

Benchmark report for Lasso and Compressed Sensing algorithms

Main purpose of this report is to analyze which algorithms can produce correct results for different datasets. Time comparisons are not to be taken too seriously as many algorithms are implemented in Matlab. However, some of them like L1_LS rely heavily on Matlab's own routines and should be comparable in efficiency.

Of our algorithms, the latest result is taken as the official. For multicore versions, for each different number of cpus (1,2,4,6,8), a result is shown.

Why some results are missing? If optimization crashes or did not finish in 90 minutes.

Definition of the objective:

- Cost function A: $\|Ax - y\|_2^2 + \lambda \|x\|_1$
- Cost function B: $\|Ax - y\|_2^2$ s.t. $\|x\|_0 = s$
- Cost function C: $\|Ax - y\|_2^2$ s.t. $\|x\|_1 \leq \tau$

Generated: 02:33:13 01/31/11 EST

Algorithms

Name		URL	Authors	Cost Function
AMP	Message Passing Compressed Sensing	http://www.pnas.org/content/106/45/18914.abstract	David L. Donoho, Arian Maleki and Andrea Montanari	B
CoSaMP	CoSaMP Iterative Signal Recovery	http://arxiv.org/abs/0803.2392/	D. Needell and J. A. Tropp	B
FPC_AS	Fixed point continuation and active set	http://www.caam.rice.edu/~optimization/L1/FPC_AS/	Zaiwen Wen, Wotao Yin	A
GPSR_BB	Gradient Projection for Sparse Reconstruction	http://www.lx.it.pt/~mtf/GPSR/	Stephen Wright, Robert Nowak, Mario Figueiredo	A
Hard_I0	Iterative hard thresholding	http://www.personal.soton.ac.uk/tb1m08/sparsify/sparsify.html	T. Blumensath and M. E. Davis	B
L1_LS	A Matlab Solver for Large-Scale l1-Regularized Least Squares Problems	http://www.stanford.edu/~boyd/l1_ls/	Kwangmoo Koh, Seungjean Kim, Stephen Boyd	A
SCD	Stochastic Coordinate Descent Algorithm	http://www.cs.utexas.edu/~ambuj/code/scd/	Shay Shalev Shwartz and Ambuj Tewari	A
SMIDAS	Stochastic Mirror Descent Algorithm	http://ttic.uchicago.edu/~tewari/code/smidas/	Shai Shalev-Shwartz and Ambuj Tewari	A
SpaRSA	Sparse Reconstruction by Separable Approximation	http://www.lx.it.pt/~mtf/SpaRSA/	Stephen Wright, Robert Nowak, Mario Figueiredo	A

Datasets

Name	M	N	Sparsity	Cite
Ball64_singlepixcam.mat	4096	1638	0.499829	Rice University, Single Pixel Camera project, http://dsp.rice.edu/cscamera
diabetes.mat	10	442	1.0	Tibshirani's classical diabetes dataset
finance1000.mat	216842	30465	0.000575	Noah Smith et al, http://www.ark.cs.edu/10K/
financebigram.mat	5845762	30465	-1.0	Noah Smith et al, http://www.ark.cs.edu/10K/
lasso2_1000_10000_0.1.mat	10000	1000	0.999963	(anonymized) @ , synthetic datasets
lasso2_1000_10000_1.mat	10000	1000	0.999963	(anonymized) @ , synthetic datasets
lasso2_1000_10000_10.mat	10000	1000	0.999963	(anonymized) @ , synthetic datasets
lasso2_1000_1000_0.1.mat	1000	1000	0.999968	(anonymized) @ , synthetic datasets
lasso2_1000_1000_1.mat	1000	1000	0.999968	(anonymized) @ , synthetic datasets
lasso2_1000_1000_10.mat	1000	1000	0.999968	(anonymized) @ , synthetic datasets
lasso2_1000_100_0.1.mat	100	1000	1.0	(anonymized) @ , synthetic datasets
lasso2_1000_100_1.mat	100	1000	1.0	(anonymized) @ , synthetic datasets
lasso2_1000_100_10.mat	100	1000	1.0	(anonymized) @ , synthetic datasets
lasso2_1000_10_0.1.mat	10	1000	1.0	(anonymized) @ , synthetic datasets
lasso2_1000_10_1.mat	10	1000	1.0	(anonymized) @ , synthetic datasets
lasso2_1000_10_10.mat	10	1000	1.0	(anonymized) @ , synthetic datasets
lasso2_50_10000_0.1.mat	10000	50	0.999534	(anonymized) @ , synthetic datasets
lasso2_50_10000_1.mat	10000	50	0.999534	(anonymized) @ , synthetic datasets
lasso2_50_10000_10.mat	10000	50	0.999534	(anonymized) @ , synthetic datasets
lasso2_50_1000_0.1.mat	1000	50	0.99934	(anonymized) @ , synthetic datasets
lasso2_50_1000_1.mat	1000	50	0.99934	(anonymized) @ , synthetic datasets
lasso2_50_1000_10.mat	1000	50	0.99934	(anonymized) @ , synthetic datasets
lasso2_50_100_0.1.mat	100	50	0.9998	(anonymized) @ , synthetic datasets
lasso2_50_100_1.mat	100	50	0.9998	(anonymized) @ , synthetic datasets
lasso2_50_100_10.mat	100	50	0.9998	(anonymized) @ , synthetic datasets
lasso2_50_10_0.1.mat	10	50	1.0	(anonymized) @ , synthetic datasets
lasso2_50_10_1.mat	10	50	1.0	(anonymized) @ , synthetic datasets
lasso2_50_10_10.mat	10	50	1.0	(anonymized) @ , synthetic datasets
Logo64_singlepixcam.mat	4096	1638	0.499829	Rice University, Single Pixel Camera project, http://dsp.rice.edu/cscamera
mug025_12_12.mat	24820	6205	0.004824	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
mug05_12_12.mat	24820	12410	0.002897	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
mug05_2000_2000.mat	24820	12410	0.383391	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
mug075_12_12.mat	24820	13651	0.002722	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
Mug128_singlepixcam.mat	16384	4770	0.499904	Rice University, Single Pixel Camera project, http://dsp.rice.edu/cscamera
Mug32_singlepixcam.mat	1024	410	1.0	Rice University, Single Pixel Camera project, http://dsp.rice.edu/cscamera
peppers025_12_12.mat	65536	16384	0.00183	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
peppers05_12_12.mat	65536	32768	0.001098	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
peppers05_6_6.mat	65536	32768	0.000549	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
phonecalls.mat	209432	209432	2e-05	?
rand_signs1K_3K.mat	3000	1000	1.0	Arian Maleki

shperichal1K_3K.mat	10000	50	0.999534	Arian Maleki
SparcoProblem1.mat	2048	1024	0.750244	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem10.mat	10000	50	0.999534	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem11.mat	3000	1000	1.0	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem2.mat	1024	1024	0.005859	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem20.mat	65536	16384	0.00183	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem3.mat	2048	1024	0.500488	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem4.mat	2048	1024	0.500488	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem401.mat	57344	29166	0.035098	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco
SparcoProblem402.mat	86016	29166	0.035098	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco
SparcoProblem5.mat	2048	300	1.0	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem501.mat	4096	629	0.920072	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco
SparcoProblem502.mat	10000	10000	0.3321	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem6.mat	2048	600	1.0	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem603.mat	4096	1024	0.706761	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco
SparcoProblem7.mat	2560	600	1.0	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem8.mat	2560	600	1.0	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem9.mat	128	128	0.503906	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage
SparcoProblem902.mat	1000	200	0.99989	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco
SparcoProblem903.mat	1024	1024	0.96824	Sparco Toolbox http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco
testphoto05_12_12.mat	954	477	0.072797	(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices
uniform_random_projection1K_3K.mat	3000	1000	1.0	Arian Maleki

Summary

Algorithm	Success %	Success	Close	Maybe	Fail	Disqualified	Timeout	Error
		<1.02 * best	1.02- 1.15 * best	1.15- 1.3 * best	1.3- 1.5 * best	>1.5 * best	>80mins	Crash/Error
shotgun_smart_atomic;1	95%	114	3	0	0	2	0	0
shotgun_smart_atomic;4	94%	110	3	0	1	2	0	0
shotgun_smart_atomic;2	94%	110	5	0	0	2	0	0
shotgun_smart_atomic;8	93%	109	4	0	0	4	0	0
L1_LS;basic	90%	98	2	2	0	1	3	2
shotgun_smart_atomic;6	95%	81	2	0	0	2	0	0
GPSR_BB;basic	69%	79	18	2	1	11	2	0
SpaRSA;basic	66%	73	19	4	1	10	3	0

SpaRSA;maxiter_1e6	51%	67	14	1	2	2	12	31
FPC_AS;basic	52%	58	11	3	2	18	0	18
Hard_I0;basic	16%	19	30	24	12	29	0	0
AMP;basic	25%	9	5	0	0	22	0	0
SCD;basic	21%	8	4	0	2	16	3	4
SMIDAS;basic	10%	6	4	0	3	23	2	20
CoSaMP;basic	7%	4	8	3	5	18	3	11

Pairwise comparisons

Datasets and Results

Ball64_singlepixcam.mat

Rice University, Single Pixel Camera project, <http://dsp.rice.edu/cscamera>



n (# of data points)	m (# of features)	% of non-zeros	Comments
1638	4096	49.9829	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
3.00	0.4998330	0.4998330	0.4998330

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	4	0.5	1.927
shotgun_smart_atomic	6	10.0	2.431

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Close	8.455	0.334382	30.1758%	0.629374	0.019696	2011-01-30 14:30:05	Shoots: 2408448
shotgun_smart_atomic	trace 2	0.5	Close	8.881	0.348251	27.6855%	0.628483	0.034009	2011-01-30 14:30:05	Shoots: 1589248

shotgun_smart_atomic trace	4	0.5	Success	1.927	0.310663	51.1475 %	0.618585	0.00137	2011-01-30 14:30:06	Shoots: 536576
shotgun_smart_atomic trace	6	0.5	Success	2.181	0.310438	55.3223 %	0.618656	0.00111	2011-01-30 14:30:06	Shoots: 618496
shotgun_smart_atomic trace	8	0.5	Disqualified	40.758	-1.0	100.0000 %	-1.0	-1.0	2011-01-19 03:00:08	Shoots: 5062207
FPC_AS	basic	0.5	Disqualified	0.172418	122751.0	100.0000 %	432.567	122534.0	2010-10-10 22:23:24	exit status shrinkage optimal iter 1 obj: 61375.3669
GPSR_BB	basic	0.5	Success	287.26	0.312622	82.2998 %	0.624625	0.000309	2010-08-05 11:40:05	
L1_LS	basic	0.5	Success	89.7998	0.309851	100.0000 %	0.618798	0.000452	2010-08-05 11:41:38	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:28:59	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Disqualified	286.537	34.9929	72.4121 %	0.336884	34.8244	2010-08-05 11:46:29	
SpaRSA	maxiter_1e6	0.5	timeout						2010-08-07 12:19:29	4800 secs
Hard_I0	basic	0.5	Close	4.95064	0.333473	40.1367 %	0.616838	0.025054	2010-10-09 23:35:11	iters: 108 conv: -0.99952 err_mse: 1.5296e-05 iter_time: 4.929
shotgun_smart_atomic trace	1	10.0	Success	2.814	6.13319	24.4385 %	0.602653	0.106665	2011-01-30 14:30:05	Shoots: 851968
shotgun_smart_atomic trace	2	10.0	Success	3.966	6.10832	24.8779 %	0.601073	0.097591	2011-01-30 14:30:06	Shoots: 933888
shotgun_smart_atomic trace	4	10.0	Success	2.698	6.08518	26.2451 %	0.599232	0.092851	2011-01-30 14:30:06	Shoots: 987136
shotgun_smart_atomic trace	6	10.0	Success	2.431	6.08502	26.3428 %	0.599216	0.092867	2011-01-30 14:30:06	Shoots: 1028096
shotgun_smart_atomic trace	8	10.0	Success	3.991	6.08495	26.4160 %	0.59921	0.092854	2011-01-30 14:30:06	Shoots: 1531904
FPC_AS	basic	10.0	Disqualified	0.172073	126860.0	100.0000 %	432.567	122534.0	2010-10-10 22:23:29	exit status shrinkage optimal iter 1 obj: 63430.0632
GPSR_BB	basic	10.0	Success	287.433	6.08527	27.6367 %	0.599318	0.092085	2010-08-05 13:12:41	
L1_LS	basic	10.0	Success	26.1372	6.08726	100.0000 %	0.59967	0.090561	2010-08-05 13:13:11	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-23 19:30:23	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	10.0	Close	286.623	6.29083	100.0000 %	0.617894	0.111895	2010-08-05 13:18:01	
SpaRSA	maxiter_1e6	10.0	timeout						2010-	4800 secs

									08-07 13:40:37	
Hard_I0	basic	10.0	Success	6.18635	6.18169	25.5127 %	0.612024	0.061444	2010-10-09 23:35:21	iters: 134 conv: - 0.99955 err_mse: 3.7511e-05 iter_time: 6.1638

diabetes.mat

Tibshirani's classical diabetes dataset

n (# of data points)	m (# of features)	% of non-zeros	Comments
442	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
3.48	0.3217540	0.7006980	0.2058850

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	100.0	0.001
shotgun_smart_atomic	1	500.0	0.001
shotgun_smart_atomic	1	1000.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	100.0	Success	0.001	11689800.0	70.0000 %	1683.23	11521500.0	2011-01-30 13:00:04	Shoots: 500
shotgun_smart_atomic	trace 2	100.0	Success	0.001	11689800.0	70.0000 %	1683.23	11521500.0	2011-01-30 13:00:04	Shoots: 630
shotgun_smart_atomic	trace 4	100.0	Success	0.003	11689800.0	70.0000 %	1683.23	11521500.0	2011-01-30 13:00:04	Shoots: 570
shotgun_smart_atomic	trace 6	100.0	Success	0.008	11689800.0	70.0000 %	1683.23	11521500.0	2011-01-30 13:00:05	Shoots: 1650
shotgun_smart_atomic	trace 8	100.0	Success	0.005	11689800.0	70.0000 %	1683.23	11521500.0	2011-01-30 13:00:05	Shoots: 1230
GPSR_BB	basic	100.0	Success	0.071822	11690000.0	80.0000 %	1670.57	11522900.0	2010-10-09 08:17:11	
L1_LS	basic	100.0	Success	0.153541	11689800.0	100.0000 %	1683.07	11521500.0	2010-10-09 08:17:07	
SMIDAS	basic	100.0	Close	0.075099	12793700.0	100.0000 %	38.3777	14468.1	2010-10-23 23:22:31	
SpaRSA	basic	100.0	Success	0.078363	11690000.0	80.0000 %	1673.36	11522600.0	2010-10-09 08:17:14	
SpaRSA	maxiter_1e6	100.0	error=""						2010-10-09 08:17:17	errmsg=""
SpaRSA	maxiter_1e6	100.0	Success	0.072119	11690000.0	80.0000 %	1673.36	11522600.0	2010-07-29	

									18:18:25	
AMP	basic	100.0	Close	0.34209	12670200.0	80.0000 %	2856.89	12384500.0	2010-11-01 20:22:30	sweeps: 500 conv: 0 diverged: 0 lambda:
Hard_I0	basic	100.0	Success	0.038012	11707500.0	70.0000 %	2023.19	11505200.0	2010-10-09 23:34:11	iters: 15 conv: 141.3149 err_mse: 26029.8599 iter_time: 0.022561
shotgun_smart_atomic trace	1	500.0	Success	0.001	12193000.0	40.0000 %	1017.47	11684300.0	2011-01-30 13:00:04	Shoots: 450
shotgun_smart_atomic trace	2	500.0	Success	0.001	12193000.0	40.0000 %	1017.47	11684300.0	2011-01-30 13:00:04	Shoots: 430
shotgun_smart_atomic trace	4	500.0	Success	0.002	12193000.0	40.0000 %	1017.47	11684300.0	2011-01-30 13:00:05	Shoots: 830
shotgun_smart_atomic trace	6	500.0	Success	0.001	12193000.0	40.0000 %	1017.47	11684300.0	2011-01-30 13:00:05	Shoots: 680
shotgun_smart_atomic trace	8	500.0	Success	0.001	12193000.0	40.0000 %	1017.47	11684300.0	2011-01-30 13:00:05	Shoots: 490
GPSR_BB	basic	500.0	Success	0.056959	12193000.0	40.0000 %	1017.37	11684400.0	2010-07-29 18:19:18	
L1_LS	basic	500.0	Success	0.099786	12193000.0	100.0000 %	1017.44	11684300.0	2010-07-29 18:19:22	
SMIDAS	basic	500.0	Close	0.102589	12815600.0	90.0000 %	29.7057	14480.5	2010-10-23 23:22:35	
SpaRSA	basic	500.0	Success	0.065843	12193000.0	40.0000 %	1017.18	11684400.0	2010-07-29 18:19:26	
SpaRSA	maxiter_1e6	500.0	Success	0.071112	12193000.0	40.0000 %	1017.18	11684400.0	2010-07-29 18:19:30	
AMP	basic	500.0	Success	0.262412	12274400.0	50.0000 %	1440.8	11554000.0	2010-11-01 20:22:35	sweeps: 500 conv: 0 diverged: 0 lambda:
Hard_I0	basic	500.0	Success	0.037853	12424600.0	40.0000 %	1726.55	11561300.0	2010-10-09 23:34:15	iters: 16 conv: -1 err_mse: 26156.8967 iter_time: 0.022471
shotgun_smart_atomic trace	1	1000.0	Success		12590900.0	20.0000 %	598.533	11992400.0	2011-01-30 13:00:04	Shoots: 410
shotgun_smart_atomic trace	2	1000.0	Success	0.001	12590900.0	20.0000 %	598.533	11992400.0	2011-01-30 13:00:04	Shoots: 470
shotgun_smart_atomic trace	4	1000.0	Success		12590900.0	20.0000 %	598.533	11992400.0	2011-01-30 13:00:05	Shoots: 460
shotgun_smart_atomic trace	6	1000.0	Success	0.003	12590900.0	20.0000 %	598.533	11992400.0	2011-01-30 13:00:05	Shoots: 460

shotgun_smart_atomic trace	8	1000.0	Success		12590900.0	20.0000 %	598.533	11992400.0	2011-01-30 13:00:05	Shoots: 440
GPSR_BB	basic	1000.0	Success	0.056555	12590900.0	20.0000 %	598.53	11992400.0	2010-07-29 18:19:34	
L1_LS	basic	1000.0	Success	0.09985	12590900.0	100.0000 %	598.55	11992300.0	2010-07-29 18:19:38	
SMIDAS	basic	1000.0	Success	0.081044	12840600.0	100.0000 %	12.6557	14511.3	2010-10-23 23:22:40	
SpaRSA	basic	1000.0	Success	0.063645	12590900.0	20.0000 %	601.526	11989400.0	2010-07-29 18:19:42	
SpaRSA	maxiter_1e6	1000.0	Success	0.06988	12590900.0	20.0000 %	601.526	11989400.0	2010-07-29 18:19:46	
AMP	basic	1000.0	Success	0.266983	12800500.0	10.0000 %	60.1193	12740400.0	2010-11-01 20:22:39	sweeps: 500 conv: 0 diverged: 0 lambda:
Hard_I0	basic	1000.0	Close	0.028729	12936600.0	20.0000 %	1290.02	11646600.0	2010-10-09 23:34:18	iters: 3 conv: -1 err_mse: 26349.7873 iter_time: 0.013239

finance1000.mat

Noah Smith et al, <http://www.ark.cs..edu/10K/>

n (# of data points)	m (# of features)	% of non-zeros	Comments
30465	216842	0.0575	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
214.38	0.0044030	0.0044030	0.0044030

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	114.139
shotgun_smart_atomic	8	10.0	33.148
shotgun_smart_atomic	8	100.0	9.69

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	135.893	2881.92	15.0455 %	4950.76	406.541	2011-01-30 13:00:05	Shoots: 505241860
shotgun_smart_atomic trace	2	0.5	Success	208.725	2879.73	14.9763 %	4953.69	402.884	2011-01-30 13:00:06	Shoots: 547742892
shotgun_smart_atomic trace	4	0.5	Success	138.582	2882.42	15.1027 %	4938.41	413.213	2011-01-30 13:00:06	Shoots: 504157650
shotgun_smart_atomic trace	6	0.5	Success	125.658	2881.09	15.0884 %	4939.07	411.557	2011-01-30	Shoots: 529961848

									13:00:07	
shotgun_smart_atomic trace	8	0.5	Success	114.139	2881.61	15.1235 %	4935.83	413.691	2011-01-30 13:30:04	Shots: 532780794
GPSR_BB	basic	0.5	Disqualified	11484.6	25449.6	88.2071 %	1347.59	24775.8	2011-01-19 22:51:52	
L1_LS	basic	0.5	timeout						2010-08-06 23:55:37	4800 secs
L1_LS	basic	0.5	crash						2011-01-20 10:59:42	matlab crash
L1_LS trace	basic	0.5	Success	7926.0	2895.83	0.0000 %			2011-01-29 22:51:12	Inserted by hand based on trace
SMIDAS	basic	0.5	Disqualified	-1.0	-100000.0	-46.1165 %	-100000.0	-100000.0	2010-10-22 21:55:10	SCD can not work with data matrix with values outside the range [-1,1]
SpaRSA	basic	0.5	Disqualified	598.745	20672900.0	100.0000 %	160125.0	20592800.0	2010-07-29 20:19:39	
SpaRSA	maxiter_1e6	0.5	timeout						2010-08-06 22:35:36	4800 secs
Hard_I0	basic	0.5	Disqualified	1143.01	137305.0	14.5991 %	81.7168	137264.0	2010-10-10 00:00:52	iters: 1000 conv: -1 err_mse: 4.5056 iter_time: 1140.9991
shotgun_smart_atomic trace	1	10.0	Success	53.615	26461.5	8.9116 %	1533.97	11121.8	2011-01-30 13:30:04	Shots: 199711482
shotgun_smart_atomic trace	2	10.0	Success	61.43	26461.3	8.9102 %	1534.36	11117.8	2011-01-30 13:30:04	Shots: 200362008
shotgun_smart_atomic trace	4	10.0	Success	44.254	26463.0	8.9346 %	1531.73	11145.8	2011-01-30 13:30:04	Shots: 191254644
shotgun_smart_atomic trace	6	10.0	Success	34.594	26463.8	8.9494 %	1530.82	11155.6	2011-01-30 13:30:05	Shots: 190170434
shotgun_smart_atomic trace	8	10.0	Success	33.148	26462.7	8.9374 %	1531.47	11148.0	2011-01-30 13:30:04	Shots: 192989380
FPC_AS	basic	10.0	Disqualified	224.528	173341000.0	96.0806 %	159010.0	171750000.0	2010-07-29 21:43:30	
GPSR_BB	basic	10.0	Fail	11371.7	35594.6	20.0399 %	879.718	26797.4	2011-01-20 02:01:28	
L1_LS	basic	10.0	Success	2555.12	26453.7	100.0000 %	1539.92	11054.5	2011-01-20 11:42:21	
SMIDAS	basic	10.0	Disqualified	-1.0	-100000.0	-46.1165 %	-100000.0	-100000.0	2010-10-22 21:55:15	SCD can not work with data matrix with values

										outside the range [-1,1]
SpaRSA	basic	10.0	Disqualified	583.902	77008600.0	100.0000 %	892066.0	68087900.0	2010-07-29 22:56:04	
SpaRSA	maxiter_1e6	10.0	timeout						2010-08-08 00:47:15	4800 secs
Hard_I0	basic	10.0	Disqualified	587.005	129060.0	9.9999 %	94.6094	128114.0	2010-09-10 20:34:43	iters: 1000 conv: -1 err_mse: 4.2053 iter_time: 585.9822
shotgun_smart_atomic trace	1	100.0	Success	21.81	77201.8	3.3513 %	283.136	48888.1	2011-01-30 13:30:04	Shots: 89772588
shotgun_smart_atomic trace	2	100.0	Success	17.347	77202.4	3.3531 %	283.007	48901.7	2011-01-30 13:30:04	Shots: 86519958
shotgun_smart_atomic trace	4	100.0	Success	12.537	77203.8	3.3642 %	282.85	48918.8	2011-01-30 13:30:04	Shots: 87604168
shotgun_smart_atomic trace	6	100.0	Success	11.794	77203.6	3.3619 %	282.876	48916.0	2011-01-30 13:30:05	Shots: 88254694
shotgun_smart_atomic trace	8	100.0	Success	9.69	77203.4	3.3624 %	282.828	48920.7	2011-01-30 13:30:04	Shots: 88905220
FPC_AS	basic	100.0	Disqualified	264.643	191009000.0	69.2477 %	140012.0	177007000.0	2010-08-11 17:49:44	
GPSR_BB	basic	100.0	Close	10597.3	80783.1	4.7809 %	236.333	57149.8	2011-01-20 04:58:10	
L1_LS	basic	100.0	Success	1259.28	77207.9	100.0000 %	283.601	48847.9	2011-01-20 12:03:23	
SMIDAS	basic	100.0	Disqualified	-1.0	-100000.0	-46.1165 %	-100000.0	-100000.0	2010-10-22 21:55:19	SCD can not work with data matrix with values outside the range [-1,1]
SpaRSA	basic	100.0	Disqualified	969.082	659212000.0	99.7505 %	3138000.0	345412000.0	2010-08-11 11:38:00	
SpaRSA	maxiter_1e6	100.0	timeout						2010-08-11 20:45:03	4800 secs
Hard_I0	basic	100.0	Disqualified	573.825	231119.0	100.0000 %	29.294	228189.0	2010-09-10 20:44:31	iters: 1000 conv: -1 err_mse: 7.4902 iter_time: 572.7938

financebigram.mat

Noah Smith et al, <http://www.ark.cs..edu/10K/>

n (# of data points)	m (# of features)	% of non-zeros	Comments
----------------------	-------------------	----------------	----------

30465	5845762	-100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
-5845761.00	0.0000470	0.0000470	0.0000470

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	2005.6
shotgun_smart_atomic	8	10.0	1840.97

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	4919.96	322.483	0.7322 %	621.161	11.9018	2011-01-27 13:30:06	Shoots: 17899723244
shotgun_smart_atomic trace	2	0.5	Success	4370.29	321.666	0.7388 %	619.404	11.9644	2011-01-27 20:30:04	Shoots: 18209548630
shotgun_smart_atomic	4	0.5	Fail	4107.66	439.769	0.6797 %	823.605	27.9662	2010-10-10 18:33:12	Shoots: 1637893202
shotgun_smart_atomic trace	8	0.5	Success	2005.6	321.01	0.7464 %	618.068	11.9764	2011-01-27 19:00:04	Shoots: 18244623202
shotgun_smart_atomic trace	1	10.0	Success	5027.34	4727.53	0.4315 %	356.567	1161.86	2011-01-27 22:00:06	Shoots: 18776587544
shotgun_smart_atomic trace	2	10.0	Success	3821.1	4724.24	0.4338 %	356.067	1163.56	2011-01-28 00:00:04	Shoots: 18764896020
shotgun_smart_atomic trace	8	10.0	Success	1840.97	4718.25	0.4358 %	355.067	1167.57	2011-01-27 23:00:04	Shoots: 18823353640

lasso2_1000_10000_0.1.mat

(anonymized) @ . synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	10000	99.9963	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
597.10	0.0252480	0.7498350	0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
FPC_AS	basic	0.5	1.84135
GPSR_BB	basic	10.0	0.706629

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	16.898	531.803	1.2900	1050.21	6.69717	2011-	Shoots:

						%			01-30 16:00:05	2890000
shotgun_smart_atomic trace	2	0.5	Success	11.355	531.803	1.2900 %	1050.21	6.69717	2011-01-30 16:00:05	Shots: 3060000
shotgun_smart_atomic	4	0.5	Success	5.133	531.803	1.2900 %	1050.21	6.69724	2011-01-30 16:00:05	Shots: 3040000
shotgun_smart_atomic trace	6	0.5	Success	3.83	531.803	1.2900 %	1050.21	6.69719	2011-01-30 16:00:05	Shots: 3170000
shotgun_smart_atomic trace	8	0.5	Success	4.627	531.803	1.2900 %	1050.21	6.69718	2011-01-30 16:00:05	Shots: 3220000
FPC_AS	basic	0.5	Success	1.84135	531.803	1.2900 %	1050.21	6.69701	2010-07-30 02:08:26	
GPSR_BB	basic	0.5	Close	4.72406	610.182	11.1600 %	1168.8	25.784	2010-07-30 02:08:35	
L1_LS	basic	0.5	Success	11.7735	531.918	100.0000 %	1050.44	6.69774	2010-07-30 02:08:51	
SpaRSA	basic	0.5	Maybe	2.42195	649.412	14.4200 %	1256.86	20.9795	2010-07-30 02:08:57	
SpaRSA	maxiter_1e6	0.5	Maybe	3.13239	649.412	14.4200 %	1256.86	20.9795	2010-07-30 02:09:04	
Hard_I0	basic	0.5	Success	2.75548	538.421	1.2900 %	1076.81	0.014885	2010-10-09 23:24:41	iters: 26 conv: -1 err_mse: 1.4885e-05 iter_time: 2.7355
shotgun_smart_atomic trace	1	10.0	Success	7.776	8363.86	0.8200 %	622.133	2142.53	2011-01-30 16:00:05	Shots: 2030000
shotgun_smart_atomic trace	2	10.0	Success	4.931	8363.86	0.8200 %	622.133	2142.53	2011-01-30 16:00:05	Shots: 2090000
shotgun_smart_atomic trace	4	10.0	Success	2.978	8363.86	0.8200 %	622.133	2142.53	2011-01-30 16:00:05	Shots: 2150000
shotgun_smart_atomic trace	6	10.0	Success	2.659	8363.86	0.8200 %	622.133	2142.53	2011-01-30 16:00:05	Shots: 2260000
shotgun_smart_atomic trace	8	10.0	Success	2.553	8363.86	0.8200 %	622.133	2142.53	2011-01-30 16:00:05	Shots: 2260000
FPC_AS	basic	10.0	Success	1.20818	8363.86	0.8200 %	622.133	2142.53	2010-07-30 02:09:10	
GPSR_BB	basic	10.0	Success	0.706629	8363.9	0.8500 %	621.799	2145.9	2010-07-30 02:09:15	
L1_LS	basic	10.0	Success	6.1445	8364.8	100.0000 %	622.273	2142.07	2010-07-30 02:09:25	
SpaRSA	basic	10.0	Success	0.730449	8363.9	0.8300 %	620.919	2154.71	2010-07-30 02:09:30	
SpaRSA	maxiter_1e6	10.0	Success	0.735926	8363.9	0.8300	620.919	2154.71	2010-	

						%			07-30 02:09:35	
Hard_I0	basic	10.0	Maybe	0.923258	10583.8	0.8200 %	1054.35	40.2525	2010- 10-09 23:24:46	iters: 12 conv: -1 err_mse: 0.040252 iter_time: 0.90525

lasso2_1000_10000_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	10000	99.9963	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
597.10	0.0252480	0.7498350	0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	6	0.5	22.882
GPSR_BB	basic	10.0	0.707443

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	57.496	694.426	9.0900 %	1340.91	23.97	2011- 01-30 16:00:06	Shoots: 12820000
shotgun_smart_atomic	trace 2	0.5	Success	40.386	694.426	9.0900 %	1340.91	23.97	2011- 01-30 16:00:06	Shoots: 12790000
shotgun_smart_atomic	trace 4	0.5	Success	27.454	694.426	9.0900 %	1340.91	23.97	2011- 01-30 16:00:06	Shoots: 13400000
shotgun_smart_atomic	trace 6	0.5	Success	22.882	694.426	9.1000 %	1340.91	23.9701	2011- 01-30 16:00:07	Shoots: 13740000
shotgun_smart_atomic	trace 8	0.5	Success	23.65	694.426	9.0900 %	1340.91	23.9703	2011- 01-30 16:00:06	Shoots: 13910000
FPC_AS	basic	0.5	Success	49.8238	695.994	10.9900 %	1343.27	24.3585	2010- 07-30 02:10:29	
GPSR_BB	basic	0.5	Close	4.8879	761.353	15.4800 %	1467.82	27.4415	2010- 07-30 02:10:38	
L1_LS	basic	0.5	Success	23.4923	694.585	100.0000 %	1341.36	23.9065	2010- 07-30 02:11:05	
SpaRSA	basic	0.5	Close	3.97937	727.771	15.8000 %	1390.16	32.6922	2010- 07-30 02:11:13	
SpaRSA	maxiter_1e6	0.5	Close	3.98378	727.771	15.8000 %	1390.16	32.6922	2010- 07-30 02:11:22	
Hard_I0	basic	0.5	Fail	15.2955	963.994	9.0500 %	1918.55	4.72062	2010- 10-09 23:34:55	iters: 206 conv: -1 err_mse: 0.0047206

										iter_time: 15.2573
shotgun_smart_atomic trace	1	10.0	Success	8.891	9247.07	1.2400 %	632.766	2919.41	2011-01-30 16:00:06	Shoots: 2050000
shotgun_smart_atomic trace	2	10.0	Success	4.527	9247.07	1.2400 %	632.766	2919.41	2011-01-30 16:00:06	Shoots: 2080000
shotgun_smart_atomic trace	4	10.0	Success	3.49	9247.07	1.2400 %	632.766	2919.41	2011-01-30 16:00:06	Shoots: 2230000
shotgun_smart_atomic trace	6	10.0	Success	3.058	9247.07	1.2400 %	632.766	2919.41	2011-01-30 16:00:07	Shoots: 2300000
shotgun_smart_atomic trace	8	10.0	Success	2.751	9247.07	1.2400 %	632.766	2919.41	2011-01-30 16:00:06	Shoots: 2350000
FPC_AS	basic	10.0	Success	1.33973	9247.07	1.2400 %	632.767	2919.41	2010-07-30 02:11:27	
GPSR_BB	basic	10.0	Success	0.707443	9247.44	1.2800 %	629.886	2948.58	2010-07-30 02:11:32	
L1_LS	basic	10.0	Success	6.2192	9248.05	100.0000 %	632.978	2918.27	2010-07-30 02:11:42	
SpaRSA	basic	10.0	Success	0.772115	9247.88	1.2700 %	638.232	2865.56	2010-07-30 02:11:47	
SpaRSA	maxiter_1e6	10.0	Success	0.778733	9247.88	1.2700 %	638.232	2865.56	2010-07-30 02:11:52	
Hard_I0	basic	10.0	Maybe	2.83927	11991.8	1.2400 %	1137.43	617.438	2010-10-09 23:35:02	iters: 28 conv: -1 err_mse: 0.61744 iter_time: 2.8194

lasso2_1000_10000_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	10000	99.9963	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
597.10	0.0252480	0.7498350	0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
L1_LS	basic	0.5	72.1983
SpaRSA	basic	10.0	1.41421

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	348.907	2867.77	9.9600 %	5137.78	298.873	2011-01-30	Shoots: 91890000

									13:00:11	
shotgun_smart_atomic trace	2	0.5	Success	302.102	2867.77	9.9700 %	5137.79	298.873	2011-01-30 13:00:12	Shoots: 85470000
shotgun_smart_atomic trace	4	0.5	Success	184.82	2867.77	9.9900 %	5137.78	298.874	2011-01-30 13:00:12	Shoots: 84840000
shotgun_smart_atomic trace	6	0.5	Success	181.07	2867.77	9.9800 %	5137.78	298.874	2011-01-30 13:00:12	Shoots: 91430000
shotgun_smart_atomic trace	8	0.5	Success	168.832	2867.77	9.9700 %	5137.78	298.873	2011-01-30 13:00:12	Shoots: 92980000
FPC_AS	basic	0.5	Close	50.434	3007.21	31.5500 %	5398.6	307.909	2010-07-30 02:12:47	
GPSR_BB	basic	0.5	Close	5.80031	3094.7	26.2400 %	5562.18	313.61	2010-07-30 02:12:57	
L1_LS	basic	0.5	Success	72.1983	2868.44	100.0000 %	5139.15	298.86	2010-07-30 02:14:13	
SMIDAS	basic	0.5	Disqualified	58.706	109649.0	8.2500 %	0.559261	54.8244	2010-10-24 11:07:43	
SpaRSA	basic	0.5	Close	3.47023	3112.57	25.3200 %	5466.39	379.378	2010-07-30 02:14:20	
SpaRSA	maxiter_1e6	0.5	Close	3.4789	3112.57	25.3200 %	5466.39	379.378	2010-07-30 02:14:28	
Hard_I0	basic	0.5	Close	10.0439	3216.48	10.1200 %	5861.18	285.894	2010-10-09 23:24:01	iters: 139 conv: -1 err_mse: 0.28589 iter_time: 10.014
shotgun_smart_atomic trace	1	10.0	Success	40.452	43901.9	7.6600 %	3565.25	8249.34	2011-01-30 13:00:12	Shoots: 10990000
shotgun_smart_atomic trace	2	10.0	Success	29.481	43901.9	7.6600 %	3565.25	8249.34	2011-01-30 13:00:12	Shoots: 10870000
shotgun_smart_atomic trace	4	10.0	Success	21.888	43901.9	7.6600 %	3565.25	8249.34	2011-01-30 13:00:12	Shoots: 11450000
shotgun_smart_atomic trace	6	10.0	Success	20.579	43901.9	7.6600 %	3565.25	8249.34	2011-01-30 13:00:12	Shoots: 11840000
shotgun_smart_atomic trace	8	10.0	Success	20.255	43901.9	7.6600 %	3565.25	8249.34	2011-01-30 13:00:12	Shoots: 11790000
FPC_AS	basic	10.0	Success	5.41772	43901.9	7.6500 %	3565.25	8249.33	2010-07-30 02:14:37	
GPSR_BB	basic	10.0	Success	2.12281	43948.5	8.4500 %	3560.08	8347.77	2010-07-30 02:14:44	
L1_LS	basic	10.0	Success	15.6097	43908.8	100.0000 %	3566.47	8244.07	2010-07-30 02:15:04	
SMIDAS	basic	10.0	Disqualified	57.7478	109660.0	5.1800 %	0.453884	54.8275	2010-10-24 11:12:52	

SpaRSA	basic	10.0	Success	1.41421	43937.0	8.3600 %	3563.3	8303.97	2010-07-30 02:15:09	
SpaRSA	maxiter_1e6	10.0	Success	1.41928	43937.0	8.3600 %	3563.3	8303.97	2010-07-30 02:15:15	
Hard_I0	basic	10.0	Fail	12.5525	58460.3	7.6500 %	5800.28	457.463	2010-10-09 23:24:18	iters: 167 conv: -1 err_mse: 0.45746 iter_time: 12.5194

lasso2_1000_1000_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	1000	99.9968	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
265.01	0.0252160	0.7504610	0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.035
SMIDAS	basic	10.0	5.94484

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.118	148.05	3.1000 %	292.202	1.94958	2011-01-30 13:00:14	Shoots: 31000
shotgun_smart_atomic	trace 2	0.5	Success	0.073	148.05	3.1000 %	292.202	1.94958	2011-01-30 13:00:14	Shoots: 31000
shotgun_smart_atomic	trace 4	0.5	Success	0.05	148.05	3.1000 %	292.202	1.94959	2011-01-30 13:00:14	Shoots: 31000
shotgun_smart_atomic	trace 6	0.5	Success	0.042	148.05	3.1000 %	292.202	1.94959	2011-01-30 13:00:14	Shoots: 32000
shotgun_smart_atomic	trace 8	0.5	Success	0.035	148.05	3.1000 %	292.202	1.94959	2011-01-30 13:00:14	Shoots: 32000
FPC_AS	basic	0.5	Success	0.278715	148.05	3.1000 %	292.202	1.94958	2010-07-30 02:15:19	
GPSR_BB	basic	0.5	Success	0.130607	148.053	3.1000 %	292.312	1.89722	2010-07-30 02:15:22	
L1_LS	basic	0.5	Success	0.760424	148.077	100.0000 %	292.255	1.94904	2010-07-30 02:15:27	
SMIDAS	basic	0.5	Disqualified	5.9498	1988.48	2.0000 %	0.255906	0.994178	2010-10-22 21:57:03	
SpaRSA	basic	0.5	Success	0.141655	148.053	3.1000 %	292.294	1.90555	2010-07-30 02:15:30	

SpaRSA	maxiter_1e6	0.5	Success	0.147149	148.053	3.1000 %	292.294	1.90555	2010-07-30 02:15:34	
CoSaMP	basic	0.5	Success	3.64876	150.0	3.1000 %	300.0		2010-10-10 17:35:27	iterations: 500 conv: -1 sparsity level: 0.031
Hard_I0	basic	0.5	Success	0.11022	150.004	3.1000 %	300.007	0.000265	2010-10-09 23:35:43	iters: 8 conv: -1 err_mse: 2.649e- 07 iter_time: 0.093242
shotgun_smart_atomic trace	1	10.0	Close	0.11	2277.34	2.2000 %	164.648	630.854	2011-01-30 13:00:14	Shoots: 29000
shotgun_smart_atomic trace	2	10.0	Close	0.067	2277.34	2.2000 %	164.649	630.854	2011-01-30 13:00:14	Shoots: 29000
shotgun_smart_atomic trace	4	10.0	Close	0.045	2277.34	2.2000 %	164.648	630.854	2011-01-30 13:00:14	Shoots: 30000
shotgun_smart_atomic trace	6	10.0	Close	0.04	2277.34	2.2000 %	164.649	630.854	2011-01-30 13:00:14	Shoots: 31000
shotgun_smart_atomic trace	8	10.0	Close	0.035	2277.34	2.2000 %	164.648	630.854	2011-01-30 13:00:14	Shoots: 32000
FPC_AS	basic	10.0	Close	0.2237	2277.34	2.2000 %	164.649	630.854	2010-07-30 02:15:38	
GPSR_BB	basic	10.0	Close	0.095214	2277.34	2.2000 %	164.642	630.918	2010-07-30 02:15:42	
L1_LS	basic	10.0	Close	0.461794	2277.73	100.0000 %	164.756	630.171	2010-07-30 02:15:46	
SMIDAS	basic	10.0	Success	5.94484	1992.24	1.3000 %	0.207661	0.995081	2010-10-22 21:57:41	
SpaRSA	basic	10.0	Close	0.105091	2277.34	2.2000 %	164.627	631.065	2010-07-30 02:15:49	
SpaRSA	maxiter_1e6	10.0	Close	0.114015	2277.34	2.2000 %	164.627	631.065	2010-07-30 02:15:53	
CoSaMP	basic	10.0	Fail	0.159049	2839.97	2.2000 %	276.0	79.9657	2010-10-10 17:35:31	iterations: 5 conv: - 1 sparsity level: 0.022
Hard_I0	basic	10.0	Fail	0.101015	2829.21	2.2000 %	275.087	78.332	2010-10-09 23:35:47	iters: 7 conv: -1 err_mse: 0.078332 iter_time: 0.083942

lasso2_1000_1000_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	1000	99.9968	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
265.01	0.0252160	0.7504610	0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
GPSR_BB	basic	0.5	0.154075
shotgun_smart_atomic	4	10.0	0.035

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.778	631.549	62.2000 %	768.196	247.451	2011-01-20 16:30:06	Shoots: 113000
shotgun_smart_atomic	trace 2	0.5	Close	0.223	656.968	69.1000 %	664.611	324.663	2011-01-20 16:30:06	Shoots: 13000
shotgun_smart_atomic	trace 4	0.5	Close	0.124	665.845	69.7000 %	655.891	337.9	2011-01-20 16:30:07	Shoots: 13000
shotgun_smart_atomic	trace 8	0.5	Close	0.152	658.974	70.1000 %	660.592	328.677	2011-01-20 16:30:07	Shoots: 13000
FPC_AS	basic	0.5	Success	0.639246	631.549	62.2000 %	768.202	247.448	2010-07-30 02:15:57	
GPSR_BB	basic	0.5	Success	0.154075	640.261	70.1000 %	771.923	254.299	2010-07-30 02:16:01	
L1_LS	basic	0.5	Success	0.955552	631.64	100.0000 %	770.138	246.571	2010-07-30 02:16:06	
SMIDAS	basic	0.5	Disqualified	5.95225	4882.26	2.0000 %	0.274072	2.44106	2010-10-23 23:43:00	
SpaRSA	basic	0.5	Close	0.144592	645.643	65.9000 %	775.426	257.93	2010-07-30 02:16:10	
SpaRSA	maxiter_1e6	0.5	Close	0.152639	645.643	65.9000 %	775.426	257.93	2010-07-30 02:16:14	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 20:18:20	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Fail	1.55076	867.443	62.2000 %	1527.77	103.561	2010-10-09 23:34:24	iters: 187 conv: -3.6606 err_mse: 0.10356 iter_time: 1.5325
shotgun_smart_atomic	trace 1	10.0	Success	0.186	3183.33	2.2000 %	163.157	1551.75	2011-01-20 16:30:06	Shoots: 30000
shotgun_smart_atomic	trace 2	10.0	Success	0.056	3183.33	2.2000 %	163.073	1552.6	2011-01-20 16:30:07	Shoots: 12000

shotgun_smart_atomic trace	4	10.0	Success	0.035	3183.34	2.2000 %	162.82	1555.14	2011-01-20 16:30:07	Shoots: 12000
shotgun_smart_atomic trace	8	10.0	Success	0.037	3183.34	2.2000 %	162.782	1555.51	2011-01-20 16:30:07	Shoots: 12000
FPC_AS	basic	10.0	Success	0.228358	3183.33	2.2000 %	163.157	1551.75	2010-07-30 02:16:17	
GPSR_BB	basic	10.0	Success	0.094685	3183.33	2.2000 %	163.145	1551.88	2010-07-30 02:16:21	
L1_LS	basic	10.0	Success	0.464427	3184.17	100.0000 %	163.387	1550.29	2010-07-30 02:16:25	
SMIDAS	basic	10.0	Disqualified	5.90747	4887.2	1.4000 %	0.202724	2.44258	2010-10-23 23:43:35	
SpaRSA	basic	10.0	Success	0.106386	3183.33	2.2000 %	163.076	1552.56	2010-07-30 02:16:29	
SpaRSA	maxiter_1e6	10.0	Success	0.113226	3183.33	2.2000 %	163.076	1552.56	2010-07-30 02:16:32	
CoSaMP	basic	10.0	Maybe	0.16072	3735.61	2.2000 %	273.245	1003.16	2010-10-10 20:18:24	iterations: 6 conv: -1 sparsity level: 0.022
Hard_I0	basic	10.0	Maybe	0.142985	3740.08	2.2000 %	274.056	999.518	2010-10-09 23:34:28	iters: 11 conv: -1 err_mse: 0.99952 iter_time: 0.12616

lasso2_1000_1000_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	1000	99.9968	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
265.01	0.0252160	0.7504610	0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
L1_LS	basic	0.5	4.56279
SpaRSA	basic	10.0	0.139423

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	6.533	13303.0	90.6000 %	16677.6	4964.16	2011-01-30 14:30:13	Shoots: 1081000
shotgun_smart_atomic trace	2	0.5	Success	17.428	13303.0	90.6000 %	16677.6	4964.15	2011-01-30 14:30:13	Shoots: 1126000
shotgun_smart_atomic trace	4	0.5	Success	9.401	13303.0	90.6000 %	16677.6	4964.19	2011-01-30 14:30:13	Shoots: 1129000

shotgun_smart_atomic_trace	6	0.5	Success	7.91	13303.0	90.6000%	16677.6	4964.19	2011-01-30 14:30:14	Shoots: 1217000
shotgun_smart_atomic_trace	8	0.5	Success	6.499	13303.0	90.6000%	16677.6	4964.19	2011-01-30 14:30:13	Shoots: 1246000
FPC_AS	basic	0.5	Close	1.72225	14185.9	97.4000%	20623.7	3874.05	2010-07-30 02:16:38	
GPSR_BB	basic	0.5	Close	0.275307	14320.3	97.6000%	12622.0	8009.3	2010-07-30 02:16:42	
L1_LS	basic	0.5	Success	4.56279	13303.2	100.0000%	16679.2	4963.65	2010-07-30 02:16:50	
SCD	basic	0.5	Disqualified	1.76073	95308.4	99.0000%	78.6691	47.6345	2010-10-09 19:23:32	
SMIDAS	basic	0.5	Disqualified	5.99551	97208.4	31.7000%	0.450723	48.6041	2010-10-24 11:13:43	
SpaRSA	basic	0.5	Close	0.226674	14111.1	97.8000%	13072.1	7575.01	2010-07-30 02:16:54	
SpaRSA	maxiter_1e6	0.5	Close	0.230886	14111.1	97.8000%	13072.1	7575.01	2010-07-30 02:16:58	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 20:18:28	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Maybe	9.85586	16380.7	90.7000%	28631.4	2065.03	2010-10-09 23:15:52	iters: 1000 conv: 98.0264 err_mse: 2.065 iter_time: 9.8442
shotgun_smart_atomic_trace	1	10.0	Success	0.299	69390.6	43.9000%	2871.4	40676.6	2011-01-30 14:30:13	Shoots: 65000
shotgun_smart_atomic_trace	2	10.0	Success	0.467	69390.6	43.9000%	2871.4	40676.6	2011-01-30 14:30:13	Shoots: 66000
shotgun_smart_atomic_trace	4	10.0	Success	0.278	69390.6	43.9000%	2871.4	40676.6	2011-01-30 14:30:13	Shoots: 68000
shotgun_smart_atomic_trace	6	10.0	Success	0.247	69390.6	43.9000%	2871.4	40676.6	2011-01-30 14:30:14	Shoots: 71000
shotgun_smart_atomic_trace	8	10.0	Success	0.2	69390.6	43.9000%	2871.4	40676.6	2011-01-30 14:30:13	Shoots: 72000
FPC_AS	basic	10.0	Success	0.415712	69390.6	43.9000%	2871.4	40676.6	2010-07-30 02:17:02	
GPSR_BB	basic	10.0	Success	0.156027	69398.8	44.9000%	2849.81	40900.7	2010-07-30 02:17:05	
L1_LS	basic	10.0	Success	0.852379	69396.8	100.0000%	2875.9	40637.8	2010-07-30 02:17:10	
SCD	basic	10.0	Fail	1.82691	96416.0	63.4000%	39.7914	48.009	2010-10-09 19:23:59	
SMIDAS	basic	10.0	Fail	5.71869	97214.2	16.2000%	0.380052	48.6052	2010-10-24	

										11:14:17	
SpaRSA	basic	10.0	Success	0.139423	69397.6	45.1000 %	2854.91	40848.5	2010-07-30 02:17:14		
SpaRSA	maxiter_1e6	10.0	Success	0.147081	69397.6	45.1000 %	2854.91	40848.5	2010-07-30 02:17:17		
CoSaMP	basic	10.0	Disqualified	268.179	584124.0	43.9000 %	34188.7	242237.0	2010-10-10 20:23:00	iterations: 500 conv: 129.8604 sparsity level: 0.439	
Hard_I0	basic	10.0	Fail	0.901421	100067.0	43.9000 %	8117.86	18888.2	2010-10-09 23:15:56	iters: 105 conv: -14.0195 err_mse: 18.8882 iter_time: 0.8836	

lasso2_1000_100_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	100	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
60.40	0.0256910	0.7495250	0.0002270

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.002
shotgun_smart_atomic	1	10.0	0.002

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.002	57.7453	11.0000 %	113.981	0.754706	2011-01-19 13:45:48	Shoots: 500
shotgun_smart_atomic	trace 2	0.5	Success	0.006	57.7453	11.0000 %	113.981	0.754769	2011-01-19 13:45:48	Shoots: 636
shotgun_smart_atomic	trace 4	0.5	Success	0.007	57.7453	11.0000 %	113.981	0.754771	2011-01-19 13:45:48	Shoots: 646
shotgun_smart_atomic	trace 8	0.5	Success	0.006	57.7453	11.0000 %	113.981	0.754892	2011-01-19 13:45:48	Shoots: 748
FPC_AS	basic	0.5	error=""						2010-08-07 17:48:36	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.061323	57.746	11.0000 %	113.924	0.784256	2010-07-31 11:32:29	
L1_LS	basic	0.5	Success	0.129573	57.7524	100.0000 %	113.999	0.753019	2010-07-31 11:32:32	
SpaRSA	basic	0.5	Success	0.069884	57.7459	11.0000 %	113.953	0.769609	2010-07-31 11:32:36	

SpaRSA	maxiter_1e6	0.5	Success	0.075795	57.7459	11.0000 %	113.953	0.769609	2010-07-31 11:32:39	
CoSaMP	basic	0.5	Success	0.783518	58.5	11.0000 %	117.0		2010-10-10 17:32:07	iterations: 500 conv: -1 sparsity level: 0.11
Hard_I0	basic	0.5	Success	0.03549	58.4975	11.0000 %	116.995	3e-06	2010-10-09 23:41:33	iters: 6 conv: -1 err_mse: 3.2459e-09 iter_time: 0.01987
shotgun_smart_atomic trace	1	10.0	Success	0.002	889.803	8.0000 %	64.2917	246.885	2011-01-19 13:45:48	Shoots: 500
shotgun_smart_atomic trace	2	10.0	Success	0.002	889.803	8.0000 %	64.2917	246.885	2011-01-19 13:45:48	Shoots: 508
shotgun_smart_atomic trace	4	10.0	Success	0.003	889.803	8.0000 %	64.2917	246.885	2011-01-19 13:45:48	Shoots: 508
shotgun_smart_atomic trace	8	10.0	Success	0.003	889.803	8.0000 %	64.2917	246.886	2011-01-19 13:45:48	Shoots: 508
FPC_AS	basic	10.0	error=""						2010-08-07 17:48:40	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	10.0	Success	0.060128	889.802	8.0000 %	64.2915	246.887	2010-07-31 11:32:46	
L1_LS	basic	10.0	Success	0.11468	890.064	100.0000 %	64.3749	246.315	2010-07-31 11:32:50	
SpaRSA	basic	10.0	Success	0.069363	889.802	8.0000 %	64.2915	246.888	2010-07-31 11:32:54	
SpaRSA	maxiter_1e6	10.0	Success	0.075343	889.802	8.0000 %	64.2915	246.888	2010-07-31 11:32:57	
CoSaMP	basic	10.0	Maybe	0.116559	1111.75	8.0000 %	107.0	41.7512	2010-10-10 17:32:11	iterations: 4 conv: -1 sparsity level: 0.08
Hard_I0	basic	10.0	Maybe	0.036657	1095.33	8.0000 %	105.398	41.3505	2010-10-09 23:41:36	iters: 6 conv: -1 err_mse: 0.041351 iter_time: 0.020775

lasso2_1000_100_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	100	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
60.40	0.0256910	0.7495250	0.0002270

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.011
shotgun_smart_atomic	6	10.0	0.003

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic_trace	1	0.5	Success	0.011	997.349	81.0000 %	166.784	913.957	2011-01-30 14:30:16	Shots: 3300
shotgun_smart_atomic_trace	2	0.5	Success	0.024	997.349	81.0000 %	166.784	913.957	2011-01-30 14:30:16	Shots: 3300
shotgun_smart_atomic_trace	4	0.5	Success	0.015	997.349	81.0000 %	166.784	913.957	2011-01-30 14:30:16	Shots: 3300
shotgun_smart_atomic_trace	6	0.5	Success	0.012	997.349	81.0000 %	166.784	913.957	2011-01-30 14:30:16	Shots: 3500
shotgun_smart_atomic_trace	8	0.5	Success	0.012	997.349	81.0000 %	166.784	913.957	2011-01-30 14:30:16	Shots: 3500
FPC_AS	basic	0.5	error=""						2010-08-09 09:28:10	errmsg="Error using ==> AddLowerBoundedNumberOption at 19"
GPSR_BB	basic	0.5	Success	0.061381	997.356	83.0000 %	166.663	914.025	2010-07-31 11:33:04	
L1_LS	basic	0.5	Success	0.126832	997.41	100.0000 %	168.05	913.385	2010-07-31 11:33:08	
SpaRSA	basic	0.5	Success	0.069623	997.369	82.0000 %	166.733	914.002	2010-07-31 11:33:12	
SpaRSA	maxiter_1e6	0.5	Success	0.076413	997.369	82.0000 %	166.733	914.002	2010-07-31 11:33:15	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 17:37:50	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Success	0.04276	1003.14	81.0000 %	189.797	908.242	2010-10-09 23:21:54	iters: 13 conv: -2.7449 err_mse: 0.90824 iter_time: 0.027129
shotgun_smart_atomic_trace	1	10.0	Success	0.006	1897.83	7.0000 %	64.4055	1253.77	2011-01-30 14:30:16	Shots: 2400
shotgun_smart_atomic_trace	2	10.0	Success	0.004	1897.83	7.0000 %	64.4055	1253.77	2011-01-30 14:30:16	Shots: 2300
shotgun_smart_atomic_trace	4	10.0	Success	0.005	1897.83	7.0000 %	64.4055	1253.77	2011-01-30 14:30:16	Shots: 2700
shotgun_smart_atomic_trace	6	10.0	Success	0.003	1897.83	7.0000 %	64.4055	1253.77	2011-01-30 14:30:16	Shots: 2700
shotgun_smart_atomic_trace	8	10.0	Success	0.003	1897.83	7.0000 %	64.4055	1253.77	2011-01-30 14:30:16	Shots: 2700
FPC_AS	basic	10.0	error=""						2010-08-09 09:28:15	errmsg="Error using ==> AddLowerBoundedNumberOption at 19"
GPSR_BB	basic	10.0	Success	0.060119	1897.83	7.0000 %	64.4056	1253.77	2010-07-31 11:33:23	
L1_LS	basic	10.0	Success	0.113134	1898.73	100.0000 %	64.7091	1251.64	2010-07-31 11:33:27	
SpaRSA	basic	10.0	Success	0.069343	1897.83	7.0000 %	64.4054	1253.77	2010-	

						%				07-31 11:33:30	
SpaRSA	maxiter_1e6	10.0	Success	0.075332	1897.83	7.0000 %	64.4054	1253.77	2010-07-31 11:33:34		
CoSaMP	basic	10.0	Close	0.144051	2086.43	7.0000 %	99.8728	1087.7	2010-10-10 17:37:54	iterations: 4 conv: -1 sparsity level: 0.07	
Hard_I0	basic	10.0	Close	0.034272	2065.0	7.0000 %	97.8451	1086.55	2010-10-09 23:21:57	iters: 4 conv: -1 err_mse: 1.0865 iter_time: 0.018765	

lasso2_1000_100_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	100	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
60.40	0.0256910	0.7495250	0.0002270

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.016
shotgun_smart_atomic	1	10.0	0.011

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.016	91199.1	97.0000 %	864.317	90767.0	2011-01-30 14:30:17	Shots: 3900
shotgun_smart_atomic	trace 2	0.5	Success	0.052	91199.1	97.0000 %	864.317	90767.0	2011-01-30 14:30:17	Shots: 3900
shotgun_smart_atomic	trace 4	0.5	Success	0.03	91199.1	97.0000 %	864.317	90767.0	2011-01-30 14:30:17	Shots: 4000
shotgun_smart_atomic	trace 6	0.5	Success	0.025	91199.1	97.0000 %	864.317	90767.0	2011-01-30 14:30:18	Shots: 4100
shotgun_smart_atomic	trace 8	0.5	Success	0.023	91199.1	97.0000 %	864.317	90767.0	2011-01-30 14:30:18	Shots: 4100
FPC_AS	basic	0.5	error=""						2010-08-06 00:26:26	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.061225	91199.3	97.0000 %	863.032	90767.8	2010-07-31 11:33:41	
L1_LS	basic	0.5	Success	0.111886	91199.6	100.0000 %	869.475	90764.9	2010-07-31 11:33:45	
SpaRSA	basic	0.5	Success	0.069659	91199.4	97.0000 %	864.506	90767.2	2010-07-31 11:33:49	
SpaRSA	maxiter_1e6	0.5	Success	0.076423	91199.4	97.0000 %	864.506	90767.2	2010-07-31 11:33:52	

CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 17:35:52	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Success	0.041139	91205.7	97.0000 %	891.058	90760.2	2010-10-09 23:41:40	iters: 10 conv: -18.0988 err_mse: 90.7602 iter_time: 0.025417
shotgun_smart_atomic trace	1	10.0	Success	0.011	97236.8	62.0000 %	447.446	92762.4	2011-01-30 14:30:17	Shots: 3500
shotgun_smart_atomic trace	2	10.0	Success	0.024	97236.8	62.0000 %	447.446	92762.4	2011-01-30 14:30:17	Shots: 3400
shotgun_smart_atomic trace	4	10.0	Success	0.015	97236.8	62.0000 %	447.446	92762.4	2011-01-30 14:30:17	Shots: 3700
shotgun_smart_atomic trace	6	10.0	Success	0.012	97236.8	62.0000 %	447.446	92762.4	2011-01-30 14:30:18	Shots: 3700
shotgun_smart_atomic trace	8	10.0	Success	0.013	97236.8	62.0000 %	447.446	92762.4	2011-01-30 14:30:18	Shots: 3700
FPC_AS	basic	10.0	error=""						2010-08-06 00:26:29	errmsg="Error using ==> AddLowerBoundedNumberOption at 19"
GPSR_BB	basic	10.0	Success	0.060227	97236.9	62.0000 %	446.759	92769.4	2010-07-31 11:34:00	
L1_LS	basic	10.0	Success	0.115155	97243.9	100.0000 %	452.611	92717.8	2010-07-31 11:34:04	
SpaRSA	basic	10.0	Success	0.068926	97236.9	62.0000 %	446.895	92767.9	2010-07-31 11:34:07	
SpaRSA	maxiter_1e6	10.0	Success	0.075408	97236.9	62.0000 %	446.895	92767.9	2010-07-31 11:34:11	
CoSaMP	basic	10.0	error="MATLAB:badsubscript"						2010-10-10 17:35:55	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	10.0	Success	0.042193	98965.7	62.0000 %	790.754	91058.2	2010-10-09 23:41:44	iters: 12 conv: -19.1359 err_mse: 91.0582 iter_time: 0.026332

lasso2_1000_10_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(\mathbf{A})'(\text{abs}(\mathbf{A})\mathbf{1})-\text{ones}]/(d^2-d)$	$[(\mathbf{A})'((\mathbf{A})\mathbf{1})-\text{ones}]/(d^2-d)$
9.97	0.0226880	0.7511250	0.0014690

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.001
shotgun_smart_atomic	2	10.0	0.001

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic_trace	1	0.5	Success	0.001	22.2611	40.0000 %	44.0444	0.238895	2011-01-19 06:00:12	Shots: 40
shotgun_smart_atomic_trace	2	0.5	Success	0.001	22.2611	40.0000 %	44.0444	0.238894	2011-01-19 12:06:31	Shots: 50
shotgun_smart_atomic_trace	4	0.5	Success	0.001	22.2611	40.0000 %	44.0444	0.238876	2011-01-19 10:00:11	Shots: 60
shotgun_smart_atomic_trace	8	0.5	Success	0.001	22.2611	40.0000 %	44.0444	0.23889	2011-01-19 12:06:32	Shots: 59
FPC_AS	basic	0.5	error=""						2010-08-06 00:26:18	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.058229	22.2611	40.0000 %	44.0447	0.238752	2010-07-31 11:34:18	
L1_LS	basic	0.5	Success	0.108175	22.262	100.0000 %	44.0476	0.238207	2010-07-31 11:34:22	
SpaRSA	basic	0.5	Success	0.067033	22.2611	40.0000 %	44.0444	0.238899	2010-07-31 11:34:25	
SpaRSA	maxiter_1e6	0.5	Success	0.073559	22.2611	40.0000 %	44.0444	0.238899	2010-07-31 11:34:29	
Hard_I0	basic	0.5	Success	0.03282	22.4999	40.0000 %	44.9999		2010-10-09 23:17:17	iters: 4 conv: -1 err_mse: 2.8542e-11 iter_time: 0.017443
shotgun_smart_atomic_trace	1	10.0	Success	0.002	358.306	30.0000 %	27.8402	79.9042	2011-01-19 06:00:12	Shots: 40
shotgun_smart_atomic_trace	2	10.0	Success	0.001	358.306	30.0000 %	27.8402	79.9042	2011-01-19 12:06:32	Shots: 43
shotgun_smart_atomic_trace	4	10.0	Success	0.001	358.306	30.0000 %	27.8402	79.9041	2011-01-19 12:06:32	Shots: 53
shotgun_smart_atomic_trace	8	10.0	Success	0.001	358.306	30.0000 %	27.8403	79.9038	2011-01-19 12:06:32	Shots: 53
FPC_AS	basic	10.0	error=""						2010-08-06 00:26:22	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	10.0	Success	0.05906	358.307	30.0000 %	27.8402	79.9042	2010-07-31 11:34:36	
L1_LS	basic	10.0	Success	0.102643	358.354	100.0000 %	27.8439	79.9152	2010-07-31 11:34:40	
SpaRSA	basic	10.0	Success	0.066897	358.307	30.0000 %	27.8402	79.9042	2010-07-31 11:34:43	
SpaRSA	maxiter_1e6	10.0	Success	0.073482	358.307	30.0000 %	27.8402	79.9042	2010-07-31 11:34:47	
Hard_I0	basic	10.0	Maybe	0.028955	429.225	30.0000 %	42.0233	8.99202	2010-10-09 23:17:21	iters: 3 conv: -1 err_mse: 0.008992 iter_time: 0.013458

lasso2_1000_10_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
9.97	0.0226880	0.7511250	0.0014690

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.001
shotgun_smart_atomic	1	10.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.001	952.787	100.0000 %	47.4694	929.052	2011-01-30 13:00:22	Shots: 230
shotgun_smart_atomic	trace 2	0.5	Success	0.003	952.787	100.0000 %	47.4694	929.052	2011-01-30 13:00:22	Shots: 240
shotgun_smart_atomic	trace 4	0.5	Success	0.002	952.787	100.0000 %	47.4694	929.052	2011-01-30 13:00:22	Shots: 260
shotgun_smart_atomic	trace 6	0.5	Success	0.003	952.787	100.0000 %	47.4694	929.052	2011-01-30 13:00:22	Shots: 280
shotgun_smart_atomic	trace 8	0.5	Success	0.003	952.787	100.0000 %	47.4694	929.052	2011-01-30 13:00:22	Shots: 280
FPC_AS	basic	0.5	error=""						2010-08-06 10:16:31	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.058681	952.787	100.0000 %	47.4675	929.053	2010-07-31 11:34:54	
L1_LS	basic	0.5	Success	0.102897	952.803	100.0000 %	47.7912	928.908	2010-07-31 11:34:58	
SpaRSA	basic	0.5	Success	0.06743	952.787	100.0000 %	47.4697	929.052	2010-07-31 11:35:02	
SpaRSA	maxiter_1e6	0.5	Success	0.073599	952.787	100.0000 %	47.4697	929.052	2010-07-31 11:35:05	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 17:35:59	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Success	0.033066	953.403	100.0000 %	49.9397	928.433	2010-10-09 23:24:22	iters: 4 conv: 2.4582 err_mse: 0.92843 iter_time: 0.017589
shotgun_smart_atomic	trace 1	10.0	Success		1282.58	30.0000 %	26.9631	1012.95	2011-01-30 13:00:22	Shots: 230

shotgun_smart_atomic trace	2	10.0	Success	0.001	1282.58	30.0000 %	26.9631	1012.95	2011-01-30 13:00:22	Shoots: 230
shotgun_smart_atomic trace	4	10.0	Success	0.002	1282.58	30.0000 %	26.9631	1012.95	2011-01-30 13:00:22	Shoots: 270
shotgun_smart_atomic trace	6	10.0	Success	0.001	1282.58	30.0000 %	26.9631	1012.95	2011-01-30 13:00:22	Shoots: 270
shotgun_smart_atomic trace	8	10.0	Success	0.001	1282.58	30.0000 %	26.9631	1012.95	2011-01-30 13:00:22	Shoots: 270
FPC_AS	basic	10.0	error=""						2010-08-06 10:16:35	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	10.0	Success	0.058729	1282.58	30.0000 %	26.9631	1012.95	2010-07-31 11:35:13	
L1_LS	basic	10.0	Success	0.099675	1282.93	100.0000 %	26.9811	1013.12	2010-07-31 11:35:16	
SpaRSA	basic	10.0	Success	0.066818	1282.58	30.0000 %	26.9631	1012.95	2010-07-31 11:35:20	
SpaRSA	maxiter_1e6	10.0	Success	0.073686	1282.58	30.0000 %	26.9631	1012.95	2010-07-31 11:35:23	
CoSaMP	basic	10.0	Close	0.114618	1352.69	30.0000 %	41.0613	942.078	2010-10-10 17:36:03	iterations: 3 conv: -1 sparsity level: 0.3
Hard_I0	basic	10.0	Close	0.028933	1353.51	30.0000 %	41.1465	942.041	2010-10-09 23:24:25	iters: 3 conv: -1 err_mse: 0.94204 iter_time: 0.013428

lasso2_1000_10_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
9.97	0.0226880	0.7511250	0.0014690

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.002
shotgun_smart_atomic	1	10.0	0.001

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	0.002	92894.5	100.0000 %	101.118	92843.9	2011-01-20 11:30:13	Shoots: 250
shotgun_smart_atomic trace	2	0.5	Success	0.017	92894.5	100.0000 %	101.118	92843.9	2011-01-20 11:30:13	Shoots: 280
shotgun_smart_atomic trace	4	0.5	Success	0.014	92894.5	100.0000 %	101.118	92843.9	2011-01-20	Shoots: 280

									11:30:14	
shotgun_smart_atomic trace	8	0.5	Success	0.012	92894.5	100.0000 %	101.118	92843.9	2011-01-20 11:30:14	Shoots: 330
FPC_AS	basic	0.5	error=""						2010-08-06 19:55:30	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.058733	92894.5	100.0000 %	101.117	92844.0	2010-07-31 11:35:31	
L1_LS	basic	0.5	Success	0.100343	92894.5	100.0000 %	101.426	92843.8	2010-07-31 11:35:34	
SMIDAS	basic	0.5	Success	0.091947	94109.8	100.0000 %	0.368942	47.0548	2010-10-24 11:14:21	
SpaRSA	basic	0.5	Success	0.067125	92894.5	100.0000 %	101.117	92844.0	2010-07-31 11:35:38	
SpaRSA	maxiter_1e6	0.5	Success	0.073516	92894.5	100.0000 %	101.117	92844.0	2010-07-31 11:35:42	
Hard_I0	basic	0.5	Success	0.028521	92895.1	100.0000 %	103.642	92843.3	2010-10-09 23:26:52	iters: 3 conv: 33.5783 err_mse: 92.8433 iter_time: 0.013235
shotgun_smart_atomic trace	1	10.0	Success	0.001	93626.5	90.0000 %	53.6895	93089.7	2011-01-20 11:30:13	Shoots: 230
shotgun_smart_atomic trace	2	10.0	Success	0.008	93626.5	90.0000 %	53.6895	93089.7	2011-01-20 11:30:13	Shoots: 230
shotgun_smart_atomic trace	4	10.0	Success	0.008	93626.5	90.0000 %	53.6895	93089.7	2011-01-20 11:30:14	Shoots: 230
shotgun_smart_atomic trace	8	10.0	Success	0.01	93626.5	90.0000 %	53.6895	93089.7	2011-01-20 11:30:14	Shoots: 280
FPC_AS	basic	10.0	error=""						2010-08-06 19:55:33	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	10.0	Success	0.058998	93626.6	90.0000 %	53.6898	93089.7	2010-07-31 11:35:49	
L1_LS	basic	10.0	Success	0.098132	93627.9	100.0000 %	55.7762	93070.2	2010-07-31 11:35:53	
SMIDAS	basic	10.0	Success	0.091153	94115.4	100.0000 %	0.242875	47.0565	2010-10-24 11:14:26	
SpaRSA	basic	10.0	Success	0.06664	93626.6	90.0000 %	53.6897	93089.7	2010-07-31 11:35:56	
SpaRSA	maxiter_1e6	10.0	Success	0.073247	93626.6	90.0000 %	53.6897	93089.7	2010-07-31 11:36:00	
Hard_I0	basic	10.0	Success	0.028736	93852.0	90.0000 %	98.7759	92864.2	2010-10-09 23:26:55	iters: 3 conv: 33.3632 err_mse: 92.8642 iter_time: 0.013328

lasso2_50_10000_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10000	99.9534	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
43.94	0.1144610	0.7463480	0.0000260

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
L1_LS	basic	0.5	12.7557
GPSR_BB	basic	10.0	0.765494

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	82.448	180.256	0.5000 %	359.622	0.445136	2011-01-30 14:30:22	Shoots: 216720000
shotgun_smart_atomic trace	2	0.5	Success	39.756	180.256	0.5000 %	359.622	0.445269	2011-01-30 14:30:22	Shoots: 198810000
shotgun_smart_atomic trace	4	0.5	Success	24.185	180.256	0.5000 %	359.621	0.445321	2011-01-30 14:30:22	Shoots: 201140000
shotgun_smart_atomic trace	6	0.5	Success	18.722	180.256	0.5000 %	359.621	0.445355	2011-01-30 14:30:22	Shoots: 196380000
shotgun_smart_atomic trace	8	0.5	Success	17.64	180.256	0.5000 %	359.621	0.445351	2011-01-30 14:30:22	Shoots: 210560000
FPC_AS	basic	0.5	Disqualified	4.16782	271.583	40.5600 %	540.139	1.51382	2010-07-31 11:40:28	
GPSR_BB	basic	0.5	Close	3.65007	195.488	2.8800 %	389.611	0.682336	2010-07-31 11:40:35	
L1_LS	basic	0.5	Success	12.7557	180.312	100.0000 %	359.735	0.445078	2010-07-31 11:40:51	
SCD	basic	0.5	Disqualified	0.563607	413.42	57.9000 %	795.868	0.15486	2010-10-09 19:24:14	
SpaRSA	basic	0.5	Close	1.52522	198.043	11.2400 %	389.378	3.35434	2010-07-31 11:40:57	
SpaRSA	maxiter_1e6	0.5	Close	1.49831	198.043	11.2400 %	389.378	3.35434	2010-07-31 11:41:02	
Hard_I0	basic	0.5	Close	0.515169	205.748	0.5000 %	408.083	1.70666	2010-10-09 23:14:40	iters: 78 conv: -1 err_mse: 0.034133 iter_time: 0.49081
shotgun_smart_atomic trace	1	10.0	Success	7.455	3439.69	0.4800 %	326.756	172.123	2011-01-30 14:30:22	Shoots: 19550000
shotgun_smart_atomic trace	2	10.0	Success	4.261	3439.69	0.4800 %	326.756	172.122	2011-01-30 14:30:22	Shoots: 20360000

shotgun_smart_atomic trace	4	10.0	Success	2.59	3439.69	0.4800 %	326.756	172.123	2011-01-30 14:30:22	Shoots: 22440000
shotgun_smart_atomic trace	6	10.0	Success	2.2	3439.69	0.4800 %	326.757	172.121	2011-01-30 14:30:22	Shoots: 22900000
shotgun_smart_atomic trace	8	10.0	Success	1.986	3439.69	0.4800 %	326.757	172.121	2011-01-30 14:30:22	Shoots: 23170000
FPC_AS	basic	10.0	Success	3.20862	3462.88	0.7000 %	328.932	173.555	2010-07-31 11:43:52	
GPSR_BB	basic	10.0	Success	0.765494	3455.98	0.7400 %	327.866	177.323	2010-07-31 11:43:56	
L1_LS	basic	10.0	Success	3.22912	3440.58	100.0000 %	326.839	172.188	2010-07-31 11:44:03	
SCD	basic	10.0	Disqualified	0.532213	6203.04	29.7900 %	554.807	6.54976	2010-10-09 19:24:29	
SpaRSA	basic	10.0	Success	1.75041	3449.25	0.9500 %	327.037	178.885	2010-07-31 11:44:08	
SpaRSA	maxiter_1e6	10.0	Success	1.80947	3449.25	0.9500 %	327.037	178.885	2010-07-31 11:44:14	
Hard_I0	basic	10.0	Maybe	0.524712	4082.53	0.5000 %	408.083	1.70666	2010-10-09 23:14:45	iters: 78 conv: -1 err_mse: 0.034133 iter_time: 0.50007

lasso2_50_10000_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10000	99.9534	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
43.94	0.1144610	0.7463480	0.0000260

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	11.397
GPSR_BB	basic	10.0	0.629009

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	37.636	181.017	0.4900 %	359.906	1.0636	2011-01-30 13:00:24	Shoots: 98990000
shotgun_smart_atomic trace	2	0.5	Success	21.402	181.017	0.4900 %	359.907	1.0634	2011-01-30 13:00:25	Shoots: 101830000
shotgun_smart_atomic trace	4	0.5	Success	15.648	181.017	0.4900 %	359.907	1.06324	2011-01-30 13:00:25	Shoots: 130090000

shotgun_smart_atomic_trace	6	0.5	Success	11.639	181.017	0.4900 %	359.907	1.06318	2011-01-30 13:00:25	Shoots: 118440000
shotgun_smart_atomic_trace	8	0.5	Success	11.397	181.017	0.4900 %	359.907	1.06318	2011-01-30 13:00:25	Shoots: 134090000
FPC_AS	basic	0.5	Fail	3.78704	269.909	48.9400 %	535.896	1.96116	2010-07-31 11:51:57	
GPSR_BB	basic	0.5	Close	3.59453	196.085	2.8700 %	389.573	1.2987	2010-07-31 11:52:04	
L1_LS	basic	0.5	Success	14.6611	181.161	100.0000 %	360.196	1.06361	2010-07-31 11:52:22	
SpaRSA	basic	0.5	Close	2.27382	199.754	11.3200 %	393.833	2.8377	2010-07-31 11:52:28	
SpaRSA	maxiter_1e6	0.5	Close	2.25582	199.754	11.3200 %	393.833	2.8377	2010-07-31 11:52:35	
CoSaMP	basic	0.5	Disqualified	3.11467	2023.22	0.5100 %	285.788	1880.33	2010-10-10 20:18:10	iterations: 500 conv: -1 sparsity level: 0.0051
Hard_I0	basic	0.5	Close	0.965511	202.334	0.5100 %	402.297	1.18579	2010-10-09 23:35:35	iters: 112 conv: -1 err_mse: 0.023716 iter_time: 0.93817
shotgun_smart_atomic_trace	1	10.0	Success	5.811	3441.42	0.4400 %	326.741	174.012	2011-01-30 13:00:24	Shoots: 15310000
shotgun_smart_atomic_trace	2	10.0	Success	3.013	3441.42	0.4400 %	326.741	174.012	2011-01-30 13:00:25	Shoots: 15250000
shotgun_smart_atomic_trace	4	10.0	Success	1.878	3441.42	0.4400 %	326.741	174.012	2011-01-30 13:00:25	Shoots: 15770000
shotgun_smart_atomic_trace	6	10.0	Success	1.501	3441.42	0.4400 %	326.74	174.013	2011-01-30 13:00:25	Shoots: 15520000
shotgun_smart_atomic_trace	8	10.0	Success	1.329	3441.42	0.4400 %	326.741	174.012	2011-01-30 13:00:25	Shoots: 15680000
FPC_AS	basic	10.0	Success	3.18182	3503.89	0.7400 %	331.727	186.617	2010-07-31 11:53:23	
GPSR_BB	basic	10.0	Success	0.629009	3457.69	0.7300 %	328.141	176.286	2010-07-31 11:53:28	
L1_LS	basic	10.0	Success	3.68995	3443.6	100.0000 %	326.963	173.964	2010-07-31 11:53:35	
SpaRSA	basic	10.0	Success	2.26028	3452.53	0.7800 %	327.685	175.686	2010-07-31 11:53:41	
SpaRSA	maxiter_1e6	10.0	Success	2.24501	3452.53	0.7800 %	327.685	175.686	2010-07-31 11:53:47	
CoSaMP	basic	10.0	Disqualified	3.15353	5221.36	0.4400 %	280.832	2413.04	2010-10-10	iterations: 500 conv:

									20:18:17	-1 sparsity level: 0.0044
Hard_I0	basic	10.0	Close	0.703974	3925.83	0.4400 %	390.118	24.6533	2010-10-09 23:35:39	iters: 92 conv: -1 err_mse: 0.49307 iter_time: 0.67806

lasso2_50_10000_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10000	99.9534	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
43.94	0.1144610	0.7463480	0.0000260

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
L1_LS	basic	0.5	19.2336
GPSR_BB	basic	10.0	0.656022

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	149.647	251.148	0.4900 %	377.598	62.3494	2011-01-20 12:00:15	Shoots: 206290000
shotgun_smart_atomic trace	2	0.5	Success	80.371	251.148	0.4900 %	377.598	62.3494	2011-01-20 12:00:15	Shoots: 204580000
shotgun_smart_atomic trace	4	0.5	Success	52.249	251.148	0.4800 %	377.598	62.3494	2011-01-20 12:00:15	Shoots: 238330000
shotgun_smart_atomic trace	8	0.5	Success	36.832	251.148	0.4800 %	377.598	62.3494	2011-01-20 12:00:15	Shoots: 234620000
FPC_AS	basic	0.5	Fail	3.93659	359.936	54.3600 %	595.643	62.1143	2010-07-31 11:59:52	
GPSR_BB	basic	0.5	Close	3.20893	267.252	3.0000 %	409.512	62.4959	2010-07-31 11:59:59	
L1_LS	basic	0.5	Success	19.2336	251.251	100.0000 %	377.802	62.3493	2010-07-31 12:00:22	
SMIDAS	basic	0.5	Disqualified	40.3278	22046.7	21.1700 %	20.4338	220.365	2010-10-24 11:15:22	
SpaRSA	basic	0.5	Close	1.11867	268.163	6.6200 %	405.515	65.4055	2010-07-31 12:00:27	
SpaRSA	maxiter_1e6	0.5	Close	1.11166	268.163	6.6200 %	405.515	65.4055	2010-07-31 12:00:32	
Hard_I0	basic	0.5	Close	1.75439	286.811	0.4900 %	440.289	66.6664	2010-10-09 23:41:24	iters: 158 conv: -1 err_mse:

											1.3333 iter_time: 1.7228
shotgun_smart_atomic trace	1	10.0	Success	19.125	3686.41	0.4600 %	345.82	228.211	2011-01-20 12:00:15	Shoots: 26320000	
shotgun_smart_atomic trace	2	10.0	Success	10.045	3686.41	0.4600 %	345.819	228.212	2011-01-20 12:00:15	Shoots: 26890000	
shotgun_smart_atomic trace	4	10.0	Success	6.19	3686.41	0.4600 %	345.82	228.211	2011-01-20 12:00:15	Shoots: 28840000	
shotgun_smart_atomic trace	8	10.0	Success	4.154	3686.41	0.4600 %	345.82	228.21	2011-01-20 12:00:15	Shoots: 27220000	
FPC_AS	basic	10.0	Success	3.22582	3742.24	0.6600 %	340.118	341.057	2010-07-31 12:02:33		
GPSR_BB	basic	10.0	Success	0.656022	3706.96	0.7000 %	347.918	227.784	2010-07-31 12:02:38		
L1_LS	basic	10.0	Success	3.34577	3687.31	100.0000 %	345.895	228.356	2010-07-31 12:02:45		
SMIDAS	basic	10.0	Disqualified	41.3861	22405.2	16.7000 %	18.9399	222.158	2010-10-24 11:16:20		
SpaRSA	basic	10.0	Success	2.41407	3701.76	0.9000 %	346.519	236.57	2010-07-31 12:02:51		
SpaRSA	maxiter_1e6	10.0	Success	2.36913	3701.76	0.9000 %	346.519	236.57	2010-07-31 12:02:57		
Hard_I0	basic	10.0	Maybe	0.998459	4368.66	0.4600 %	430.187	66.7904	2010-10-09 23:41:29	iters: 113 conv: -1 err_mse: 1.3358 iter_time: 0.96943	

lasso2_50_1000_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	1000	99.934	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
34.58	0.1144540	0.7464270	-0.0001670

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	6	0.5	0.35
shotgun_smart_atomic	6	10.0	0.015

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	0.713	84.4353	5.0000	167.552	0.659525	2011-	Shoots:

						%			01-30 14:30:25	3735000
shotgun_smart_atomic trace	2	0.5	Success	0.469	84.4353	4.9000 %	167.552	0.659255	2011-01-30 14:30:25	Shoots: 2721000
shotgun_smart_atomic trace	4	0.5	Success	0.389	84.4354	5.0000 %	167.552	0.659565	2011-01-30 14:30:25	Shoots: 2581000
shotgun_smart_atomic trace	6	0.5	Success	0.35	84.4354	5.0000 %	167.552	0.659464	2011-01-30 14:30:26	Shoots: 2078000
shotgun_smart_atomic trace	8	0.5	Success	0.385	84.4354	5.0000 %	167.552	0.659306	2011-01-30 14:30:25	Shoots: 2307000
FPC_AS	basic	0.5	Close	0.886013	88.5887	20.2000 %	174.906	1.13584	2010-07-31 12:03:07	
GPSR_BB	basic	0.5	Close	0.166739	87.3237	10.6000 %	172.997	0.825329	2010-07-31 12:03:11	
L1_LS	basic	0.5	Success	0.525753	84.4602	100.0000 %	167.606	0.657328	2010-07-31 12:03:15	
SMIDAS	basic	0.5	Disqualified	4.32184	2935.4	45.3000 %	6.92088	29.3194	2010-10-24 11:16:30	
SpaRSA	basic	0.5	Close	0.113677	87.189	11.2000 %	171.739	1.31951	2010-07-31 12:03:19	
SpaRSA	maxiter_1e6	0.5	Close	0.119701	87.189	11.2000 %	171.739	1.31951	2010-07-31 12:03:23	
Hard_I0	basic	0.5	Close	0.132515	94.5391	4.9000 %	188.633	0.222566	2010-10-09 23:26:03	iters: 126 conv: -1 err_mse: 0.0044513 iter_time: 0.11549
shotgun_smart_atomic trace	1	10.0	Success	0.02	1446.31	3.6000 %	120.169	244.62	2011-01-30 14:30:25	Shoots: 107000
shotgun_smart_atomic trace	2	10.0	Success	0.022	1446.31	3.6000 %	120.169	244.619	2011-01-30 14:30:25	Shoots: 133000
shotgun_smart_atomic trace	4	10.0	Success	0.02	1446.31	3.6000 %	120.169	244.619	2011-01-30 14:30:25	Shoots: 156000
shotgun_smart_atomic trace	6	10.0	Success	0.015	1446.31	3.6000 %	120.169	244.62	2011-01-30 14:30:26	Shoots: 116000
shotgun_smart_atomic trace	8	10.0	Success	0.018	1446.31	3.6000 %	120.169	244.62	2011-01-30 14:30:26	Shoots: 121000
FPC_AS	basic	10.0	Success	0.240438	1446.31	3.6000 %	120.169	244.619	2010-07-31 12:03:28	
GPSR_BB	basic	10.0	Success	0.085777	1447.01	4.1000 %	120.322	243.792	2010-07-31 12:03:32	
L1_LS	basic	10.0	Success	0.176882	1446.77	100.0000 %	120.233	244.432	2010-07-31 12:03:36	
SMIDAS	basic	10.0	Disqualified	4.64758	3043.62	23.8000 %	5.21241	29.9149	2010-10-24 11:16:40	

SpaRSA	basic	10.0	Success	0.091392	1446.53	3.9000 %	120.353	243.002	2010-07-31 12:03:39	
SpaRSA	maxiter_1e6	10.0	Success	0.098562	1446.53	3.9000 %	120.353	243.002	2010-07-31 12:03:43	
Hard_I0	basic	10.0	Fail	0.116523	1909.91	3.6000 %	190.737	2.5406	2010-10-09 23:26:07	iters: 119 conv: -1 err_mse: 0.050812 iter_time: 0.10002

lasso2_50_1000_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	1000	99.934	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
34.58	0.1144540	0.7464270	-0.0001670

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.306
shotgun_smart_atomic	2	10.0	0.021

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.496	84.651	4.8000 %	167.936	0.683264	2011-01-30 13:00:27	Shoots: 2460000
shotgun_smart_atomic	trace 2	0.5	Success	0.389	84.651	4.8000 %	167.936	0.683187	2011-01-30 13:00:27	Shoots: 2288000
shotgun_smart_atomic	trace 4	0.5	Success	0.395	84.6511	4.8000 %	167.936	0.682994	2011-01-30 13:00:28	Shoots: 2355000
shotgun_smart_atomic	trace 6	0.5	Success	0.412	84.6511	4.8000 %	167.936	0.682974	2011-01-30 13:00:28	Shoots: 2633000
shotgun_smart_atomic	trace 8	0.5	Success	0.306	84.6511	4.8000 %	167.936	0.683082	2011-01-30 13:00:28	Shoots: 1892000
FPC_AS	basic	0.5	Close	0.909068	94.7468	14.6000 %	186.528	1.48276	2010-07-31 12:03:52	
GPSR_BB	basic	0.5	Close	0.161508	88.2668	11.2000 %	174.859	0.837309	2010-07-31 12:03:55	
L1_LS	basic	0.5	Success	0.52443	84.6758	100.0000 %	167.993	0.679446	2010-07-31 12:04:00	
SpaRSA	basic	0.5	Close	0.11803	87.5079	10.4000 %	173.483	0.766397	2010-07-31 12:04:04	
SpaRSA	maxiter_1e6	0.5	Close	0.124648	87.5079	10.4000 %	173.483	0.766397	2010-07-31	

									12:04:08	
CoSaMP	basic	0.5	Disqualified	1.05824	383.287	5.0000 %	132.887	316.844	2010-10-10 17:35:43	iterations: 500 conv: -1 sparsity level: 0.05
Hard_I0	basic	0.5	Close	0.115128	95.9119	4.8000 %	188.732	1.54596	2010-10-09 23:34:31	iters: 112 conv: -1 err_mse: 0.030919 iter_time: 0.098284
shotgun_smart_atomic trace	1	10.0	Success	0.034	1456.87	3.8000 %	122.051	236.358	2011-01-30 13:00:27	Shoots: 177000
shotgun_smart_atomic trace	2	10.0	Success	0.021	1456.87	3.8000 %	122.051	236.358	2011-01-30 13:00:27	Shoots: 164000
shotgun_smart_atomic trace	4	10.0	Success	0.028	1456.87	3.8000 %	122.051	236.358	2011-01-30 13:00:28	Shoots: 196000
shotgun_smart_atomic trace	6	10.0	Success	0.03	1456.87	3.8000 %	122.051	236.357	2011-01-30 13:00:28	Shoots: 215000
shotgun_smart_atomic trace	8	10.0	Success	0.031	1456.87	3.8000 %	122.051	236.358	2011-01-30 13:00:28	Shoots: 220000
FPC_AS	basic	10.0	Success	0.238319	1456.87	3.8000 %	122.051	236.356	2010-07-31 12:04:12	
GPSR_BB	basic	10.0	Success	0.080312	1457.49	4.2000 %	122.075	236.737	2010-07-31 12:04:16	
L1_LS	basic	10.0	Success	0.175249	1457.28	100.0000 %	122.093	236.35	2010-07-31 12:04:20	
SpaRSA	basic	10.0	Success	0.083951	1458.05	4.2000 %	124.453	213.519	2010-07-31 12:04:24	
SpaRSA	maxiter_1e6	10.0	Success	0.090643	1458.05	4.2000 %	124.453	213.519	2010-07-31 12:04:28	
CoSaMP	basic	10.0	Close	1.15761	1673.01	3.8000 %	129.079	382.227	2010-10-10 17:35:48	iterations: 500 conv: -1 sparsity level: 0.038
Hard_I0	basic	10.0	Fail	0.096033	1984.74	3.8000 %	198.241	2.33241	2010-10-09 23:34:35	iters: 92 conv: -1 err_mse: 0.046648 iter_time: 0.079399

lasso2_50_1000_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	1000	99.934	

Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
34.58	0.1144540	0.7464270	-0.0001670

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
L1_LS	basic	0.5	0.749275
shotgun_smart_atomic	4	10.0	0.027

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	0.866	134.277	4.9000 %	264.124	2.21537	2011-01-30 14:00:21	Shoots: 4577000
shotgun_smart_atomic trace	2	0.5	Success	1.037	134.277	4.9000 %	264.124	2.21535	2011-01-30 14:00:21	Shoots: 6035000
shotgun_smart_atomic trace	4	0.5	Success	1.164	134.277	4.9000 %	264.123	2.21556	2011-01-30 14:00:21	Shoots: 7132000
shotgun_smart_atomic trace	6	0.5	Success	1.033	134.277	4.9000 %	264.123	2.21556	2011-01-30 14:00:22	Shoots: 6274000
shotgun_smart_atomic trace	8	0.5	Success	1.208	134.277	4.9000 %	264.123	2.21561	2011-01-30 14:00:22	Shoots: 7346000
FPC_AS	basic	0.5	Close	0.893301	149.913	17.0000 %	293.7	3.06257	2010-07-31 12:04:39	
GPSR_BB	basic	0.5	Close	0.162639	142.271	13.6000 %	279.318	2.61203	2010-07-31 12:04:43	
L1_LS	basic	0.5	Success	0.749275	134.328	100.0000 %	264.227	2.2151	2010-07-31 12:04:47	
SCD	basic	0.5	Disqualified	0.128247	245.63	95.4000 %	461.995	0.146327	2010-10-09 19:23:00	
SpaRSA	basic	0.5	Close	0.100334	141.98	15.4000 %	279.203	2.37898	2010-07-31 12:04:51	
SpaRSA	maxiter_1e6	0.5	Close	0.106077	141.98	15.4000 %	279.203	2.37898	2010-07-31 12:04:55	
CoSaMP	basic	0.5	Disqualified	0.927047	799.26	4.9000 %	219.824	689.348	2010-10-10 20:23:04	iterations: 500 conv: -1 sparsity level: 0.049
Hard_l0	basic	0.5	Maybe	0.144121	163.808	4.9000 %	323.55	2.03308	2010-10-09 23:26:59	iters: 140 conv: -1 err_mse: 0.040662 iter_time: 0.12722
shotgun_smart_atomic trace	1	10.0	Success	0.03	2369.73	4.2000 %	207.602	293.705	2011-01-30 14:00:21	Shoots: 156000

shotgun_smart_atomic trace	2	10.0	Success	0.036	2369.73	4.2000 %	207.602	293.709	2011-01-30 14:00:21	Shots: 219000
shotgun_smart_atomic trace	4	10.0	Success	0.027	2369.73	4.2000 %	207.602	293.71	2011-01-30 14:00:21	Shots: 225000
shotgun_smart_atomic trace	6	10.0	Success	0.038	2369.73	4.2000 %	207.602	293.709	2011-01-30 14:00:22	Shots: 240000
shotgun_smart_atomic trace	8	10.0	Success	0.038	2369.73	4.2000 %	207.602	293.71	2011-01-30 14:00:22	Shots: 246000
FPC_AS	basic	10.0	Success	0.286728	2369.73	4.2000 %	207.602	293.708	2010-07-31 12:05:00	
GPSR_BB	basic	10.0	Success	0.089456	2375.7	5.3000 %	208.063	295.072	2010-07-31 12:05:04	
L1_LS	basic	10.0	Success	0.191954	2370.18	100.0000 %	207.656	293.624	2010-07-31 12:05:08	
SCD	basic	10.0	Fail	0.124901	3141.19	38.0000 %	250.058	6.40607	2010-10-09 19:23:05	
SpaRSA	basic	10.0	Success	0.084152	2374.58	5.5000 %	207.7	297.581	2010-07-31 12:05:11	
SpaRSA	maxiter_1e6	10.0	Success	0.091215	2374.58	5.5000 %	207.7	297.581	2010-07-31 12:05:15	
CoSaMP	basic	10.0	Maybe	0.946655	2971.58	4.2000 %	204.848	923.106	2010-10-10 20:23:09	iterations: 500 conv: -1 sparsity level: 0.042
Hard_I0	basic	10.0	Maybe	0.211074	2979.55	4.2000 %	297.584	3.71157	2010-10-09 23:27:03	iters: 185 conv: -1 err_mse: 0.074231 iter_time: 0.19278

lasso2_50_100_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	100	99.98	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
18.77	0.1149580	0.7535600	-0.0005030

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.002
shotgun_smart_atomic	1	10.0	0.001

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
-----------	---------------	--------	--------	----------	-----------	-------------	-----------	-------	---------	-------

shotgun_smart_atomic trace	1	0.5	Success	0.002	57.7314	15.0000 %	113.925	0.768713	2011-01-19 16:00:21	Shoots: 4700
shotgun_smart_atomic trace	2	0.5	Success	0.006	57.7314	15.0000 %	113.925	0.768924	2011-01-19 16:00:21	Shoots: 4539
shotgun_smart_atomic trace	4	0.5	Success	0.009	57.7314	15.0000 %	113.925	0.768916	2011-01-19 16:00:21	Shoots: 4657
shotgun_smart_atomic trace	8	0.5	Success	0.008	57.7314	15.0000 %	113.925	0.76888	2011-01-19 16:00:21	Shoots: 4554
FPC_AS	basic	0.5	Close	0.185442	63.1886	24.0000 %	122.944	1.7164	2010-07-31 12:05:19	
GPSR_BB	basic	0.5	Close	0.070827	59.8516	32.0000 %	115.751	1.97584	2010-07-31 12:05:23	
L1_LS	basic	0.5	Success	0.145829	57.7409	100.0000 %	113.943	0.76947	2010-07-31 12:05:27	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:12:57	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Close	0.07426	58.9387	32.0000 %	114.772	1.55277	2010-07-31 12:05:31	
SpaRSA	maxiter_1e6	0.5	Close	0.081105	58.9387	32.0000 %	114.772	1.55277	2010-07-31 12:05:35	
Hard_I0	basic	0.5	Success	0.041594	58.5231	15.0000 %	117.039	0.003564	2010-10-09 23:27:07	iters: 36 conv: -1 err_mse: 7.1275e-05 iter_time: 0.026274
shotgun_smart_atomic trace	1	10.0	Success	0.001	903.916	11.0000 %	65.9442	244.474	2011-01-19 06:00:18	Shoots: 1300
shotgun_smart_atomic trace	2	10.0	Success	0.002	903.916	11.0000 %	65.9438	244.478	2011-01-19 06:00:18	Shoots: 1237
shotgun_smart_atomic trace	4	10.0	Success	0.002	903.916	11.0000 %	65.9433	244.482	2011-01-19 16:00:21	Shoots: 1336
shotgun_smart_atomic trace	8	10.0	Success	0.001	903.916	11.0000 %	65.9435	244.481	2011-01-19 16:00:21	Shoots: 1132
FPC_AS	basic	10.0	Success	0.188434	903.916	11.0000 %	65.9447	244.469	2010-07-31 12:05:39	
GPSR_BB	basic	10.0	Success	0.060802	903.948	11.0000 %	65.7619	246.329	2010-07-31 12:05:43	
L1_LS	basic	10.0	Success	0.108234	904.253	100.0000 %	66.0472	243.782	2010-07-31 12:05:46	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-23 19:13:02	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	10.0	Success	0.068642	903.935	11.0000 %	65.857	245.365	2010-07-31 12:05:50	
SpaRSA	maxiter_1e6	10.0	Success	0.074113	903.935	11.0000 %	65.857	245.365	2010-07-31	

										12:05:54
Hard_I0	basic	10.0	Maybe	0.038687	1169.71	11.0000 %	116.971	0.000474	2010-10-09 23:27:10	iters: 17 conv: -1 err_mse: 9.4712e-06 iter_time: 0.023265

lasso2_50_100_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	100	99.98	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
18.77	0.1149580	0.7535600	-0.0005030

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.004
shotgun_smart_atomic	4	10.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.004	69.3057	39.0000 %	132.02	3.29566	2011-01-30 13:00:30	Shots: 13300
shotgun_smart_atomic	trace 2	0.5	Success	0.01	69.3057	39.0000 %	132.02	3.29567	2011-01-30 13:00:30	Shots: 15600
shotgun_smart_atomic	trace 4	0.5	Success	0.011	69.3057	39.0000 %	132.02	3.29565	2011-01-30 13:00:30	Shots: 17600
shotgun_smart_atomic	trace 6	0.5	Success	0.015	69.3057	39.0000 %	132.02	3.29564	2011-01-30 13:00:30	Shots: 17600
shotgun_smart_atomic	trace 8	0.5	Success	0.011	69.3057	39.0000 %	132.02	3.29568	2011-01-30 13:00:30	Shots: 19700
FPC_AS	basic	0.5	Success	0.227488	69.3057	39.0000 %	132.02	3.29547	2010-07-31 12:05:58	
GPSR_BB	basic	0.5	Close	0.070086	73.4343	56.0000 %	140.648	3.11045	2010-07-31 12:06:02	
L1_LS	basic	0.5	Success	0.163264	69.3142	100.0000 %	132.1	3.26416	2010-07-31 12:06:06	
SpaRSA	basic	0.5	Close	0.073436	71.5462	55.0000 %	136.569	3.26153	2010-07-31 12:06:10	
SpaRSA	maxiter_1e6	0.5	Close	0.08051	71.5462	55.0000 %	136.569	3.26153	2010-07-31 12:06:14	
Hard_I0	basic	0.5	Maybe	0.050762	80.627	39.0000 %	159.698	0.778244	2010-10-09 23:21:28	iters: 85 conv: -1 err_mse: 0.015565 iter_time: 0.035368

shotgun_smart_atomic trace	1	10.0	Success	0.001	982.35	12.0000 %	70.8091	274.259	2011-01-30 13:00:30	Shoots: 4600
shotgun_smart_atomic trace	2	10.0	Success	0.002	982.35	12.0000 %	70.8091	274.259	2011-01-30 13:00:30	Shoots: 4900
shotgun_smart_atomic trace	4	10.0	Success		982.35	12.0000 %	70.8091	274.259	2011-01-30 13:00:30	Shoots: 4900
shotgun_smart_atomic trace	6	10.0	Success	0.002	982.35	12.0000 %	70.8091	274.259	2011-01-30 13:00:30	Shoots: 4900
shotgun_smart_atomic trace	8	10.0	Success	0.001	982.35	12.0000 %	70.8091	274.259	2011-01-30 13:00:30	Shoots: 4800
FPC_AS	basic	10.0	Success	0.188857	982.35	12.0000 %	70.8091	274.259	2010-07-31 12:06:18	
GPSR_BB	basic	10.0	Success	0.061336	982.381	12.0000 %	70.6583	275.798	2010-07-31 12:06:21	
L1_LS	basic	10.0	Success	0.109761	982.538	100.0000 %	70.8693	273.845	2010-07-31 12:06:25	
SpaRSA	basic	10.0	Success	0.068396	982.362	12.0000 %	70.6831	275.531	2010-07-31 12:06:29	
SpaRSA	maxiter_1e6	10.0	Success	0.075117	982.362	12.0000 %	70.6831	275.531	2010-07-31 12:06:33	
Hard_I0	basic	10.0	Maybe	0.038624	1261.03	12.0000 %	124.242	18.6104	2010-10-09 23:21:32	iters: 17 conv: -1 err_mse: 0.37221 iter_time: 0.023014

lasso2_50_100_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	100	99.98	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
18.77	0.1149580	0.7535600	-0.0005030

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.05
shotgun_smart_atomic	1	10.0	0.002

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	0.05	208.541	49.0000 %	390.657	13.2126	2011-01-30 13:00:31	Shoots: 180000
shotgun_smart_atomic trace	2	0.5	Success	0.222	208.541	49.0000 %	390.663	13.2096	2011-01-30	Shoots: 334700

									13:00:31	
shotgun_smart_atomic trace	4	0.5	Success	0.313	208.541	49.0000 %	390.664	13.2093	2011-01-30 13:00:31	Shoots: 419700
shotgun_smart_atomic trace	6	0.5	Success	0.334	208.541	49.0000 %	390.664	13.2092	2011-01-30 13:00:32	Shoots: 444800
shotgun_smart_atomic trace	8	0.5	Success	0.149	208.541	49.0000 %	390.663	13.2097	2011-01-30 13:00:31	Shoots: 189800
FPC_AS	basic	0.5	Maybe	0.593237	248.622	80.0000 %	466.413	15.4157	2010-07-31 12:06:38	
GPSR_BB	basic	0.5	Close	0.071609	217.144	74.0000 %	405.653	14.3178	2010-07-31 12:06:42	
L1_LS	basic	0.5	Success	0.220337	208.563	100.0000 %	390.774	13.1757	2010-07-31 12:06:46	
SCD	basic	0.5	Disqualified	0.079378	320.457	99.0000 %	391.213	1.24851	2010-10-09 19:22:52	
SpaRSA	basic	0.5	Close	0.073086	216.039	79.0000 %	403.787	14.1456	2010-07-31 12:06:50	
SpaRSA	maxiter_1e6	0.5	Close	0.080603	216.039	79.0000 %	403.787	14.1456	2010-07-31 12:06:54	
Hard_I0	basic	0.5	Close	0.067818	228.428	48.0000 %	437.174	9.84157	2010-10-09 23:24:58	iters: 160 conv: 29.5075 err_mse: 0.19683 iter_time: 0.052286
shotgun_smart_atomic trace	1	10.0	Success	0.002	2816.41	31.0000 %	196.623	850.177	2011-01-30 13:00:31	Shoots: 9800
shotgun_smart_atomic trace	2	10.0	Success	0.006	2816.41	31.0000 %	196.623	850.178	2011-01-30 13:00:31	Shoots: 10600
shotgun_smart_atomic trace	4	10.0	Success	0.006	2816.41	31.0000 %	196.623	850.178	2011-01-30 13:00:31	Shoots: 11600
shotgun_smart_atomic trace	6	10.0	Success	0.005	2816.41	31.0000 %	196.623	850.178	2011-01-30 13:00:32	Shoots: 11700
shotgun_smart_atomic trace	8	10.0	Success	0.005	2816.41	31.0000 %	196.623	850.178	2011-01-30 13:00:32	Shoots: 11500
FPC_AS	basic	10.0	Success	0.200273	2816.41	31.0000 %	196.623	850.178	2010-07-31 12:06:58	
GPSR_BB	basic	10.0	Success	0.062851	2817.0	34.0000 %	196.395	853.054	2010-07-31 12:07:02	
L1_LS	basic	10.0	Success	0.115459	2816.89	100.0000 %	196.797	848.922	2010-07-31 12:07:06	
SCD	basic	10.0	Close	0.077228	2881.47	45.0000 %	186.741	10.1407	2010-10-09 19:22:56	
SpaRSA	basic	10.0	Success	0.069967	2816.53	32.0000 %	196.696	849.567	2010-07-31 12:07:10	

SpaRSA	maxiter_1e6	10.0	Success	0.076705	2816.53	32.0000 %	196.696	849.567	2010-07-31 12:07:13	
Hard_I0	basic	10.0	Maybe	0.043079	3548.25	31.0000 %	335.513	193.128	2010-10-09 23:25:02	iters: 49 conv: 21.8951 err_mse: 3.8626 iter_time: 0.027494

lasso2_50_10_0.1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
7.48	0.1030930	0.7638310	-0.0006200

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	
shotgun_smart_atomic	1	10.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	1	0.5	Success		22.1288	40.0000 %	43.5151	0.371247	2010-10-11 11:15:18	Shoots: 80
shotgun_smart_atomic	2	0.5	Success		22.1288	40.0000 %	43.5151	0.371247	2010-10-11 11:15:18	Shoots: 94
shotgun_smart_atomic	4	0.5	Success		22.1288	40.0000 %	43.5151	0.371247	2010-10-11 11:15:18	Shoots: 92
shotgun_smart_atomic trace	8	0.5	Success	0.001	22.1288	40.0000 %	43.5153	0.371175	2011-01-19 13:00:18	Shoots: 86
FPC_AS	basic	0.5	error=""						2010-08-07 00:56:21	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.059288	22.1336	50.0000 %	43.4366	0.415349	2010-07-31 12:07:21	
L1_LS	basic	0.5	Success	0.109254	22.1305	100.0000 %	43.5198	0.370577	2010-07-31 12:07:25	
SMIDAS	basic	0.5	Disqualified	0.080004	414.242	90.0000 %	4.10517	4.12189	2010-10-24 10:31:11	
SpaRSA	basic	0.5	Success	0.067858	22.1297	40.0000 %	43.5096	0.37493	2010-07-31 12:07:29	
SpaRSA	maxiter_1e6	0.5	Success	0.073317	22.1297	40.0000 %	43.5096	0.37493	2010-07-31 12:07:33	
CoSaMP	basic	0.5	Success	0.092493	22.5	40.0000	45.0		2010-	iterations: 3 conv: -1 sparsity

						%			10-10 17:35:35	level: 0.4
Hard_I0	basic	0.5	Disqualified	0.026507	525.315	0.0000 %		525.315	2010- 09-10 20:52:21	iters: 2 conv: -1 err_mse: 10.5063 iter_time: 0.012282
shotgun_smart_atomic	1	10.0	Success		325.608	30.0000 %	22.9206	96.4024	2010- 10-11 11:15:18	Shoots: 50
shotgun_smart_atomic	2	10.0	Success		325.608	30.0000 %	22.9206	96.4024	2010- 10-11 11:15:18	Shoots: 53
shotgun_smart_atomic	4	10.0	Success		325.608	30.0000 %	22.9206	96.4024	2010- 10-11 11:15:18	Shoots: 53
shotgun_smart_atomic trace	8	10.0	Success	0.001	325.608	30.0000 %	22.9206	96.4024	2010- 10-11 11:15:18	Shoots: 53
FPC_AS	basic	10.0	error=""						2010- 08-07 00:56:25	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	10.0	Success	0.058611	325.609	30.0000 %	22.8921	96.6878	2010- 07-31 12:07:40	
L1_LS	basic	10.0	Success	0.103085	325.639	100.0000 %	22.9393	96.2458	2010- 07-31 12:07:44	
SMIDAS	basic	10.0	Fail	0.087653	473.522	40.0000 %	2.42753	4.49247	2010- 10-24 10:31:15	
SpaRSA	basic	10.0	Success	0.067324	325.609	30.0000 %	22.9124	96.4844	2010- 07-31 12:07:48	
SpaRSA	maxiter_1e6	10.0	Success	0.073655	325.609	30.0000 %	22.9124	96.4844	2010- 07-31 12:07:51	
CoSaMP	basic	10.0	Fail	0.100295	429.0	30.0000 %	42.0	9.00007	2010- 10-10 17:35:39	iterations: 3 conv: -1 sparsity level: 0.3
Hard_I0	basic	10.0	Maybe	0.026424	393.959	10.0000 %	17.5042	218.917	2010- 09-10 20:52:24	iters: 2 conv: -1 err_mse: 4.3783 iter_time: 0.012236

lasso2_50_10_1.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
7.48	0.1030930	0.7638310	-0.0006200

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	
shotgun_smart_atomic	1	10.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success		51.2121	100.0000 %	47.1245	27.6498	2011-01-30 13:00:33	Shoots: 380
shotgun_smart_atomic trace	2	0.5	Success	0.001	51.2121	100.0000 %	47.1245	27.6498	2011-01-30 13:00:34	Shoots: 370
shotgun_smart_atomic trace	4	0.5	Success	0.001	51.2121	100.0000 %	47.1245	27.6498	2011-01-30 13:00:34	Shoots: 390
shotgun_smart_atomic trace	6	0.5	Success		51.2121	100.0000 %	47.1245	27.6498	2011-01-30 13:00:34	Shoots: 400
shotgun_smart_atomic trace	8	0.5	Success	0.001	51.2121	100.0000 %	47.1245	27.6498	2011-01-30 13:00:34	Shoots: 400
FPC_AS	basic	0.5	error=""						2010-08-06 00:09:10	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.059478	51.2204	100.0000 %	46.9321	27.7543	2010-07-31 12:07:59	
L1_LS	basic	0.5	Success	0.107006	51.2128	100.0000 %	47.1579	27.6338	2010-07-31 12:08:03	
SCD	basic	0.5	Success	0.071986	51.2121	100.0000 %	47.124	0.276501	2010-10-09 19:22:45	
SpaRSA	basic	0.5	Success	0.067143	51.2121	100.0000 %	47.112	27.6561	2010-07-31 12:08:07	
SpaRSA	maxiter_1e6	0.5	Success	0.073746	51.2121	100.0000 %	47.112	27.6561	2010-07-31 12:08:11	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 17:37:32	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Disqualified	0.026479	518.614	0.0000 %		518.614	2010-09-10 20:50:24	iters: 2 conv: -1 err_mse: 10.3723 iter_time: 0.0123
shotgun_smart_atomic trace	1	10.0	Success		345.223	30.0000 %	20.8119	137.105	2011-01-30 13:00:34	Shoots: 250
shotgun_smart_atomic trace	2	10.0	Success	0.001	345.223	30.0000 %	20.8119	137.105	2011-01-30 13:00:34	Shoots: 250
shotgun_smart_atomic trace	4	10.0	Success	0.001	345.223	30.0000 %	20.8119	137.105	2011-01-30 13:00:34	Shoots: 250
shotgun_smart_atomic trace	6	10.0	Success		345.223	30.0000 %	20.8119	137.105	2011-01-30 13:00:34	Shoots: 250
shotgun_smart_atomic trace	8	10.0	Success	0.001	345.223	30.0000 %	20.8119	137.105	2011-01-30 13:00:34	Shoots: 250
FPC_AS	basic	10.0	error=""						2010-08-06 00:09:14	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	10.0	Success	0.058318	345.224	30.0000 %	20.7871	137.352	2010-07-31 12:08:18	
L1_LS	basic	10.0	Success	0.102918	345.275	100.0000 %	20.8403	136.871	2010-07-31	

										12:08:22
SCD	basic	10.0	Success	0.073445	345.223	30.0000 %	20.8119	1.37105	2010-10-09 19:22:48	
SpaRSA	basic	10.0	Success	0.06721	345.224	30.0000 %	20.8037	137.186	2010-07-31 12:08:26	
SpaRSA	maxiter_1e6	10.0	Success	0.074296	345.224	30.0000 %	20.8037	137.186	2010-07-31 12:08:30	
CoSaMP	basic	10.0	Fail	0.175732	449.366	30.0000 %	39.9669	49.6963	2010-10-10 17:37:36	iterations: 3 conv: -1 sparsity level: 0.3
Hard_I0	basic	10.0	Maybe	0.026451	406.586	10.0000 %	16.7059	239.528	2010-09-10 20:50:31	iters: 2 conv: -1 err_mse: 4.7906 iter_time: 0.012255

lasso2_50_10_10.mat

(anonymized) @ , synthetic datasets

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
7.48	0.1030930	0.7638310	-0.0006200

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	
shotgun_smart_atomic	1	10.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success		2752.06	100.0000 %	106.091	2699.01	2011-01-30 13:30:26	Shots: 410
shotgun_smart_atomic	trace 2	0.5	Success	0.001	2752.06	100.0000 %	106.091	2699.01	2011-01-30 13:30:27	Shots: 410
shotgun_smart_atomic	trace 4	0.5	Success		2752.06	100.0000 %	106.091	2699.01	2011-01-30 13:30:27	Shots: 420
shotgun_smart_atomic	trace 6	0.5	Success	0.001	2752.06	100.0000 %	106.091	2699.01	2011-01-30 13:30:27	Shots: 410
shotgun_smart_atomic	trace 8	0.5	Success	0.001	2752.06	100.0000 %	106.091	2699.01	2011-01-30 13:30:27	Shots: 410
FPC_AS	basic	0.5	error=""						2010-08-09 19:41:44	errmsg="Error using ==> AddLowerBoundedNumberOption at 19
GPSR_BB	basic	0.5	Success	0.05995	2752.08	100.0000 %	105.908	2699.12	2010-07-31 12:08:37	
L1_LS	basic	0.5	Success	0.100563	2752.06	100.0000 %	106.258	2698.93	2010-07-31 12:08:41	

SMIDAS	basic	0.5	Fail	0.079932	3840.2	100.0000 %	6.73341	38.3683	2010-10-24 11:16:44	
SpaRSA	basic	0.5	Success	0.067307	2752.08	100.0000 %	105.887	2699.13	2010-07-31 12:08:45	
SpaRSA	maxiter_1e6	0.5	Success	0.073316	2752.08	100.0000 %	105.887	2699.13	2010-07-31 12:08:49	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 17:37:25	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Success	0.033566	2752.74	100.0000 %	108.802	2698.34	2010-10-09 23:21:35	iters: 9 conv: 4.6792 err_mse: 53.9667 iter_time: 0.018112
shotgun_smart_atomic_trace	1	10.0	Success		3522.67	90.0000 %	57.5156	2947.51	2011-01-30 13:30:27	Shoots: 350
shotgun_smart_atomic_trace	2	10.0	Success	0.001	3522.67	90.0000 %	57.5156	2947.51	2011-01-30 13:30:27	Shoots: 340
shotgun_smart_atomic_trace	4	10.0	Success	0.001	3522.67	90.0000 %	57.5156	2947.51	2011-01-30 13:30:27	Shoots: 380
shotgun_smart_atomic_trace	6	10.0	Success	0.002	3522.67	90.0000 %	57.5156	2947.51	2011-01-30 13:30:28	Shoots: 350
shotgun_smart_atomic_trace	8	10.0	Success		3522.67	90.0000 %	57.5156	2947.51	2011-01-30 13:30:27	Shoots: 350
FPC_AS	basic	10.0	error=""						2010-08-09 19:41:48	errmsg="Error using ==> AddLowerBoundedNumberOption at 19"
GPSR_BB	basic	10.0	Success	0.059543	3522.67	90.0000 %	57.4649	2948.02	2010-07-31 12:08:56	
L1_LS	basic	10.0	Success	0.100595	3522.78	100.0000 %	57.8957	2943.82	2010-07-31 12:09:00	
SMIDAS	basic	10.0	Close	0.080398	3947.82	100.0000 %	3.9867	39.0795	2010-10-24 11:16:47	
SpaRSA	basic	10.0	Success	0.067068	3522.67	90.0000 %	57.4544	2948.13	2010-07-31 12:09:04	
SpaRSA	maxiter_1e6	10.0	Success	0.073761	3522.67	90.0000 %	57.4544	2948.13	2010-07-31 12:09:07	
CoSaMP	basic	10.0	error="MATLAB:badsubscript"						2010-10-10 17:37:28	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	10.0	Close	0.033474	3765.06	90.0000 %	106.016	2704.91	2010-10-09 23:21:39	iters: 8 conv: -1 err_mse: 54.0982 iter_time: 0.017898

Logo64_singlepixcam.mat

Rice University, Single Pixel Camera project, <http://dsp.rice.edu/cscamera>



n (# of data points)	m (# of features)	% of non-zeros	Comments
1638	4096	49.9829	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1) - \text{ones}]/(d^2 - d)$	$[(A)'((A)1) - \text{ones}]/(d^2 - d)$
3.00	0.4998330	0.4998330	0.4998330

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	4	0.5	1.925
shotgun_smart_atomic	1	1.0	30.939
shotgun_smart_atomic	6	10.0	2.524

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Close	6.708	0.32346	28.9795 %	0.605652	0.020634	2011-01-30 14:30:34	Shoots: 1912832
shotgun_smart_atomic trace	2	0.5	Close	9.406	0.326054	28.5156 %	0.604896	0.023606	2011-01-30 14:30:34	Shoots: 1634304
shotgun_smart_atomic trace	4	0.5	Success	1.925	0.297375	53.4912 %	0.593064	0.000843	2011-01-30 14:30:34	Shoots: 536576
shotgun_smart_atomic trace	6	0.5	Success	2.358	0.297316	60.0098 %	0.59337	0.000631	2011-01-30 14:30:34	Shoots: 643072
shotgun_smart_atomic trace	8	0.5	Close	1.035	0.325297	43.8721 %	0.604568	0.023013	2011-01-19 06:00:22	Shoots: 105535
FPC_AS	basic	0.5	Disqualified	0.203136	12312.8	100.0000 %	137.757	12243.9	2010-10-10 23:06:04	exit status shrinkage optimal iter 1 obj: 6156.3971
GPSR_BB	basic	0.5	Success	280.592	0.299281	86.7432 %	0.598008	0.000278	2010-08-06 09:14:35	
L1_LS	basic	0.5	Success	57.7717	0.296832	100.0000 %	0.592972	0.000347	2010-08-06 09:16:18	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:10:11	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Success	202.369	0.300777	99.8779 %	0.601001	0.000276	2010-08-06 09:19:44	
SpaRSA	maxiter_1e6	0.5	timeout						2010-08-07 09:26:34	4800 secs
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-	errmsg="Index

									10-10 17:25:13	exceeds matrix dimensions."
Hard_I0	basic	0.5	Close	0.164891	0.304214	100.0000 %	0.606576	0.000926	2010- 10-09 23:17:25	iters: 3 conv: - 0.99971 err_mse: 5.6507e-07 iter_time: 0.14785
shotgun_smart_atomic trace	1	1.0	Success	30.939	0.605379	34.6680 %	0.600306	0.005073	2011- 01-19 18:30:20	Shoots: 4747264
shotgun_smart_atomic trace	1	10.0	Success	2.986	5.87301	23.8281 %	0.577941	0.093607	2011- 01-30 14:30:34	Shoots: 901120
shotgun_smart_atomic trace	2	10.0	Success	3.884	5.85738	25.1709 %	0.576812	0.089254	2011- 01-30 14:30:34	Shoots: 913408
shotgun_smart_atomic trace	4	10.0	Success	2.614	5.8386	25.7812 %	0.575261	0.085991	2011- 01-30 14:30:34	Shoots: 974848
shotgun_smart_atomic trace	6	10.0	Success	2.524	5.83845	25.8545 %	0.575269	0.085757	2011- 01-30 14:30:34	Shoots: 1060864
shotgun_smart_atomic trace	8	10.0	Success	3.138	5.83838	26.0010 %	0.575288	0.085506	2011- 01-30 14:30:34	Shoots: 1269760
FPC_AS	basic	10.0	Disqualified	0.17161	13621.5	100.0000 %	137.757	12243.9	2010- 10-10 23:06:07	exit status shrinkage optimal iter 1 obj: 6810.7452
GPSR_BB	basic	10.0	Success	288.018	5.83862	26.8311 %	0.575348	0.085142	2010- 08-07 09:32:45	
L1_LS	basic	10.0	Success	25.6999	5.8404	100.0000 %	0.575682	0.083572	2010- 08-07 09:33:14	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010- 10-23 19:11:35	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	10.0	Disqualified	286.58	19.1916	71.0938 %	0.757471	11.6169	2010- 08-07 09:38:04	
SpaRSA	maxiter_1e6	10.0	timeout						2010- 08-07 10:58:05	4800 secs
CoSaMP	basic	10.0	Disqualified	405.642	8.92002	26.8311 %	0.557733	3.34269	2010- 10-10 17:32:03	iterations: 500 conv: -0.99924 sparsity level: 0.26831
Hard_I0	basic	10.0	Success	4.16449	5.93289	26.8311 %	0.588877	0.044121	2010- 10-09 23:17:33	iters: 92 conv: - 0.99963 err_mse: 2.6936e-05 iter_time: 4.1439

mug025_12_12.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
6205	24820	0.4824	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1-\text{ones})]/(d^2-d)$	$[(A)'((A)1-\text{ones})]/(d^2-d)$
2865.00	0.0045090	0.0048160	-0.0000070

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.843
shotgun_smart_atomic	8	10.0	0.529

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	1.524	1543.84	28.2232 %	3071.65	8.01168	2011-01-30 14:00:28	Shoots: 3797460
shotgun_smart_atomic trace	2	0.5	Success	1.769	1543.85	28.5737 %	3071.54	8.08024	2011-01-30 14:00:28	Shoots: 3747820
shotgun_smart_atomic trace	4	0.5	Success	1.131	1543.83	28.4408 %	3071.52	8.07233	2011-01-30 14:00:28	Shoots: 3996020
shotgun_smart_atomic trace	6	0.5	Success	0.883	1543.92	28.8437 %	3071.56	8.14323	2011-01-30 14:00:28	Shoots: 4020840
shotgun_smart_atomic trace	8	0.5	Success	0.843	1543.89	28.5898 %	3071.6	8.09141	2011-01-30 14:00:28	Shoots: 4120120
FPC_AS	basic	0.5	Success	15.3695	1573.97	51.1362 %	3125.86	11.0382	2010-07-29 18:20:06	
GPSR_BB	basic	0.5	Success	13.7891	1555.03	29.0290 %	3094.47	7.80076	2010-07-29 18:20:24	
L1_LS	basic	0.5	Success	16.2112	1543.43	100.0000 %	3071.83	7.51085	2010-07-29 18:20:44	
SCD	basic	0.5	Disqualified	0.489057	241348.0	32.9049 %	47.7443	19.446	2010-10-09 19:25:00	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-22 21:55:55	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Success	7.92134	1552.38	30.7494 %	3089.01	7.87581	2010-07-29 18:20:56	
SpaRSA	maxiter_1e6	0.5	Success	7.95965	1552.38	30.7494 %	3089.01	7.87581	2010-07-29 18:21:08	
Hard_I0	basic	0.5	Maybe	3.69137	1973.2	25.3143 %	3913.64	16.3843	2010-10-09 23:16:20	iters: 137 conv: -1 err_mse: 0.0026405 iter_time: 3.6479
shotgun_smart_atomic trace	1	10.0	Success	1.071	28466.2	17.3449 %	2633.05	2135.79	2011-01-30 14:00:28	Shoots: 2730200
shotgun_smart_atomic trace	2	10.0	Success	1.014	28466.2	17.3650 %	2633.02	2136.01	2011-	Shoots: 2804660

						%				01-30 14:00:28	
shotgun_smart_atomic trace	4	10.0	Success	0.692	28466.2	17.3247 %	2633.0	2136.22	2011-01-30 14:00:28	Shoots: 3176960	
shotgun_smart_atomic trace	6	10.0	Success	0.571	28466.2	17.3610 %	2632.94	2136.84	2011-01-30 14:00:28	Shoots: 3350700	
shotgun_smart_atomic trace	8	10.0	Success	0.529	28466.2	17.3328 %	2632.96	2136.64	2011-01-30 14:00:28	Shoots: 3449980	
FPC_AS	basic	10.0	Success	1.78837	28466.2	17.2844 %	2633.1	2135.18	2010-07-29 18:21:14		
GPSR_BB	basic	10.0	Success	1.95193	28466.5	17.4496 %	2632.96	2136.96	2010-07-29 18:21:20		
L1_LS	basic	10.0	Success	4.5625	28471.0	100.0000 %	2634.07	2130.29	2010-07-29 18:21:28		
SCD	basic	10.0	Disqualified	0.544912	242231.0	29.3352 %	40.3319	19.4865	2010-10-09 19:25:25		
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-22 21:56:31	errmsg="Attempted to access out2(1); index out of bounds becau	
SpaRSA	basic	10.0	Success	1.09635	28466.3	17.4658 %	2632.91	2137.25	2010-07-29 18:21:33		
SpaRSA	maxiter_1e6	10.0	Success	1.09687	28466.3	17.4658 %	2632.91	2137.25	2010-07-29 18:21:38		
Hard_I0	basic	10.0	Maybe	11.1225	36479.8	17.3449 %	3625.48	224.997	2010-10-09 23:16:35	iters: 270 conv: -1 err_mse: 0.036261 iter_time: 11.0525	

mug05_12_12.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
12410	24820	0.2897	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
4431.40	0.0027480	0.0028840	-0.0000120

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.658
shotgun_smart_atomic	8	10.0	0.287

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic_trace	1	0.5	Success	1.119	1684.79	43.5536 %	3330.25	19.6617	2011-01-30 14:00:29	Shots: 2407540
shotgun_smart_atomic_trace	2	0.5	Success	1.46	1684.75	43.3642 %	3330.25	19.6276	2011-01-30 14:00:29	Shots: 2457180
shotgun_smart_atomic_trace	4	0.5	Success	0.876	1684.73	43.2353 %	3330.33	19.5657	2011-01-30 14:00:29	Shots: 2630920
shotgun_smart_atomic_trace	6	0.5	Success	0.758	1684.73	43.3965 %	3330.11	19.6792	2011-01-30 14:00:30	Shots: 2730200
shotgun_smart_atomic_trace	8	0.5	Success	0.658	1684.75	43.4690 %	3330.06	19.7169	2011-01-30 14:00:30	Shots: 2680560
FPC_AS	basic	0.5	Success	7.01786	1684.56	41.3336 %	3331.09	19.0122	2010-07-29 18:21:49	
GPSR_BB	basic	0.5	Success	7.1274	1685.76	43.8195 %	3332.43	19.5422	2010-07-29 18:22:00	
L1_LS	basic	0.5	Success	14.6088	1684.76	100.0000 %	3331.97	18.7719	2010-08-31 18:11:50	
SpaRSA	basic	0.5	Success	3.86844	1685.74	43.8961 %	3332.48	19.5025	2010-07-29 18:22:24	
SpaRSA	maxiter_1e6	0.5	Success	3.89902	1685.74	43.8961 %	3332.48	19.5025	2010-07-29 18:22:32	
Hard_I0	basic	0.5	Disqualified	0.354707	203944.0	0.4996 %	502.024	203693.0	2010-09-10 20:51:56	iters: 8 conv: -1 err_mse: 16.4136 iter_time: 0.33762
shotgun_smart_atomic_trace	1	10.0	Success	0.822	30353.9	15.1168 %	2798.86	2365.38	2011-01-30 14:00:29	Shots: 1836680
shotgun_smart_atomic_trace	2	10.0	Success	0.695	30353.9	15.1209 %	2798.84	2365.59	2011-01-30 14:00:29	Shots: 1836680
shotgun_smart_atomic_trace	4	10.0	Success	0.406	30353.9	15.1168 %	2798.83	2365.61	2011-01-30 14:00:29	Shots: 1886320
shotgun_smart_atomic_trace	6	10.0	Success	0.358	30353.9	15.1168 %	2798.82	2365.74	2011-01-30 14:00:30	Shots: 1985600
shotgun_smart_atomic_trace	8	10.0	Success	0.287	30353.9	15.1209 %	2798.83	2365.68	2011-01-30 14:00:30	Shots: 1861500
FPC_AS	basic	10.0	Success	1.15699	30353.9	15.1048 %	2798.95	2364.4	2010-07-29 18:22:37	
GPSR_BB	basic	10.0	Success	0.696235	30354.0	15.1450 %	2798.53	2368.66	2010-07-29 18:22:42	
L1_LS	basic	10.0	Success	5.35705	30359.5	100.0000 %	2800.7	2352.51	2010-08-31 18:12:10	
SpaRSA	basic	10.0	Success	0.671726	30354.0	15.1652	2798.74	2366.59	2010-	

						%			07-29 18:22:55	
SpaRSA	maxiter_1e6	10.0	Success	0.67556	30354.0	15.1652 %	2798.74	2366.59	2010-07-29 18:23:00	
CoSaMP	basic	10.0	Close	3718.39	33710.4	15.1209 %	3350.69	203.434	2010-10-10 17:25:09	iterations: 500 conv: -1 sparsity level: 0.15121
Hard_I0	basic	10.0	Close	1.1483	32515.1	10.0000 %	3198.26	532.515	2010-09-10 20:52:01	iters: 47 conv: -1 err_mse: 0.04291 iter_time: 1.126

mug05_2000_2000.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
12410	24820	38.3391	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
528.37	0.0073020	0.3833850	0.0018240

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	437.885
shotgun_smart_atomic	8	10.0	617.485

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	<u>trace</u> 1	0.5	Success	628.027	1709.05	67.5020 %	3417.3	0.396969	2011-01-30 21:00:32	Shoots: 25142660
shotgun_smart_atomic	<u>trace</u> 2	0.5	Success	913.115	1709.01	66.3578 %	3417.31	0.357204	2011-01-30 21:00:32	Shoots: 25192300
shotgun_smart_atomic	<u>trace</u> 4	0.5	Success	641.648	1709.03	67.0105 %	3417.33	0.369686	2011-01-30 21:00:32	Shoots: 21717500
shotgun_smart_atomic	<u>trace</u> 6	0.5	Success	498.477	1709.05	68.2151 %	3417.32	0.390876	2011-01-30 21:17:37	Shoots: 21518940
shotgun_smart_atomic	<u>trace</u> 8	0.5	Success	437.885	1709.05	67.3610 %	3417.36	0.373283	2011-01-30 21:17:37	Shoots: 21916060

FPC_AS	basic	0.5	Disqualified	1525.59	3522.71	100.0000 %	3564.5	1740.47	2010-07-30 00:41:47	
GPSR_BB	basic	0.5	timeout						2010-08-08 23:31:15	4800 secs
L1_LS	basic	0.5	timeout						2010-08-09 00:51:16	4800 secs
SpaRSA	basic	0.5	timeout						2010-08-08 22:11:14	4800 secs
SpaRSA	maxiter_1e6	0.5	timeout						2010-08-09 23:43:04	4800 secs
Hard_I0	basic	0.5	Disqualified	233.772	8703.03	95.4432 %	6847.43	5279.31	2010-10-09 23:31:22	iters: 84 conv: - err_mse: 0.42541 iter_time: 233.7379
shotgun_smart_atomic trace	1	10.0	Success	774.196	34094.3	50.0645 %	3401.43	80.0193	2011-01-30 21:30:28	Shots: 34673540
shotgun_smart_atomic trace	2	10.0	Success	1530.69	34094.3	50.0483 %	3401.44	79.9025	2011-01-30 22:01:00	Shots: 34599080
shotgun_smart_atomic trace	4	10.0	Success	817.727	34094.4	50.2861 %	3401.4	80.3784	2011-01-30 22:30:52	Shots: 30578240
shotgun_smart_atomic trace	6	10.0	Success	697.229	34094.4	50.1813 %	3401.41	80.2456	2011-01-30 22:30:52	Shots: 30230760
shotgun_smart_atomic trace	8	10.0	Success	617.485	34094.4	50.2498 %	3401.41	80.3333	2011-01-30 23:00:25	Shots: 30925720
FPC_AS	basic	10.0	Close	1594.59	35401.1	100.0000 %	3472.98	671.257	2010-07-30 06:28:39	
GPSR_BB	basic	10.0	timeout						2010-08-10 19:55:31	4800 secs
L1_LS	basic	10.0	Success	3861.18	34098.1	100.0000 %	3402.22	75.8439	2010-07-30 08:53:14	
SpaRSA	basic	10.0	timeout						2010-08-10 17:15:29	4800 secs
SpaRSA	maxiter_1e6	10.0	timeout						2010-08-10 21:15:32	4800 secs
Hard_I0	basic	10.0	Disqualified	150.784	70320.8	100.0000 %	6881.73	1503.46	2010-10-09 23:34:07	iters: 78 conv: - err_mse: 0.12115 iter_time: 150.7492

mug075_12_12.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
13651	24820	0.2722	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
4697.75	0.0025830	0.0027080	-0.0000130

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.598
shotgun_smart_atomic	8	10.0	0.292

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic <u>trace</u>	1	0.5	Success	0.899	1693.73	44.5971 %	3347.3	20.083	2011-01-19 16:00:26	Shoots: 2084880
shotgun_smart_atomic <u>trace</u>	2	0.5	Success	1.586	1693.73	44.4964 %	3347.52	19.9728	2011-01-19 16:00:26	Shoots: 2429733
shotgun_smart_atomic <u>trace</u>	4	0.5	Success	0.894	1693.73	44.5165 %	3347.52	19.9741	2011-01-19 16:00:26	Shoots: 2454578
shotgun_smart_atomic <u>trace</u>	8	0.5	Success	0.598	1693.74	44.3433 %	3347.52	19.9741	2011-01-19 16:00:26	Shoots: 2405207
FPC_AS	basic	0.5	Success	4.14783	1693.6	42.9855 %	3348.25	19.4753	2010-07-29 18:23:08	
GPSR_BB	basic	0.5	Success	5.91804	1694.43	45.1894 %	3348.57	20.1488	2010-07-29 18:23:18	
L1_LS	basic	0.5	Success	9.90935	1693.89	100.0000 %	3349.57	19.1035	2010-07-29 18:23:31	
SpaRSA	basic	0.5	Success	2.63903	1693.97	45.8703 %	3348.16	19.8917	2010-07-29 18:23:38	
SpaRSA	maxiter_1e6	0.5	Success	2.68606	1693.97	45.8703 %	3348.16	19.8917	2010-07-29 18:23:44	
Hard_I0	basic	0.5	Disqualified	0.349552	214087.0	0.4996 %	496.792	213839.0	2010-09-10 21:00:20	iters: 8 conv: -1 err_mse: 15.6647 iter_time: 0.33214
shotgun_smart_atomic <u>trace</u>	1	10.0	Success	0.677	30528.6	14.4843 %	2816.97	2358.87	2011-01-19 16:00:26	Shoots: 1638120

shotgun_smart_atomic trace	2	10.0	Success	0.771	30528.6	14.4883 %	2816.98	2358.85	2011-01-19 16:00:26	Shoots: 1722853
shotgun_smart_atomic trace	4	10.0	Success	0.436	30528.6	14.4803 %	2817.01	2358.48	2011-01-19 16:00:26	Shoots: 1772482
shotgun_smart_atomic trace	8	10.0	Success	0.292	30528.6	14.4803 %	2817.01	2358.49	2011-01-19 16:00:26	Shoots: 1747851
FPC_AS	basic	10.0	Success	1.08291	30528.6	14.4803 %	2817.05	2358.06	2010-07-29 18:23:50	
GPSR_BB	basic	10.0	Success	0.614286	30528.6	14.5125 %	2816.76	2360.98	2010-07-29 18:23:55	
L1_LS	basic	10.0	Success	4.44423	30538.0	100.0000 %	2819.37	2344.26	2010-07-29 18:24:03	
SpaRSA	basic	10.0	Success	0.669461	30528.6	14.5568 %	2816.92	2359.38	2010-07-29 18:24:08	
SpaRSA	maxiter_1e6	10.0	Success	0.679203	30528.6	14.5568 %	2816.92	2359.38	2010-07-29 18:24:12	
Hard_I0	basic	10.0	Close	0.928514	32583.7	10.0000 %	3200.81	575.605	2010-09-10 21:00:29	iters: 35 conv: -1 err_mse: 0.042166 iter_time: 0.90763

Mug128_singlepixcam.mat

Rice University, Single Pixel Camera project, <http://dsp.rice.edu/cscamera>



n (# of data points)	m (# of features)	% of non-zeros	Comments
4770	16384	49.9904	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
3.00	0.4999040	0.4999040	0.4999040

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	4	0.5	63.772
shotgun_smart_atomic	6	10.0	87.445

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	93.087	1.92331	39.0564 %	3.79836	0.024131	2011-01-30 14:30:36	Shoots: 8388608

shotgun_smart_atomic trace	2	0.5	Success	81.839	1.91878	40.9363 %	3.79634	0.020613	2011-01-30 14:30:36	Shoots: 7618560
shotgun_smart_atomic trace	4	0.5	Success	63.772	1.88858	51.3977 %	3.77415	0.0015	2011-01-30 14:30:36	Shoots: 8552448
shotgun_smart_atomic trace	6	0.5	Success	66.145	1.88773	51.8677 %	3.7737	0.000878	2011-01-30 14:30:36	Shoots: 9994240
shotgun_smart_atomic	8	0.5	Disqualified		-1.0	0.0000 %	-1.0	-1.0	2011-01-20 22:30:23	Shoots: 25477120
FPC_AS	basic	0.5	Disqualified	422.132	5.23135	100.0000 %	4.00534	3.22868	2010-08-06 15:03:08	
GPSR_BB	basic	0.5	Success	4333.44	1.91823	98.9929 %	3.8275	0.004479	2010-08-06 13:19:39	
L1_LS	basic	0.5	Success	1773.33	1.88683	100.0000 %	3.77343	0.000119	2010-08-06 15:32:51	
SCD	basic	0.5	Disqualified	20.1233	968.195	45.2209 %	36.0875	0.099597	2010-10-09 19:37:52	
SMIDAS	basic	0.5	Disqualified	47.3606	3.02515	100.0000 %	3.80979	0.000117	2010-10-24 10:46:58	
SpaRSA	basic	0.5	timeout						2010-08-06 12:07:16	4800 secs
SpaRSA	maxiter_1e6	0.5	timeout						2010-08-06 14:39:40	4800 secs
Hard_I0	basic	0.5	Close	1.15428	2.03045	100.0000 %	3.82878	0.11606	2010-10-09 23:26:13	iters: 3 conv: -0.99977 err_mse: 2.4331e-05 iter_time: 1.1371
shotgun_smart_atomic trace	1	10.0	Success	122.074	37.7401	32.4341 %	3.76795	0.060592	2011-01-30 15:00:49	Shoots: 10878976
shotgun_smart_atomic trace	2	10.0	Success	108.527	37.7288	32.6660 %	3.7671	0.057859	2011-01-30 15:00:50	Shoots: 12255232
shotgun_smart_atomic trace	4	10.0	Success	90.415	37.6896	32.2021 %	3.76372	0.052466	2011-01-30 15:00:50	Shoots: 13139968
shotgun_smart_atomic trace	6	10.0	Success	87.445	37.6877	31.9153 %	3.76382	0.049435	2011-01-30 15:00:50	Shoots: 14565376
shotgun_smart_atomic trace	8	10.0	Success	4398.93	37.7184	40.2832 %	3.76757	0.042712	2011-01-30 16:00:26	Shoots: 285605888
FPC_AS	basic	10.0	Disqualified	403.02	862.255	100.0000 %	64.9726	212.53	2010-08-06 19:48:29	
GPSR_BB	basic	10.0	Success	3228.26	38.0907	95.3674 %	3.80586	0.032095	2010-08-06 17:42:23	
L1_LS	basic	10.0	Success	411.543	37.7061	100.0000 %	3.76642	0.041897	2010-08-06 19:55:26	
SCD	basic	10.0	Disqualified	20.14	1103.95	37.1704	26.3541	0.088093	2010-	

						%			10-09 19:50:12	
SMIDAS	basic	10.0	Close	47.1682	39.2498	100.0000 %	3.80826	0.000122	2010- 10-24 11:02:25	
SpaRSA	basic	10.0	Success	3222.0	38.3523	99.9329 %	3.8213	0.139272	2010- 08-06 16:48:29	
SpaRSA	maxiter_1e6	10.0	timeout						2010- 08-06 19:02:24	4800 secs
Hard_I0	basic	10.0	Close	5.89981	39.322	36.1755 %	3.77566	1.56548	2010- 10-09 23:26:25	iters: 15 conv: - 0.99899 err_mse: 0.00032819 iter_time: 5.8809

Mug32_singlepixcam.mat

Rice University, Single Pixel Camera project, <http://dsp.rice.edu/cscamera>



n (# of data points)	m (# of features)	% of non-zeros	Comments
410	1024	100.0	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2\text{-}d)$	$[(A)'((A)1)\text{-ones}]/(d^2\text{-}d)$
158.62	0.0393760	1.0000000	-0.0000740

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	6	0.5	0.022
shotgun_smart_atomic	8	10.0	0.002

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.031	0.138262	27.2461 %	0.2098	0.033362	2011- 01-30 14:00:31	Shoots: 23552
shotgun_smart_atomic	trace 2	0.5	Success	0.039	0.138259	27.6367 %	0.209493	0.033512	2011- 01-30 14:00:31	Shoots: 22528
shotgun_smart_atomic	trace 4	0.5	Success	0.024	0.138278	28.0273 %	0.209153	0.033701	2011- 01-30 14:00:31	Shoots: 22528
shotgun_smart_atomic	trace 6	0.5	Success	0.022	0.13827	27.7344 %	0.209382	0.03358	2011- 01-30 14:00:31	Shoots: 22528
shotgun_smart_atomic	trace 8	0.5	Success	0.023	0.13826	27.9297 %	0.209228	0.033646	2011- 01-30 14:00:31	Shoots: 23552

FPC_AS	basic	0.5	Success	1.97935	0.138204	26.1719 %	0.209744	0.033331	2010-08-08 15:40:47	
GPSR_BB	basic	0.5	Success	0.295162	0.138203	25.9766 %	0.209743	0.033332	2010-08-08 15:40:28	
L1_LS	basic	0.5	Success	3.27158	0.13823	100.0000 %	0.210078	0.033191	2010-08-08 15:40:35	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:08:32	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Success	0.302658	0.138203	25.9766 %	0.209743	0.033332	2010-08-08 15:40:51	
SpaRSA	maxiter_1e6	0.5	Success	0.310257	0.138203	25.9766 %	0.209743	0.033332	2010-08-08 15:40:41	
AMP	basic	0.5	Disqualified	0.160216	0.317578	0.0000 %		0.317578	2010-09-29 21:49:40	sweeps: 43 conv: 0 diverged: 1 lambda:
CoSaMP	basic	0.5	Fail	20.1826	0.180479	25.9766 %	0.288361	0.036299	2010-10-10 17:32:35	iterations: 500 conv: -1 sparsity level: 0.25977
Hard_I0	basic	0.5	Fail	0.663365	0.199376	25.9766 %	0.395702	0.001525	2010-10-09 23:24:51	iters: 235 conv: -1 err_mse: 3.7197e-06 iter_time: 0.64403
shotgun_smart_atomic trace	1	10.0	Success	0.01	0.317578	0.0000 %		0.317578	2011-01-30 14:00:31	Shots: 7168
shotgun_smart_atomic trace	2	10.0	Success	0.006	0.317578	0.0000 %		0.317578	2011-01-30 14:00:31	Shots: 7168
shotgun_smart_atomic trace	4	10.0	Success	0.004	0.317578	0.0000 %		0.317578	2011-01-30 14:00:31	Shots: 7168
shotgun_smart_atomic trace	6	10.0	Success	0.003	0.317578	0.0000 %		0.317578	2011-01-30 14:00:31	Shots: 7168
shotgun_smart_atomic trace	8	10.0	Success	0.002	0.317578	0.0000 %		0.317578	2011-01-30 14:00:31	Shots: 7168
FPC_AS	basic	10.0	Success	0.062813	0.317578	0.0000 %		0.317578	2010-08-08 15:41:18	
GPSR_BB	basic	10.0	Success	0.046623	0.317578	0.0000 %		0.317578	2010-08-08 15:41:07	
L1_LS	basic	10.0	Success	0.045197	0.317578	0.0000 %		0.317578	2010-08-08 15:41:11	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-23 19:08:46	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	10.0	Success	0.051575	0.317578	0.0000 %		0.317578	2010-08-08 15:41:21	
SpaRSA	maxiter_1e6	10.0	Success	0.05907	0.317578	0.0000 %		0.317578	2010-08-08 15:41:14	
AMP	basic	10.0	Success	0.158908	0.317578	0.0000 %		0.317578	2010-09-29 21:49:48	sweeps: 43 conv: 0 diverged: 1 lambda:

CoSaMP	basic	10.0	Disqualified	6.48562	3.76217	9.9609 %	0.367784	0.084331	2010-10-10 17:32:45	iterations: 500 conv: -1 sparsity level: 0.099609
Hard_I0	basic	10.0	Disqualified	0.112161	2.51527	9.9609 %	0.246823	0.047042	2010-10-09 23:24:54	iters: 34 conv: -1 err_mse: 0.00011474 iter_time: 0.095337

peppers025_12_12.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
16384	65536	0.183	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
7570.59	0.0017800	0.0018260	-0.0000030

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	6	0.5	4.408
SpaRSA	basic	10.0	3.63759

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	8.023	4139.97	28.1448 %	8237.35	21.2909	2011-01-30 23:00:25	Shoots: 17432576
shotgun_smart_atomic	trace 2	0.5	Success	6.95	4140.02	28.2242 %	8237.42	21.3121	2011-01-30 23:00:25	Shoots: 17498112
shotgun_smart_atomic	trace 4	0.5	Success	4.607	4140.13	28.6560 %	8236.85	21.7057	2011-01-30 23:00:25	Shoots: 18153472
shotgun_smart_atomic	trace 6	0.5	Success	4.408	4140.07	28.3585 %	8237.17	21.491	2011-01-30 23:00:25	Shoots: 19726336
shotgun_smart_atomic	trace 8	0.5	Success	4.936	4140.14	28.6133 %	8236.82	21.7275	2011-01-30 23:00:25	Shoots: 20316160
FPC_AS	basic	0.5	Close	44.7083	4264.99	53.3966 %	8471.14	29.4184	2010-07-29 18:25:01	
GPSR_BB	basic	0.5	Success	43.0412	4165.03	29.0649 %	8288.81	20.6209	2010-07-29 18:25:48	
L1_LS	basic	0.5	Success	55.6309	4139.59	100.0000	8239.34	19.9263	2010-	

						%			07-29 18:26:48	
SpaRSA	basic	0.5	Success	19.536	4164.73	29.8615 %	8287.88	20.7918	2010-07-29 18:27:12	
SpaRSA	maxiter_1e6	0.5	Success	19.1196	4164.73	29.8615 %	8287.88	20.7918	2010-07-29 18:27:35	
AMP	basic	0.5	Disqualified	1.46561	544319.0	0.0000 %		544319.0	2010-09-29 23:13:45	sweeps: 23 conv: 0 diverged: 1 lambda:
Hard_I0	basic	0.5	Maybe	10.9699	4943.98	25.5142 %	9810.89	38.5362	2010-10-09 23:15:00	iters: 128 conv: - 1.1989 err_mse: 0.0023521 iter_time: 10.877
shotgun_smart_atomic trace	1	10.0	Success	7.446	76191.3	18.9209 %	7012.03	6070.94	2011-01-30 23:00:25	Shoots: 16384000
shotgun_smart_atomic trace	2	10.0	Success	5.565	76191.3	18.9285 %	7011.98	6071.45	2011-01-30 23:00:25	Shoots: 16515072
shotgun_smart_atomic trace	4	10.0	Success	4.355	76191.3	18.9316 %	7011.89	6072.4	2011-01-30 23:00:25	Shoots: 17825792
shotgun_smart_atomic trace	6	10.0	Success	3.691	76191.3	18.9148 %	7011.91	6072.14	2011-01-30 23:00:25	Shoots: 19398656
shotgun_smart_atomic trace	8	10.0	Success	3.651	76191.3	18.9163 %	7011.88	6072.48	2011-01-30 23:00:25	Shoots: 19857408
FPC_AS	basic	10.0	Success	12.2625	76191.1	18.8309 %	7012.72	6063.95	2010-07-29 18:27:51	
GPSR_BB	basic	10.0	Success	7.68062	76192.3	18.9896 %	7012.25	6069.81	2010-07-29 18:28:06	
L1_LS	basic	10.0	Success	13.3472	76208.9	100.0000 %	7016.09	6047.99	2010-07-29 18:28:24	
SpaRSA	basic	10.0	Success	3.63759	76191.9	19.0063 %	7011.96	6072.3	2010-07-29 18:28:32	
SpaRSA	maxiter_1e6	10.0	Success	3.67112	76191.9	19.0063 %	7011.96	6072.3	2010-07-29 18:28:40	
Hard_I0	basic	10.0	Maybe	26.0194	94136.6	18.8309 %	9359.87	537.931	2010-10-09 23:15:30	iters: 218 conv: - 2.9224 err_mse: 0.032833 iter_time: 25.8717

peppers05_12_12.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
32768	65536	0.1098	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
11664.70	0.0010730	0.0010930	-0.0000050

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	2.76
shotgun_smart_atomic	8	10.0	1.787

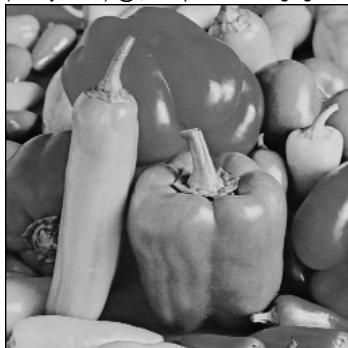
Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	5.313	4606.34	45.8237 %	9100.04	56.321	2011-01-30 13:00:37	Shoots: 10682368
shotgun_smart_atomic	trace 2	0.5	Success	5.815	4606.38	45.8939 %	9099.62	56.5681	2011-01-30 13:00:37	Shoots: 10747904
shotgun_smart_atomic	trace 4	0.5	Success	3.723	4606.32	45.7184 %	9099.99	56.326	2011-01-30 13:00:37	Shoots: 11272192
shotgun_smart_atomic	trace 6	0.5	Success	3.033	4606.34	45.7886 %	9099.7	56.4948	2011-01-30 13:00:37	Shoots: 11927552
shotgun_smart_atomic	trace 8	0.5	Success	2.76	4606.4	45.9259 %	9099.17	56.8137	2011-01-30 13:00:37	Shoots: 12320768
FPC_AS	basic	0.5	Success	31.229	4605.81	43.3258 %	9103.92	53.846	2010-07-29 18:29:15	
GPSR_BB	basic	0.5	Success	23.6531	4607.75	45.6100 %	9106.21	54.6459	2010-07-29 18:29:43	
L1_LS	basic	0.5	Success	33.09	4606.25	100.0000 %	9106.23	53.128	2010-07-29 18:30:19	
SpaRSA	basic	0.5	Success	12.4239	4607.2	46.1105 %	9105.28	54.5578	2010-07-29 18:30:36	
SpaRSA	maxiter_1e6	0.5	Success	12.4224	4607.2	46.1105 %	9105.28	54.5578	2010-07-29 18:30:52	
Hard_I0	basic	0.5	Fail	18.869	6573.18	43.3258 %	12856.1	145.148	2010-10-09 23:16:58	iters: 171 conv: -1 err_mse: 0.0044296

										iter_time: 18.7627
shotgun_smart_atomic_trace	1	10.0	Success	4.679	82701.4	15.3122 %	7627.15	6429.9	2011-01-30 13:00:37	Shoots: 9699328
shotgun_smart_atomic_trace	2	10.0	Success	3.737	82701.4	15.3168 %	7627.09	6430.49	2011-01-30 13:00:37	Shoots: 9895936
shotgun_smart_atomic_trace	4	10.0	Success	2.373	82701.4	15.3152 %	7627.13	6430.1	2011-01-30 13:00:37	Shoots: 10485760
shotgun_smart_atomic_trace	6	10.0	Success	1.982	82701.4	15.3076 %	7627.21	6429.29	2011-01-30 13:00:37	Shoots: 11010048
shotgun_smart_atomic_trace	8	10.0	Success	1.787	82701.4	15.3183 %	7627.05	6430.9	2011-01-30 13:00:37	Shoots: 11206656
FPC_AS	basic	10.0	Success	3.36045	82701.4	15.3000 %	7627.47	6426.69	2010-07-29 18:30:59	
GPSR_BB	basic	10.0	Success	2.14503	82701.4	15.3275 %	7627.01	6431.28	2010-07-29 18:31:05	
L1_LS	basic	10.0	Success	15.0274	82742.0	100.0000 %	7636.7	6374.98	2010-07-29 18:31:24	
SpaRSA	basic	10.0	Success	2.07618	82701.4	15.3244 %	7627.3	6428.36	2010-07-29 18:31:30	
SpaRSA	maxiter_1e6	10.0	Success	2.10647	82701.4	15.3244 %	7627.3	6428.36	2010-07-29 18:31:36	
Hard_I0	basic	10.0	Close	11.7696	90311.8	15.3000 %	8962.27	689.041	2010-10-09 23:17:13	iters: 94 conv: -1 err_mse: 0.021028 iter_time: 11.6973

peppers05_6_6.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices



n (# of data points)	m (# of features)	% of non-zeros	Comments
32768	65536	0.0549	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2\text{-}d)$	$[(A)'((A)1)\text{-ones}]/(d^2\text{-}d)$
11779.15	0.0005420	0.0005440	-0.0000050

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	1.567
SpaRSA	basic	10.0	0.866511

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	4.095	4556.59	39.4241 %	8933.98	89.5937	2011-01-30 20:20:18	Shots: 11010048
shotgun_smart_atomic	trace 2	0.5	Success	3.618	4556.59	39.4089 %	8933.91	89.6374	2011-01-30 20:20:18	Shots: 11010048
shotgun_smart_atomic	trace 4	0.5	Success	2.254	4556.59	39.4409 %	8933.77	89.7076	2011-01-30 20:20:19	Shots: 11927552
shotgun_smart_atomic	trace 6	0.5	Success	1.785	4556.6	39.4745 %	8933.68	89.7567	2011-01-30 20:20:19	Shots: 12189696
shotgun_smart_atomic	trace 8	0.5	Success	1.567	4556.61	39.5355 %	8933.51	89.8576	2011-01-30 20:20:19	Shots: 12582912
FPC_AS	basic	0.5	Success	6.26528	4556.48	38.5208 %	8936.23	88.3593	2010-07-29 18:31:46	
GPSR_BB	basic	0.5	Success	7.61992	4558.08	40.1962 %	8936.47	89.8459	2010-07-29 18:31:57	
L1_LS	basic	0.5	Success	17.766	4557.04	100.0000 %	8939.03	87.5212	2010-07-29 18:32:19	
SMIDAS	basic	0.5	Disqualified	0.898706	317555.0	0.3906 %	0.066968	4.8455	2010-10-24 10:19:48	
SpaRSA	basic	0.5	Success	3.51177	4557.37	40.7898 %	8935.72	89.5089	2010-07-29 18:32:26	
SpaRSA	maxiter_1e6	0.5	Success	3.43973	4557.37	40.7898 %	8935.72	89.5089	2010-07-29 18:32:33	
AMP	basic	0.5	Disqualified	1.46289	317564.0	0.0000 %		317564.0	2010-09-29 21:33:42	sweeps: 31 conv: 0 diverged: 1 lambda:
Hard_I0	basic	0.5	Fail	24.5143	6098.11	38.5208 %	11946.0	125.099	2010-10-09 23:25:53	iters: 227 conv: -1 err_mse: 0.0038177 iter_time: 24.3602
shotgun_smart_atomic	trace 1	10.0	Success	3.406	77117.3	10.5148 %	6743.91	9678.19	2011-01-30 20:20:18	Shots: 9306112
shotgun_smart_atomic	trace 2	10.0	Success	2.083	77117.3	10.5164 %	6743.88	9678.47	2011-01-30 20:20:18	Shots: 9437184
shotgun_smart_atomic	trace 4	10.0	Success	1.424	77117.3	10.5179 %	6743.93	9678.04	2011-01-30 20:20:19	Shots: 9895936
shotgun_smart_atomic	trace 6	10.0	Success	1.16	77117.3	10.5164 %	6743.9	9678.33	2011-01-30	Shots: 10289152

										20:20:19
shotgun_smart_atomic trace	8	10.0	Success	1.212	77117.3	10.5179 %	6743.97	9677.6	2011-01-30 20:20:19	Shoots: 10420224
FPC_AS	basic	10.0	Success	1.80558	77117.3	10.5118 %	6744.07	9676.58	2010-07-29 18:32:39	
GPSR_BB	basic	10.0	Success	0.907757	77117.3	10.5255 %	6743.71	9680.23	2010-07-29 18:32:43	
L1_LS	basic	10.0	Success	7.30963	77161.6	100.0000 %	6752.65	9635.03	2010-07-29 18:32:54	
SMIDAS	basic	10.0	Disqualified	0.879296	317555.0	0.1465 %	0.075818	4.84548	2010-10-24 10:31:07	
SpaRSA	basic	10.0	Success	0.866511	77117.3	10.5347 %	6743.64	9680.94	2010-07-29 18:32:59	
SpaRSA	maxiter_1e6	10.0	Success	0.882877	77117.3	10.5347 %	6743.64	9680.94	2010-07-29 18:33:04	
AMP	basic	10.0	Disqualified	1.47356	317564.0	0.0000 %		317564.0	2010-09-29 21:48:29	sweeps: 31 conv: 0 diverged: 1 lambda:
Hard_I0	basic	10.0	Close	3.05416	87864.9	10.5164 %	8712.72	737.616	2010-10-09 23:26:00	iters: 46 conv: -1 err_mse: 0.02251 iter_time: 3.0101

phonecalls.mat

?

n (# of data points)	m (# of features)	% of non-zeros	Comments
209432	209432	0.002	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
2072.77	0.0003130	0.0003130	0.0003130

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	1172.09
shotgun_smart_atomic	8	10.0	34.045

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	1172.09	220253.0	70.5031 %	10093.0	215207.0	2011-01-30 13:30:30	Shoots: 5922318096
shotgun_smart_atomic trace	2	0.5	Close	518.363	228079.0	72.3824 %	8000.43	224079.0	2011-01-30 14:00:32	Shoots: 2468365552
shotgun_smart_atomic trace	4	0.5	Close	271.65	229254.0	73.2768 %	7482.61	225513.0	2011-01-30 14:00:32	Shoots: 2294746424

shotgun_smart_atomic trace	6	0.5	Close	193.372	230511.0	73.7772 %	7085.83	226968.0	2011-01-30 14:00:32	Shoots: 2127619688
shotgun_smart_atomic trace	8	0.5	Close	141.493	231207.0	73.8846 %	6891.14	227762.0	2011-01-30 14:00:32	Shoots: 1997981280
FPC_AS	basic	0.5	Disqualified	172.646	8.89953e+18	86.1468 %	181389000.0	8.89953e+18	2010-10-22 21:28:25	exit status exceed max iterations iter 1000 obj: 4449763625621122560
GPSR_BB	basic	0.5	Disqualified	7832.67	980568.0	82.9214 %	19.1651	980558.0	2011-01-20 07:08:46	
L1_LS	basic	0.5	timeout						2010-10-22 21:20:57	4800 secs
SCD	basic	0.5	Disqualified	-1.0	-100000.0	-47.7482 %	-100000.0	-100000.0	2010-10-22 21:22:26	SCD can not work with data matrix with values outside the range [-1,1]
SpaRSA	basic	0.5	Disqualified	28.5442	2.96963e+18	86.1936 %	112924000.0	2.96963e+18	2010-10-22 21:22:23	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-22 21:25:29	errormsg=""
shotgun_smart_atomic trace	1	10.0	Success	101.478	280254.0	60.8694 %	2344.17	256812.0	2011-01-30 14:00:32	Shoots: 520019656
shotgun_smart_atomic trace	2	10.0	Success	101.051	280643.0	61.0833 %	2320.83	257435.0	2011-01-30 14:00:32	Shoots: 509129192
shotgun_smart_atomic trace	4	10.0	Success	54.298	281659.0	61.5808 %	2264.7	259012.0	2011-01-30 14:00:32	Shoots: 487138832
shotgun_smart_atomic trace	6	10.0	Success	44.996	281126.0	61.7174 %	2277.65	258349.0	2011-01-30 14:00:32	Shoots: 529025232
shotgun_smart_atomic trace	8	10.0	Success	34.045	281732.0	61.9308 %	2248.72	259245.0	2011-01-30 14:00:32	Shoots: 503474528
GPSR_BB	basic	10.0	Disqualified	7525.17	980360.0	75.8556 %	19.1722	980168.0	2011-01-20 09:14:15	

rand_signs1K_3K.mat

Random Signs Arian Maleki

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	3000	100.0	Random Signs
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
413.24	0.0252300	1.0000000	-0.0000160

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	4	0.5	0.118
shotgun_smart_atomic	8	10.0	0.066

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	1.039	17.6252	1.3333 %	30.5009	2.37471	2011-01-20 16:30:22	Shots: 168000
shotgun_smart_atomic trace	2	0.5	Success	0.184	17.6261	1.3333 %	30.5184	2.36693	2011-01-20 16:30:22	Shots: 36000
shotgun_smart_atomic trace	4	0.5	Success	0.118	17.626	1.3333 %	30.516	2.36797	2011-01-20 16:30:22	Shots: 36000
shotgun_smart_atomic trace	8	0.5	Success	0.118	17.6264	1.3333 %	30.5102	2.37127	2011-01-20 16:30:22	Shots: 36000
FPC_AS	basic	0.5	Success	0.342619	17.6253	1.3333 %	30.4999	2.37532	2010-10-10 20:19:00	
GPSR_BB	basic	0.5	Success	0.190677	17.6253	1.3333 %	30.4964	2.37707	2010-10-10 20:18:40	
L1_LS	basic	0.5	Success	2.16882	17.637	100.0000 %	30.5279	2.37307	2010-10-10 20:17:07	
SCD	basic	0.5	Disqualified	4.78942	42.8904	22.7333 %	0.299412	0.02137	2010-10-10 20:18:36	
SpaRSA	basic	0.5	Success	0.228582	17.6253	1.3333 %	30.5118	2.3694	2010-10-10 20:19:05	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 20:18:56	errmsg=""
SpaRSA	maxiter_1e6	0.5	Success	0.490497	17.6253	1.3333 %	30.5118	2.3694	2010-08-31 10:07:28	
AMP	basic	0.5	Close	1.76033	19.9986	2.4333 %	39.9973		2010-10-30 21:15:41	sweeps: 15 conv: 1 diverged: 0 lambda:
CoSaMP	basic	0.5	Close	19.7286	20.0	1.3333 %	40.0		2010-10-10 20:19:28	iterations: 500 conv: -1 sparsity level: 0.013333
Hard_l0	basic	0.5	Close	0.237554	19.9999	1.3333 %	39.9998	1e-06	2010-10-10 20:19:33	iters: 7 conv: -1 err_mse: 1.2118e-09 iter_time: 0.22121
shotgun_smart_atomic trace	1	10.0	Success	0.318	43.124	0.0000 %		43.124	2011-01-20 16:30:22	Shots: 36000
shotgun_smart_atomic trace	2	10.0	Success	0.153	43.124	0.0000 %		43.124	2011-01-20 16:30:22	Shots: 36000
shotgun_smart_atomic trace	4	10.0	Success	0.098	43.124	0.0000 %		43.124	2011-01-20 16:30:22	Shots: 36000
shotgun_smart_atomic trace	8	10.0	Success	0.066	43.124	0.0000 %		43.124	2011-01-20 16:30:22	Shots: 36000
FPC_AS	basic	10.0	Success	0.147583	43.124	0.0000 %		43.124	2010-08-31	

										10:27:22
GPSR_BB	basic	10.0	Success	0.170239	43.124	0.0000 %		43.124	2010-08-31 10:19:30	
L1_LS	basic	10.0	Success	0.161892	43.124	0.0000 %		43.124	2010-08-31 10:26:41	
SpaRSA	basic	10.0	Success	0.196293	43.124	0.0000 %		43.124	2010-08-31 10:19:26	
SpaRSA	maxiter_1e6	10.0	Success	0.196442	43.124	0.0000 %		43.124	2010-08-31 10:19:21	
AMP	basic	10.0	Success	7.42457	43.124	0.0000 %		43.124	2010-10-30 21:15:54	sweeps: 56 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	Disqualified	62.8295	400.022	10.0000 %	40.0022		2010-10-10 17:37:22	iterations: 500 conv: -1 sparsity level: 0.1
Hard_I0	basic	10.0	Disqualified	2.99723	409.737	10.0000 %	40.9737	0.000513	2010-10-09 23:21:50	iters: 74 conv: -1.0128 err_mse: 5.126e-07 iter_time: 2.9785

shperichal1K_3K.mat

Spherical matrix Arian Maleki

n (# of data points)	m (# of features)	% of non-zeros	Comments
50	10000	99.9534	Spherical matrix
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
1369.46	0.0252430	0.6370650	0.0000210

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
GPSR_BB	basic	0.5	0.209534
shotgun_smart_atomic	6	10.0	0.061

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic <u>trace</u>	1	0.5	Success	0.61	17.4303	0.4000 %	29.7211	2.56972	2011-01-30 14:30:37	Shots: 165000
shotgun_smart_atomic <u>trace</u>	2	0.5	Success	0.374	17.4303	0.4000 %	29.7211	2.56972	2011-01-30 14:30:37	Shots: 165000
shotgun_smart_atomic <u>trace</u>	4	0.5	Success	0.266	17.4303	0.4000 %	29.7211	2.56972	2011-01-30 14:30:38	Shots: 165000
shotgun_smart_atomic <u>trace</u>	6	0.5	Success	0.252	17.4303	0.4000 %	29.7211	2.56972	2011-01-30 14:30:38	Shots: 165000
shotgun_smart_atomic <u>trace</u>	8	0.5	Success	0.212	17.4303	0.4000 %	29.7211	2.56972	2011-01-30	Shots: 165000

									14:30:38	
FPC_AS	basic	0.5	Success	0.66619	17.4303	0.4000 %	29.7211	2.56972	2010-09-01 14:16:24	
GPSR_BB	basic	0.5	Success	0.209534	17.4303	0.4000 %	29.7089	2.57586	2010-09-01 14:16:34	
L1_LS	basic	0.5	Success	7.53487	17.4362	30.0000 %	29.7349	2.56869	2010-08-31 17:57:21	
SpaRSA	basic	0.5	Success	0.327066	17.4303	0.4000 %	29.7203	2.57012	2010-09-01 14:15:41	
SpaRSA	maxiter_1e6	0.5	Success	0.215751	17.4303	0.4000 %	29.7203	2.57012	2010-09-01 14:16:29	
AMP	basic	0.5	Disqualified	1.77553	40.1346	0.0000 %		40.1346	2010-09-29 20:10:32	sweeps: 38 conv: 0 diverged: 1 lambda:
Hard_I0	basic	0.5	Disqualified	0.254298	30.9673	0.1200 %	12.8832	24.5257	2010-10-09 23:41:15	iters: 8 conv: -1 err_mse: 0.024526 iter_time: 0.23732
shotgun_smart_atomic trace	1	10.0	Success	0.155	40.1346	0.0000 %		40.1346	2011-01-30 14:30:37	Shots: 39000
shotgun_smart_atomic trace	2	10.0	Success	0.099	40.1346	0.0000 %		40.1346	2011-01-30 14:30:37	Shots: 39000
shotgun_smart_atomic trace	4	10.0	Success	0.07	40.1346	0.0000 %		40.1346	2011-01-30 14:30:38	Shots: 39000
shotgun_smart_atomic trace	6	10.0	Success	0.061	40.1346	0.0000 %		40.1346	2011-01-30 14:30:38	Shots: 39000
shotgun_smart_atomic trace	8	10.0	Success	0.061	40.1346	0.0000 %		40.1346	2011-01-30 14:30:38	Shots: 39000
FPC_AS	basic	10.0	Success	0.066775	40.1346	0.0000 %		40.1346	2010-09-01 14:19:14	
GPSR_BB	basic	10.0	Success	0.062632	40.1346	0.0000 %		40.1346	2010-09-01 14:19:22	
L1_LS	basic	10.0	Success	0.471393	40.1346	0.0000 %		40.1346	2010-08-31 17:57:33	
SpaRSA	basic	10.0	Success	0.073845	40.1346	0.0000 %		40.1346	2010-09-01 14:19:03	
SpaRSA	maxiter_1e6	10.0	Success	0.075166	40.1346	0.0000 %		40.1346	2010-09-01 14:19:18	
AMP	basic	10.0	Success	1.82024	40.1346	0.0000 %		40.1346	2010-09-29 20:10:46	sweeps: 38 conv: 0 diverged: 1 lambda:
Hard_I0	basic	10.0	Disqualified	0.254961	153.357	0.1200	12.8832	24.5257	2010-	iters: 8

1024	1024	0.5859	Blocksine singal
------	------	--------	------------------

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	
shotgun_smart_atomic	1	10.0	

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success		220.866	6.9336 %	432.857	4.4375	2011-01-20 16:00:23	Shoots: 2048
shotgun_smart_atomic	trace 2	0.5	Success	0.001	220.866	6.9336 %	432.857	4.4375	2011-01-20 16:00:23	Shoots: 2048
shotgun_smart_atomic	trace 4	0.5	Success	0.001	220.866	6.9336 %	432.857	4.4375	2011-01-20 16:00:23	Shoots: 2048
shotgun_smart_atomic	trace 8	0.5	Success	0.001	220.866	6.9336 %	432.857	4.4375	2011-01-20 16:00:23	Shoots: 2048
FPC_AS	basic	0.5	Success	0.187718	220.866	6.9336 %	432.857	4.4375	2010-09-02 08:27:55	
GPSR_BB	basic	0.5	Success	0.101085	220.866	6.9336 %	432.857	4.4375	2010-09-02 09:35:35	
SMIDAS	basic	0.5	Disqualified	0.073005	6205.13	1.3672 %	0.342323	3.02977	2010-10-24 11:13:04	
SpaRSA	basic	0.5	Success	0.108896	220.866	6.9336 %	432.857	4.4375	2010-09-01 15:20:13	
SpaRSA	maxiter_1e6	0.5	Success	0.113172	220.866	6.9336 %	432.857	4.4375	2010-09-01 15:20:18	
Hard_I0	basic	0.5	Close	0.018634	225.304	6.9336 %	450.607		2010-10-09 23:16:08	iters: 1 conv: -1 err_mse: 2.8954e-30 iter_time: 0.015798
shotgun_smart_atomic	trace 1	10.0	Success		3061.0	2.8320 %	201.737	1043.63	2011-01-20 16:00:23	Shoots: 2048
shotgun_smart_atomic	trace 2	10.0	Success		3061.0	2.8320 %	201.737	1043.63	2011-01-20 16:00:23	Shoots: 2048
shotgun_smart_atomic	trace 4	10.0	Success	0.001	3061.0	2.8320 %	201.737	1043.63	2011-01-20 16:00:23	Shoots: 2048
shotgun_smart_atomic	trace 8	10.0	Success	0.001	3061.0	2.8320 %	201.737	1043.63	2011-01-20 16:00:23	Shoots: 2048
FPC_AS	basic	10.0	Success	1.34987	3061.0	2.9297 %	201.737	1043.63	2010-09-03 12:12:18	
GPSR_BB	basic	10.0	Success	0.139815	3061.0	2.9297 %	201.737	1043.63	2010-	

						%			09-05 23:48:35	
SMIDAS	basic	10.0	Disqualified	0.096981	6208.61	1.3672 %	0.338389	3.0299	2010-10-24 11:13:08	
SpaRSA	basic	10.0	Success	0.099152	3061.0	2.9297 %	201.737	1043.63	2010-09-05 23:48:47	
SpaRSA	maxiter_1e6	10.0	Success	0.118593	3061.0	2.9297 %	201.737	1043.63	2010-09-05 23:48:39	
Hard_I0	basic	10.0	Maybe	0.043781	3786.0	2.8320 %	346.737	318.632	2010-10-09 23:16:12	iters: 2 conv: -1 err_mse: 0.31116 iter_time: 0.027101

SparcoProblem3.mat

Cosine with random spikes Sparco Toolbox <http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
1024	2048	50.0488	Cosine with random spikes
Shotgun P	Average absolute non-diag A'A	[abs(A)'(abs(A)1)-ones]/(d^2-d)	[(A)'((A)1)-ones]/(d^2-d)
1025.00	0.0140790	0.2167050	0.0000150

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.043
shotgun_smart_atomic	8	10.0	0.045

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.258	104.144	4.6387 %	195.347	6.47024	2011-01-20 16:00:23	Shoots: 77824
shotgun_smart_atomic	trace 2	0.5	Success	0.086	104.251	5.6641 %	195.53	6.48556	2011-01-20 16:00:23	Shoots: 40960
shotgun_smart_atomic	trace 4	0.5	Success	0.066	104.264	5.5664 %	195.475	6.52697	2011-01-20 16:00:23	Shoots: 40960
shotgun_smart_atomic	trace 8	0.5	Success	0.043	104.277	5.5176 %	195.5	6.52719	2011-01-20 16:00:23	Shoots: 40960
FPC_AS	basic	0.5	Success	0.351496	104.144	4.5898 %	195.347	6.47023	2010-09-01 15:24:53	
GPSR_BB	basic	0.5	Success	0.195478	104.452	4.7363 %	195.254	6.82525	2010-09-01 15:24:38	
L1_LS	basic	0.5	Success	1.34116	104.158	100.0000 %	195.429	6.44358	2010-09-01 15:24:44	

SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:31:07	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Success	0.190724	104.508	4.7852 %	196.228	6.39408	2010-09-01 15:24:57	
SpaRSA	maxiter_1e6	0.5	Success	0.199564	104.508	4.7852 %	196.228	6.39408	2010-09-01 15:24:48	
Hard_I0	basic	0.5	Close	4.18487	109.93	4.5898 %	218.667	0.596161	2010-10-09 23:41:06	iters: 118 conv: -1 err_mse: 0.00058219 iter_time: 4.1661
shotgun_smart_atomic trace	1	10.0	Success	0.166	1405.17	0.0977 %	126.084	144.336	2011-01-20 16:00:23	Shoots: 49152
shotgun_smart_atomic trace	2	10.0	Success	0.104	1405.17	0.0977 %	126.084	144.336	2011-01-20 16:00:23	Shoots: 49152
shotgun_smart_atomic trace	4	10.0	Success	0.062	1405.17	0.0977 %	126.084	144.336	2011-01-20 16:00:23	Shoots: 49152
shotgun_smart_atomic trace	8	10.0	Success	0.045	1405.17	0.0977 %	126.084	144.336	2011-01-20 16:00:23	Shoots: 49152
FPC_AS	basic	10.0	Success	0.257329	1405.17	0.0977 %	126.083	144.337	2010-09-01 15:27:33	
GPSR_BB	basic	10.0	Success	0.134607	1405.17	0.0977 %	126.083	144.337	2010-09-01 15:27:19	
L1_LS	basic	10.0	Success	0.892302	1405.66	100.0000 %	126.132	144.34	2010-09-01 15:27:24	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-23 19:31:36	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	10.0	Success	0.146508	1405.17	0.0977 %	126.083	144.337	2010-09-01 15:27:38	
SpaRSA	maxiter_1e6	10.0	Success	0.152619	1405.17	0.0977 %	126.083	144.337	2010-09-01 15:27:28	
Hard_I0	basic	10.0	Close	0.061189	1455.17	0.0977 %	136.083	94.337	2010-10-09 23:41:10	iters: 2 conv: -1 err_mse: 0.092126 iter_time: 0.044175

SparcoProblem4.mat

Complex sinusoid with spikes Sparco Toolbox <http://www.cs.ubc.ca/labs/sci/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
1024	2048	50.0488	Complex sinusoid with spikes
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(\mathbf{A})'(\text{abs}(\mathbf{A})\mathbf{1})-\text{ones}]/(d^2-d)$	$[(\mathbf{A})'((\mathbf{A})\mathbf{1})-\text{ones}]/(d^2-d)$
-2047.00	0.0151610	0.2173720	0.0002590

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
SpaRSA	maxiter_1e6	0.5	1.12562
GPSR_BB	basic	10.0	0.384863

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic_trace	1	0.5	Disqualified	0.103	1240.59	47.8027%	2356.65	62.2631	2011-01-30 13:00:38	Shoots: 51200
shotgun_smart_atomic_trace	2	0.5	Disqualified	0.067	1240.59	47.8027%	2356.65	62.2631	2011-01-30 13:00:38	Shoots: 51200
shotgun_smart_atomic_trace	4	0.5	Disqualified	0.048	1240.59	47.8027%	2356.65	62.2631	2011-01-30 13:00:38	Shoots: 59392
shotgun_smart_atomic_trace	6	0.5	Disqualified	0.039	1240.59	47.8027%	2356.65	62.2631	2011-01-30 13:00:38	Shoots: 59392
shotgun_smart_atomic_trace	8	0.5	Disqualified	0.031	1240.59	47.8027%	2356.65	62.2631	2011-01-30 13:00:38	Shoots: 59392
FPC_AS	basic	0.5	Close	1.04572	187.502	9.5215%	348.822	13.0914	2010-10-10 08:56:49	
GPSR_BB	basic	0.5	Close	0.785468	187.733	9.7656%	348.332	13.5666	2010-10-10 08:55:01	
SCD	basic	0.5	Disqualified	4.27556	12894.8	126.6113%	5.3019	3.1475	2010-10-10 08:56:39	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-22 21:53:04	errmsg="Attempted to access out2(1); index out of bounds becau
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:33:31	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 08:55:05	errmsg=""
SpaRSA	maxiter_1e6	0.5	Success	1.12562	174.317	6.1523%	331.564	8.53451	2010-09-02 09:34:16	
AMP	basic	0.5	Disqualified	48.8313	583.834	92.3340%	1167.67		2010-10-10 09:47:36	sweeps: 500 conv: 0 diverged: 0 lambda:
Hard_I0	basic	0.5	Disqualified	11.6818	297.265	12.3047%	575.717	9.40687	2010-10-10 09:46:37	iters: 95 conv: -1 err_mse: 0.0045932 iter_time: 11.6623
shotgun_smart_atomic_trace	1	10.0	Disqualified	0.105	8264.47	0.2441%	1.53367	8249.13	2011-01-30 13:00:38	Shoots: 51200
shotgun_smart_atomic_trace	2	10.0	Disqualified	0.057	8264.47	0.2441%	1.53367	8249.13	2011-01-30 13:00:38	Shoots: 51200
shotgun_smart_atomic_trace	4	10.0	Disqualified	0.041	8264.47	0.2441%	1.53367	8249.13	2011-	Shoots: 51200

						%			01-30 13:00:38	
shotgun_smart_atomic_trace	6	10.0	Disqualified	0.035	8264.47	0.2441 %	1.53367	8249.13	2011-01-30 13:00:38	Shoots: 51200
shotgun_smart_atomic_trace	8	10.0	Disqualified	0.029	8264.47	0.2441 %	1.53367	8249.13	2011-01-30 13:00:38	Shoots: 51200
FPC_AS	basic	10.0	Success	0.435641	2338.28	0.1953 %	203.488	303.4	2010-10-10 09:49:58	
GPSR_BB	basic	10.0	Success	0.384863	2338.28	0.1953 %	203.488	303.4	2010-10-10 09:48:10	
SCD	basic	10.0	Disqualified	4.58645	12926.8	0.4395 %	0.22009	3.15542	2010-10-10 09:49:49	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-22 21:54:51	errmsg="Attempted to access out2(1); index out of bounds becau
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-23 19:35:24	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-10 09:48:13	errmsg=""
SpaRSA	maxiter_1e6	10.0	Disqualified	1.33653	2.7866e+17	50.1953 %	2.7866e+16	6032.19	2010-09-02 09:35:00	
AMP	basic	10.0	Disqualified	49.135	11676.7	92.3340 %	1167.67		2010-10-10 10:09:51	sweeps: 500 conv: 0 diverged: 0 lambda:
Hard_I0	basic	10.0	Close	1.19266	2492.98	0.3906 %	230.206	190.916	2010-10-10 10:08:54	iters: 12 conv: -1 err_mse: 0.09322 iter_time: 1.1762

SparcoProblem402.mat

Sparco Toolbox <http://www.cs.ubc.ca/labs/sci/sparco/index.php/Main/HomePageSparcSparco>



n (# of data points)	m (# of features)	% of non-zeros	Comments
29166	86016	3.5098	

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
FPC_AS	basic	0.5	16.0673
FPC_AS	basic	10.0	0.387908

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	x _0/m	x _1	L2err	Updated	Notes
shotgun_smart_atomic_trace	1	0.5	Success	100.99	285.214	1.6915 %	327.529	121.449	2011-01-30 14:00:33	Shoots: 24256512
shotgun_smart_atomic_trace	2	0.5	Success	54.719	285.214	1.6927 %	327.53	121.449	2011-01-30	Shoots: 24084480

									14:30:38	
shotgun_smart_atomic trace	4	0.5	Success	38.663	285.214	1.6915 %	327.529	121.449	2011-01-30 14:30:38	Shoots: 25718784
shotgun_smart_atomic trace	6	0.5	Success	33.431	285.214	1.6915 %	327.528	121.45	2011-01-30 14:30:39	Shoots: 25374720
shotgun_smart_atomic trace	8	0.5	Success	29.608	285.214	1.6915 %	327.527	121.45	2011-01-30 14:30:38	Shoots: 26234880
FPC_AS	basic	0.5	Success	16.0673	287.127	2.0671 %	328.124	123.065	2010-10-10 11:34:31	
GPSR_BB	basic	0.5	Success	46.7634	285.306	1.7264 %	327.645	121.483	2010-10-10 10:31:20	
L1_LS	basic	0.5	Success	320.072	285.233	100.0000 %	327.641	121.413	2010-10-10 10:29:43	
SCD	basic	0.5	timeout						2010-10-10 10:24:08	4800 secs
SpaRSA	basic	0.5	Success	25.5883	285.397	1.7497 %	327.872	121.461	2010-10-10 10:30:20	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 10:31:30	errmsg=""
AMP	basic	0.5	Disqualified	31.5253	533.023	0.0000 %		533.023	2010-10-10 12:49:11	sweeps: 20 conv: 0 diverged: 1 lambda:
Hard_I0	basic	0.5	Maybe	165.663	370.662	1.7008 %	638.971	51.1765	2010-10-10 11:37:29	iters: 117 conv: -1 err_mse: 0.0017547 iter_time: 165.5356
shotgun_smart_atomic trace	1	10.0	Success	17.334	533.023	0.0000 %		533.023	2011-01-30 14:30:38	Shoots: 3870720
shotgun_smart_atomic trace	2	10.0	Success	8.688	533.023	0.0000 %		533.023	2011-01-30 14:30:38	Shoots: 3870720
shotgun_smart_atomic trace	4	10.0	Success	5.945	533.023	0.0000 %		533.023	2011-01-30 14:30:38	Shoots: 3870720
shotgun_smart_atomic trace	6	10.0	Success	4.846	533.023	0.0000 %		533.023	2011-01-30 14:30:39	Shoots: 3870720
shotgun_smart_atomic trace	8	10.0	Success	4.307	533.023	0.0000 %		533.023	2011-01-30 14:30:38	Shoots: 3870720
FPC_AS	basic	10.0	Success	0.387908	533.023	0.0000 %		533.023	2010-10-10 16:27:21	
GPSR_BB	basic	10.0	Success	0.993873	533.023	0.0000 %		533.023	2010-10-10 14:11:28	
L1_LS	basic	10.0	Success	24.3869	533.023	0.0000 %		533.023	2010-10-10 14:11:03	
SCD	basic	10.0	Success	72.5715	533.023	0.0000 %		0.009138	2010-10-10 14:10:26	

SpaRSA	basic	10.0	Success	0.9983	533.023	0.0000 %		533.023	2010-10-10 14:11:15	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-10 14:11:39	errmsg=""
AMP	basic	10.0	Success	29.2346	533.023	0.0000 %		533.023	2010-10-10 16:29:21	sweeps: 20 conv: 0 diverged: 1 lambda:
Hard_I0	basic	10.0	Disqualified	20.4166	971.734	0.0349 %	55.4154	417.58	2010-10-10 16:27:53	iters: 16 conv: -1 err_mse: 0.014317 iter_time: 20.3832

SparcoProblem5.mat

Cosine with spikes measured with Gaussian ensemble Sparco Toolbox
<http://www.cs.ubc.ca/labs/sc/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
300	2048	100.0	Cosine with spikes measured with Gaussian ensemble
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1-\text{ones})]/(d^2-d)$	$[(A)'((A)1-\text{ones})]/(d^2-d)$
131.67	0.0493720	0.6391290	0.0000490

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.031
shotgun_smart_atomic	8	10.0	0.023

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.376	86.7815	4.1504 %	166.864	3.34949	2011-01-20 16:30:23	Shoots: 192512
shotgun_smart_atomic	trace 2	0.5	Success	0.051	87.7359	9.0332 %	167.833	3.81919	2011-01-20 16:30:23	Shoots: 40960
shotgun_smart_atomic	trace 4	0.5	Success	0.033	87.6906	8.9355 %	168.003	3.68922	2011-01-20 16:30:23	Shoots: 40960
shotgun_smart_atomic	trace 8	0.5	Success	0.031	87.7098	9.1309 %	166.975	4.22219	2011-01-20 16:30:23	Shoots: 40960
FPC_AS	basic	0.5	Success	0.308993	86.7815	4.1504 %	166.864	3.34936	2010-10-09 20:00:45	
GPSR_BB	basic	0.5	Disqualified	0.252103	132.536	19.8242 %	246.861	9.106	2010-10-10 17:14:38	
L1_LS	basic	0.5	error="MATLAB:UndefinedFunction"						2010-09-01 15:11:14	errmsg="Undefined function or method 'l1_ls' for input

											argumen
SpaRSA	basic	0.5	Fail	0.151716	115.05	6.8359 %	152.268	38.9153	2010-10-09 20:00:55		
SpaRSA	maxiter_1e6	0.5	Fail	0.254727	115.05	6.8359 %	152.268	38.9153	2010-09-01 15:21:13		
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-09 20:00:48	errmsg=""	
AMP	basic	0.5	Disqualified	0.170127	6538.23	0.0000 %		6538.23	2010-09-29 21:48:49	sweeps: 31 conv: 0 diverged: 1 lambda:	
Hard_I0	basic	0.5	Maybe	0.608397	101.287	4.1504 %	195.06	3.75711	2010-10-09 23:15:34	iters: 127 conv: -1 err_mse: 0.012524 iter_time: 0.58977	
shotgun_smart_atomic trace	1	10.0	Success	0.167	1333.09	0.1465 %	119.954	133.55	2011-01-20 16:30:23	Shoots: 86016	
shotgun_smart_atomic trace	2	10.0	Success	0.044	1333.09	0.1465 %	119.953	133.555	2011-01-20 16:30:23	Shoots: 49152	
shotgun_smart_atomic trace	4	10.0	Success	0.035	1333.09	0.1465 %	119.955	133.541	2011-01-20 16:30:23	Shoots: 49152	
shotgun_smart_atomic trace	8	10.0	Success	0.023	1333.09	0.1465 %	119.952	133.568	2011-01-20 16:30:23	Shoots: 49152	
FPC_AS	basic	10.0	Success	0.228862	1333.09	0.1465 %	119.954	133.55	2010-09-01 15:22:37		
GPSR_BB	basic	10.0	Success	0.072747	1333.09	0.1465 %	120.01	132.992	2010-10-10 17:14:42		
L1_LS	basic	10.0	Success	0.487859	1333.35	100.0000 %	119.997	133.379	2010-09-01 15:22:46		
SpaRSA	basic	10.0	Success	0.095957	1333.09	0.1465 %	120.028	132.809	2010-09-01 15:22:32		
SpaRSA	maxiter_1e6	10.0	Success	0.105646	1333.09	0.1465 %	120.028	132.809	2010-09-01 15:22:12		
AMP	basic	10.0	Disqualified	0.172353	6538.23	0.0000 %		6538.23	2010-09-29 21:48:58	sweeps: 31 conv: 0 diverged: 1 lambda:	
Hard_I0	basic	10.0	Close	0.047961	1413.41	0.1465 %	136.018	53.2262	2010-10-09 23:15:38	iters: 5 conv: -1 err_mse: 0.17742 iter_time: 0.031543	

SparcoProblem501.mat

Shepp Logan Phantom Sparco Toolbox <http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco>



n (# of data points)	m (# of features)	% of non-zeros	Comments
629	4096	92.0072	Shepp Logan Phantom

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	1.32
shotgun_smart_atomic	8	10.0	0.066

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	3.485	41.9857	0.8057 %	43.6632	20.1541	2011-01-30 13:00:38	Shots: 1609728
shotgun_smart_atomic trace	2	0.5	Success	2.023	41.9857	0.8057 %	43.6632	20.1541	2011-01-30 13:00:39	Shots: 1609728
shotgun_smart_atomic trace	4	0.5	Success	1.54	41.9857	0.8057 %	43.6632	20.1541	2011-01-30 13:00:39	Shots: 1609728
shotgun_smart_atomic trace	6	0.5	Success	1.439	41.9857	0.8057 %	43.6632	20.1541	2011-01-30 13:00:39	Shots: 1609728
shotgun_smart_atomic trace	8	0.5	Success	1.32	41.9857	0.8057 %	43.6632	20.1541	2011-01-30 13:00:39	Shots: 1613824
FPC_AS	basic	0.5	Maybe	2.57432	51.1589	2.3193 %	48.8667	26.7255	2010-10-10 17:42:34	
GPSR_BB	basic	0.5	Maybe	0.773577	51.1792	2.6611 %	49.2011	26.5787	2010-10-10 18:05:48	
L1_LS	basic	0.5	Maybe	13.8604	51.1702	200.0000 %	48.9859	26.6773	2010-10-10 17:42:26	
SCD	basic	0.5	Disqualified	8.64544	121.115	2.7100 %	0.039934	0.04813	2010-10-10 17:48:17	
SpaRSA	basic	0.5	Maybe	0.840708	51.2091	2.4414 %	50.5322	25.943	2010-10-10 17:43:28	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 17:48:22	errmsg=""
AMP	basic	0.5	Disqualified	3.15076	121.208	0.0000 %		121.208	2010-10-10 18:19:18	sweeps: 15 conv: 0 diverged: 1 lambda:
CoSaMP	basic	0.5	Disqualified	765.485	99.7793	4.5410 %	186.825	6.36664	2010-10-10 20:20:18	iterations: 500 conv: - 1 sparsity level: 0.022705
Hard_I0	basic	0.5	Disqualified	11.9614	82.5006	4.5410 %	153.318	5.8416	2010-10-10 18:06:06	iters: 47 conv: -1 err_mse: 0.0046436 iter_time: 11.9416
shotgun_smart_atomic trace	1	10.0	Success	0.184	109.614	0.0000 %		109.614	2011-01-30 13:00:38	Shots: 77824
shotgun_smart_atomic trace	2	10.0	Success	0.113	109.614	0.0000 %		109.614	2011-01-30 13:00:39	Shots: 77824
shotgun_smart_atomic trace	4	10.0	Success	0.075	109.614	0.0000 %		109.614	2011-01-30	Shots: 77824

13:00:39										
shotgun_smart_atomic trace	6	10.0	Success	0.071	109.614	0.0000 %		109.614	2011-01-30 13:00:39	Shoots: 77824
shotgun_smart_atomic trace	8	10.0	Success	0.066	109.614	0.0000 %		109.614	2011-01-30 13:00:39	Shoots: 77824
FPC_AS	basic	10.0	Close	0.107172	121.208	0.0000 %		121.208	2010-10-10 18:19:31	
GPSR_BB	basic	10.0	Close	0.192492	121.208	0.0000 %		121.208	2010-10-10 18:28:10	
L1_LS	basic	10.0	Close	0.763876	121.208	0.0000 %		121.208	2010-10-10 18:19:25	
SCD	basic	10.0	Close	8.75357	121.208	0.0000 %		0.048175	2010-10-10 18:24:56	
SpaRSA	basic	10.0	Close	0.197507	121.208	0.0000 %		121.208	2010-10-10 18:20:03	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-10 18:25:01	errmsg=""
AMP	basic	10.0	Close	3.14906	121.208	0.0000 %		121.208	2010-10-10 18:28:38	sweeps: 15 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	Disqualified	1.36368	406.186	0.3906 %	36.4203	41.9829	2010-10-10 20:20:25	iterations: 5 conv: -1 sparsity level: 0.0019531
Hard_I0	basic	10.0	Disqualified	1.26978	287.279	0.1953 %	23.7878	49.4011	2010-10-10 18:28:17	iters: 8 conv: -1 err_mse: 0.03927 iter_time: 1.2535

SparcoProblem502.mat

Artificial Anigram Sparco Toolbox <http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
10000	10000	33.21	Artificial Anigram

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	8.535
shotgun_smart_atomic	8	10.0	1.347

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic trace	1	0.5	Success	28.04	113.303	4.6400 %	108.772	58.9167	2011-01-30	Shoots: 1920000

									14:30:39	
shotgun_smart_atomic trace	2	0.5	Success	16.328	113.303	4.6700 %	108.772	58.9167	2011-01-30 14:30:39	Shoots: 1900000
shotgun_smart_atomic trace	4	0.5	Success	10.784	113.303	4.5800 %	108.771	58.917	2011-01-30 14:30:39	Shoots: 1920000
shotgun_smart_atomic trace	6	0.5	Success	9.4	113.303	4.6500 %	108.772	58.917	2011-01-30 14:30:39	Shoots: 1890000
shotgun_smart_atomic trace	8	0.5	Success	8.535	113.303	4.5800 %	108.771	58.917	2011-01-30 14:30:39	Shoots: 1900000
FPC_AS	basic	0.5	Maybe	12.5637	144.823	4.7400 %	200.446	44.5999	2010-10-10 09:18:06	
GPSR_BB	basic	0.5	Maybe	8.22725	144.826	4.7600 %	200.872	44.3902	2010-10-10 09:17:00	
L1_LS	basic	0.5	Maybe	118.164	144.863	200.0000 %	200.708	44.5086	2010-10-10 09:21:22	
SCD	basic	0.5	timeout						2010-10-10 10:44:30	4800 secs
SpaRSA	basic	0.5	Maybe	9.32882	144.826	4.7600 %	200.872	44.3902	2010-10-10 09:16:10	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 09:16:30	errmsg=""
SpaRSA	maxiter_1e6	0.5	timeout						2010-09-06 03:11:08	4800 secs
AMP	basic	0.5	Disqualified	2.6739	243.254	0.0000 %		243.254	2010-10-10 13:26:23	sweeps: 1 conv: 0 diverged: 1 lambda:
CoSaMP	basic	0.5	timeout						2010-10-10 18:57:56	4800 secs
Hard_I0	basic	0.5	Disqualified	47.7992	192.407	9.5200 %	384.814	0.000222	2010-10-10 12:05:42	iters: 19 conv: -1 err_mse: 1.1109e-08 iter_time: 47.7375
shotgun_smart_atomic trace	1	10.0	Success	5.48	148.388	0.0000 %		148.388	2011-01-30 14:30:39	Shoots: 370000
shotgun_smart_atomic trace	2	10.0	Success	2.626	148.388	0.0000 %		148.388	2011-01-30 14:30:39	Shoots: 370000
shotgun_smart_atomic trace	4	10.0	Success	1.819	148.388	0.0000 %		148.388	2011-01-30 14:30:39	Shoots: 370000
shotgun_smart_atomic trace	6	10.0	Success	1.546	148.388	0.0000 %		148.388	2011-01-30 14:30:39	Shoots: 370000
shotgun_smart_atomic trace	8	10.0	Success	1.347	148.388	0.0000 %		148.388	2011-01-30 14:30:39	Shoots: 370000
FPC_AS	basic	10.0	Disqualified	0.63979	243.254	0.0000 %		243.254	2010-10-10 13:29:10	

GPSR_BB	basic	10.0	Disqualified	1.77835	243.254	0.0000 %		243.254	2010-10-10 13:28:13	
L1_LS	basic	10.0	Disqualified	14.04	243.254	0.0000 %		243.254	2010-10-10 14:19:43	
SCD	basic	10.0	timeout						2010-10-10 15:43:28	4800 secs
SpaRSA	basic	10.0	Disqualified	1.78127	243.254	0.0000 %		243.254	2010-10-10 13:27:29	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-10 13:27:49	errmsg=""
SpaRSA	maxiter_1e6	10.0	Disqualified	1.43367	243.254	0.0000 %		243.254	2010-09-06 05:56:01	
AMP	basic	10.0	Disqualified	2.39109	243.254	0.0000 %		243.254	2010-10-10 18:27:57	sweeps: 1 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	timeout						2010-10-10 20:17:58	4800 secs
CoSaMP	basic	10.0	timeout						2010-10-10 18:27:19	4800 secs
Hard_I0	basic	10.0	Disqualified	203.405	4769.86	40.0000 %	476.984	0.018024	2010-10-10 17:07:17	iters: 92 conv: -1 err_mse: 9.0118e-07 iter_time: 203.3707

SparcoProblem6.mat

Piecewise cubic polynomial Sparco Toolbox <http://www.cs.ubc.ca/labs/scf/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
600	2048	100.0	Piecewise cubic polynomial
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(\mathbf{A})'(\text{abs}(\mathbf{A})\mathbf{1})\text{-ones}]/(d^2-d)$	$[(\mathbf{A})'((\mathbf{A})\mathbf{1})\text{-ones}]/(d^2-d)$
255.18	0.0326350	0.6379160	-0.0000360

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	6	0.5	14.072
shotgun_smart_atomic	8	10.0	6.999

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	20.086	874.181	32.2754 %	1748.28	0.04346	2011-01-30 14:30:39	Shoots: 7325696

shotgun_smart_atomic trace	2	0.5	Success	37.216	874.201	31.8359 %	1748.32	0.043338	2011-01-30 14:30:39	Shoots: 9031680
shotgun_smart_atomic trace	4	0.5	Success	22.368	874.42	32.3242 %	1748.75	0.043572	2011-01-30 14:30:39	Shoots: 9015296
shotgun_smart_atomic trace	6	0.5	Success	14.072	874.557	32.7637 %	1749.03	0.044265	2011-01-30 14:30:39	Shoots: 7135232
shotgun_smart_atomic trace	8	0.5	Success	15.072	874.615	32.4707 %	1749.14	0.043979	2011-01-30 14:30:39	Shoots: 9129984
FPC_AS	basic	0.5	Success	17.1611	874.303	30.0781 %	1748.52	0.040745	2010-09-02 10:28:12	
GPSR_BB	basic	0.5	Disqualified	10.9317	1920.89	95.0195 %	3841.65	0.068511	2010-09-02 10:27:40	
L1_LS	basic	0.5	Success	59.397	874.006	100.0000 %	1747.93	0.041188	2010-09-02 10:33:31	
SpaRSA	basic	0.5	Disqualified	11.7754	1795.11	85.5469 %	3526.69	31.7585	2010-09-02 10:35:40	
SpaRSA	maxiter_1e6	0.5	Fail	251.452	1196.02	61.9141 %	2391.93	0.052849	2010-09-02 10:32:28	
CoSaMP	basic	0.5	error="MATLAB:badsubscript"						2010-10-10 17:32:57	errmsg="Index exceeds matrix dimensions."
Hard_I0	basic	0.5	Disqualified	0.244331	2049.94	100.0000 %	4019.8	40.0428	2010-10-09 23:14:31	iters: 23 conv: -2.5672 err_mse: 0.066738 iter_time: 0.22717
shotgun_smart_atomic trace	1	10.0	Success	9.878	17462.1	28.1738 %	1744.62	15.9665	2011-01-30 14:30:39	Shoots: 3713024
shotgun_smart_atomic trace	2	10.0	Success	14.495	17462.1	28.0762 %	1744.62	15.9647	2011-01-30 14:30:39	Shoots: 3794944
shotgun_smart_atomic trace	4	10.0	Success	8.834	17462.1	28.1250 %	1744.62	15.9681	2011-01-30 14:30:39	Shoots: 3987456
shotgun_smart_atomic trace	6	10.0	Success	7.378	17462.1	28.0762 %	1744.62	15.9764	2011-01-30 14:30:40	Shoots: 4159488
shotgun_smart_atomic trace	8	10.0	Success	6.999	17462.1	28.1250 %	1744.62	15.9691	2011-01-30 14:30:39	Shoots: 4438016
FPC_AS	basic	10.0	Success	16.7464	17468.1	26.2695 %	1745.47	13.4356	2010-09-02 10:36:33	
GPSR_BB	basic	10.0	Disqualified	11.5692	28486.0	59.7656 %	2846.0	26.003	2010-09-02 10:36:01	
L1_LS	basic	10.0	Success	30.4064	17466.1	100.0000 %	1745.07	15.4803	2010-09-02 10:38:04	
SpaRSA	basic	10.0	Maybe	11.0109	22077.1	66.6016 %	2205.44	22.7123	2010-09-02 10:40:08	
SpaRSA	maxiter_1e6	10.0	Success	52.3348	17503.4	32.4218 %	1748.61	17.3585	2010-09-02 10:37:30	

CoSaMP	basic	10.0	Disqualified	114.672	1511160.0	29.1016 %	2608.45	1485070.0	2010-10-10 17:34:55	iterations: 500 conv: -1 sparsity level: 0.29102
Hard_I0	basic	10.0	Disqualified	1.42185	30404.8	29.1016 %	2848.28	1922.0	2010-10-09 23:14:36	iters: 135 conv: -1 err_mse: 3.2033 iter_time: 1.4023

SparcoProblem603.mat

GPSR Compressed sensing Sparco Toolbox
<http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco>



n (# of data points)	m (# of features)	% of non-zeros	Comments
1024	4096	70.6761	GPSR Compressed sensing

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
SpaRSA	basic	0.5	0.304357
SpaRSA	basic	10.0	0.206582

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic_trace	1	0.5	Success	1.531	89.7342	1.2207 %	136.588	21.44	2011-01-30 16:00:27	Shoots: 319488
shotgun_smart_atomic_trace	2	0.5	Success	0.74	89.7342	1.2207 %	136.588	21.44	2011-01-30 16:00:28	Shoots: 315392
shotgun_smart_atomic_trace	4	0.5	Success	0.685	89.7342	1.2207 %	136.588	21.44	2011-01-30 16:00:28	Shoots: 319488
shotgun_smart_atomic_trace	6	0.5	Success	0.571	89.7342	1.2207 %	136.588	21.44	2011-01-30 16:00:28	Shoots: 323584
shotgun_smart_atomic_trace	8	0.5	Success	0.554	89.7342	1.2207 %	136.588	21.44	2011-01-30 16:00:28	Shoots: 323584
FPC_AS	basic	0.5	Success	0.562728	89.7342	1.2207 %	136.606	21.4312	2010-10-10 10:33:04	
GPSR_BB	basic	0.5	Success	0.412321	89.8205	1.1719 %	134.28	22.6805	2010-10-10 10:33:45	
L1_LS	basic	0.5	Success	3.2862	89.7772	100.0000 %	136.782	21.3864	2010-10-10 10:33:18	
SCD	basic	0.5	Disqualified	2.50812	647.324	47.7295 %	1.3615	0.315744	2010-10-10 10:32:45	
SpaRSA	basic	0.5	Success	0.304357	89.7512	1.2207 %	136.568	21.4673	2010-10-10 10:33:08	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10	errmsg=""

									10:33:11	
AMP	basic	0.5	Disqualified	1.02954	649.068	0.0000 %		649.068	2010-10-10 10:34:02	sweeps: 36 conv: 0 diverged: 1 lambda:
CoSaMP	basic	0.5	Close	1.01947	102.056	1.2207 %	184.748	9.68172	2010-10-10 17:35:01	iterations: 8 conv: -1 sparsity level: 0.012207
Hard_I0	basic	0.5	Close	0.809916	102.493	1.2207 %	186.782	9.10219	2010-10-10 10:33:49	iters: 17 conv: -1 err_mse: 0.0088889 iter_time: 0.7934
shotgun_smart_atomic trace	1	10.0	Success	0.642	592.692	0.0732 %	18.1607	411.086	2011-01-30 16:00:27	Shoots: 184320
shotgun_smart_atomic trace	2	10.0	Success	0.435	592.692	0.0732 %	18.1607	411.086	2011-01-30 16:00:28	Shoots: 184320
shotgun_smart_atomic trace	4	10.0	Success	0.363	592.692	0.0732 %	18.1607	411.086	2011-01-30 16:00:28	Shoots: 184320
shotgun_smart_atomic trace	6	10.0	Success	0.305	592.692	0.0732 %	18.1607	411.086	2011-01-30 16:00:28	Shoots: 184320
shotgun_smart_atomic trace	8	10.0	Success	0.27	592.692	0.0732 %	18.1607	411.086	2011-01-30 16:00:28	Shoots: 184320
FPC_AS	basic	10.0	Success	0.247096	592.692	0.0732 %	18.1591	411.101	2010-10-10 11:04:33	
GPSR_BB	basic	10.0	Success	0.363045	592.692	0.0732 %	18.1585	411.107	2010-10-10 11:05:09	
L1_LS	basic	10.0	Success	1.15698	593.043	100.0000 %	18.1759	411.284	2010-10-10 11:04:44	
SCD	basic	10.0	Close	2.42083	648.956	0.0732 %	0.018418	0.316783	2010-10-10 11:04:12	
SpaRSA	basic	10.0	Success	0.206582	592.692	0.0732 %	18.1583	411.109	2010-10-10 11:04:36	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-10 11:04:40	errmsg=""
AMP	basic	10.0	Close	1.02755	649.068	0.0000 %		649.068	2010-10-10 11:05:26	sweeps: 36 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	Fail	0.377648	857.014	0.0732 %	71.7102	139.912	2010-10-10 17:35:05	iterations: 3 conv: -1 sparsity level: 0.00073242
Hard_I0	basic	10.0	Fail	0.336642	863.934	0.0732 %	72.415	139.784	2010-10-10 11:05:13	iters: 4 conv: -1 err_mse: 0.13651 iter_time: 0.32122

SparcoProblem7.mat

Sign spikes, real domain Sparco Toolbox <http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
600	2560	100.0	Sign spikes, real domain
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)-\text{ones}]/(d^2-d)$	$[(A)'((A)1)-\text{ones}]/(d^2-d)$
568.46	0.0285450	0.6379570	-0.0000140

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.035
shotgun_smart_atomic	8	10.0	0.036

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.323	4.70656	0.2734 %	1.22787	4.09262	2011-01-20 16:00:24	Shoots: 87040
shotgun_smart_atomic	trace 2	0.5	Success	0.081	4.70657	0.2734 %	1.24211	4.08552	2011-01-20 16:00:24	Shoots: 30720
shotgun_smart_atomic	trace 4	0.5	Success	0.048	4.70657	0.2734 %	1.23986	4.08664	2011-01-20 16:00:24	Shoots: 30720
shotgun_smart_atomic	trace 8	0.5	Success	0.035	4.70657	0.2734 %	1.24142	4.08586	2011-01-20 16:00:24	Shoots: 30720
FPC_AS	basic	0.5	Success	0.174681	4.70656	0.2734 %	1.22787	4.09263	2010-10-09 21:02:23	
GPSR_BB	basic	0.5	Success	0.077391	4.70656	0.2734 %	1.22753	4.0928	2010-10-09 20:01:23	
L1_LS	basic	0.5	Success	0.449996	4.71055	100.0000 %	1.24755	4.08677	2010-10-09 20:01:27	
SpaRSA	basic	0.5	Success	0.354272	4.70656	0.2734 %	1.2275	4.09281	2010-09-02 10:44:08	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-09 20:01:30	errmsg=""
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-09 21:02:30	errmsg=""
SpaRSA	maxiter_1e6	0.5	Success	0.323461	4.70656	0.2734 %	1.2275	4.09281	2010-09-02 10:43:42	
Hard_I0	basic	0.5	Fail	0.132388	6.32578	0.2734 %	7.70646	2.47255	2010-10-09 23:26:29	iters: 8 conv: -1 err_mse: 0.0041209 iter_time: 0.11571

shotgun_smart_atomic_trace	1	10.0	Success	0.118	4.80498	0.0000 %		4.80498	2011-01-20 16:00:24	Shoots: 30720
shotgun_smart_atomic_trace	2	10.0	Success	0.085	4.80498	0.0000 %		4.80498	2011-01-20 16:00:24	Shoots: 30720
shotgun_smart_atomic_trace	4	10.0	Success	0.047	4.80498	0.0000 %		4.80498	2011-01-20 16:00:24	Shoots: 30720
shotgun_smart_atomic_trace	8	10.0	Success	0.036	4.80498	0.0000 %		4.80498	2011-01-20 16:00:24	Shoots: 30720
FPC_AS	basic	10.0	Success	0.157053	4.80498	0.0000 %		4.80498	2010-09-02 10:44:39	
GPSR_BB	basic	10.0	Success	0.177002	4.80498	0.0000 %		4.80498	2010-09-02 10:44:54	
L1_LS	basic	10.0	Success	0.166032	4.80498	0.0000 %		4.80498	2010-09-02 10:44:44	
SpaRSA	basic	10.0	Success	0.176854	4.80498	0.0000 %		4.80498	2010-09-02 10:44:59	
SpaRSA	maxiter_1e6	10.0	Success	0.228133	4.80498	0.0000 %		4.80498	2010-09-02 10:44:35	
Hard_I0	basic	10.0	Disqualified	0.090874	199.958	0.7812 %	19.9958		2010-10-09 23:26:33	iters: 6 conv: -1 err_mse: 5.7742e-10 iter_time: 0.074216

SparcoProblem702.mat

n (# of data points)	m (# of features)	% of non-zeros	Comments
16384	16384	99.6335	

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
Hard_I0	basic	0.5	145.217
Hard_I0	basic	10.0	1092.94

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
SMIDAS	basic	0.5	timeout						2010-10-22 23:17:45	4800 secs
Hard_I0	basic	0.5	Success	145.217	44.8743	0.5005 %	85.9757	1.88643	2010-09-10 21:03:29	iters: 52 conv: -1 err_mse: 0.00011514 iter_time: 145.1987
SMIDAS	basic	10.0	timeout						2010-10-23 00:37:47	4800 secs

Hard_I0	basic	10.0	Success	1092.94	1779.67	9.9976 %	177.967	0.003825	2010-09-10 21:22:18	iters: 348 conv: -1 err_mse: 2.3345e-07 iter_time: 1092.8907
---------	-------	------	---------	---------	----------------	-------------	---------	----------	------------------------	---

SparcoProblem8.mat

Sign spikes, complex domain Sparco Toolbox <http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
600	2560	100.0	Sign spikes, complex domain
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
568.33	0.0285450	0.6379480	-0.0000160

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.034
shotgun_smart_atomic	8	10.0	0.038

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.262	4.2899	0.1172 %	0.234622	4.17259	2011-01-20 16:30:23	Shoots: 71680
shotgun_smart_atomic	trace 2	0.5	Success	0.064	4.2899	0.1172 %	0.234767	4.17252	2011-01-20 16:30:23	Shoots: 30720
shotgun_smart_atomic	trace 4	0.5	Success	0.041	4.2899	0.1172 %	0.234762	4.17252	2011-01-20 16:30:23	Shoots: 30720
shotgun_smart_atomic	trace 8	0.5	Success	0.034	4.2899	0.1172 %	0.234816	4.17249	2011-01-20 16:30:23	Shoots: 30720
FPC_AS	basic	0.5	Disqualified	0.629421	8.84758	0.0000 %		8.84758	2010-10-10 10:14:35	
GPSR_BB	basic	0.5	Disqualified	14.6608	57.3923	100.0000 %	114.73	0.027054	2010-10-10 10:14:53	
SCD	basic	0.5	Success	1.84624	4.29745	0.1172 %	0.000354	0.003581	2010-10-10 10:15:35	
SpaRSA	basic	0.5	Disqualified	14.0049	8.36919	0.7031 %	5.33994	5.69922	2010-10-10 10:14:31	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 10:15:39	errmsg=""
SpaRSA	maxiter_1e6	0.5	error=""						2010-09-02 12:17:23	errmsg=""
AMP	basic	0.5	Disqualified	2.2589	8.84758	0.0000		8.84758	2010-	sweeps: 77

						%			10-10 10:16:11	conv: 0 diverged: 1 lambda:
CoSaMP	basic	0.5	Disqualified	0.194809	9.44111	0.1172 %	4.67358	7.10432	2010- 10-10 17:35:09	iterations: 3 conv: -1 sparsity level: 0.0011719
Hard_I0	basic	0.5	Disqualified	0.119688	9.39614	0.1172 %	4.59448	7.0989	2010- 10-10 10:16:01	iters: 4 conv: -1 err_mse: 0.011831 iter_time: 0.10424
shotgun_smart_atomic trace	1	10.0	Success	0.093	4.29747	0.0000 %		4.29747	2011- 01-20 16:30:23	Shoots: 30720
shotgun_smart_atomic trace	2	10.0	Success	0.063	4.29747	0.0000 %		4.29747	2011- 01-20 16:30:23	Shoots: 30720
shotgun_smart_atomic trace	4	10.0	Success	0.042	4.29747	0.0000 %		4.29747	2011- 01-20 16:30:23	Shoots: 30720
shotgun_smart_atomic trace	8	10.0	Success	0.038	4.29747	0.0000 %		4.29747	2011- 01-20 16:30:23	Shoots: 30720
FPC_AS	basic	10.0	Disqualified	0.060699	8.84758	0.0000 %		8.84758	2010- 10-10 10:16:19	
GPSR_BB	basic	10.0	Disqualified	0.057966	8.84758	0.0000 %		8.84758	2010- 10-10 10:16:22	
SCD	basic	10.0	Success	1.98047	4.29748	0.0000 %		0.003581	2010- 10-10 10:17:04	
SpaRSA	basic	10.0	Disqualified	0.06341	8.84758	0.0000 %		8.84758	2010- 10-10 10:16:15	
SpaRSA	maxiter_1e6	10.0	error=""						2010- 10-10 10:17:08	errmsg=""
SpaRSA	maxiter_1e6	10.0	error=""						2010- 09-02 12:19:57	errmsg=""
AMP	basic	10.0	Disqualified	2.21078	8.84758	0.0000 %		8.84758	2010- 10-10 10:17:47	sweeps: 77 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	Disqualified	7.47862	282.843	0.7812 %	28.2843		2010- 10-10 17:35:20	iterations: 500 conv: - 1 sparsity level: 0.0078125
Hard_I0	basic	10.0	Disqualified	0.159215	282.815	0.7812 %	28.2815		2010- 10-10 10:17:37	iters: 6 conv: -1 err_mse: 4.7891e-10 iter_time: 0.14354

SparcoProblem9.mat

Blk signal with heavyside matrix Sparco Toolbox <http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePage>



n (# of data points)	m (# of features)	% of non-zeros	Comments
128	128	50.3906	Blk signal with heavyside matrix
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1-\text{ones})]/(d^2-d)$	$[(A)'(A)1-\text{ones}]/(d^2-d)$
2.44	0.7500000	0.7500000	0.7500000

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.03
shotgun_smart_atomic	1	10.0	0.017

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.03	19.9332	10.9375 %	38.7331	0.566615	2011-01-30 14:30:40	Shoots: 119808
shotgun_smart_atomic	trace 2	0.5	Success	0.067	19.9332	15.6250 %	38.7377	0.564349	2011-01-30 14:30:40	Shoots: 108288
shotgun_smart_atomic	trace 4	0.5	Success	0.067	19.9332	17.9688 %	38.7311	0.567636	2011-01-30 14:30:40	Shoots: 112128
shotgun_smart_atomic	trace 6	0.5	Success	0.071	19.9333	16.4062 %	38.7223	0.572087	2011-01-30 14:30:40	Shoots: 120960
shotgun_smart_atomic	trace 8	0.5	Success	0.086	19.9332	17.1875 %	38.7231	0.571686	2011-01-30 14:30:40	Shoots: 135040
FPC_AS	basic	0.5	Disqualified	1.07433	69.3339	100.0000 %	103.866	17.4011	2010-10-09 21:03:04	
GPSR_BB	basic	0.5	Disqualified	0.434624	30.7241	74.2188 %	36.4082	12.52	2010-10-09 21:02:57	
L1_LS	basic	0.5	Success	0.217939	19.9406	100.0000 %	38.7419	0.569618	2010-10-09 21:03:12	
SCD	basic	0.5	Disqualified	0.101332	55.3756	71.0938 %	31.6191	0.154555	2010-10-09 21:03:08	
SMIDAS	basic	0.5	Disqualified	0.282979	310.828	88.2812 %	4.24991	1.20587	2010-10-24 10:31:20	
SpaRSA	basic	0.5	Close	0.380704	20.5247	89.0625 %	38.2797	1.3849	2010-10-09 21:02:50	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-09 21:03:00	errmsg=""
SpaRSA	maxiter_1e6	0.5	Success	0.717391	19.9485	59.3750 %	38.6277	0.634603	2010-09-06 12:10:48	
AMP	basic	0.5	Disqualified	0.08197	773.26	0.0000 %		773.26	2010-10-09 21:03:36	sweeps: 1 conv: 0 diverged: 1

										lambda:
CoSaMP	basic	0.5	Close	0.205227	20.5002	10.1562 %	41.0004	3.4e-05	2010-10-10 17:32:49	iterations: 6 conv: -1 sparsity level: 0.10156
Hard_I0	basic	0.5	Disqualified	0.617618	87.2138	10.1562 %	20.453	76.9874	2010-10-09 23:16:01	iters: 1000 conv: -1 err_mse: 0.60146 iter_time: 0.61366
shotgun_smart_atomic trace	1	10.0	Success	0.017	232.208	7.8125 %	12.1813	110.395	2011-01-30 14:30:40	Shoots: 82944
shotgun_smart_atomic trace	2	10.0	Success	0.021	232.208	14.0625 %	12.1825	110.383	2011-01-30 14:30:40	Shoots: 65152
shotgun_smart_atomic trace	4	10.0	Success	0.03	232.208	12.5000 %	12.182	110.389	2011-01-30 14:30:40	Shoots: 78976
shotgun_smart_atomic trace	6	10.0	Success	0.034	232.208	14.0625 %	12.1783	110.426	2011-01-30 14:30:40	Shoots: 84864
shotgun_smart_atomic trace	8	10.0	Success	0.039	232.208	16.4062 %	12.1796	110.412	2011-01-30 14:30:40	Shoots: 91008
FPC_AS	basic	10.0	Disqualified	1.47754	16836.6	98.4375 %	1130.47	5531.92	2010-10-09 21:03:56	
GPSR_BB	basic	10.0	Success	0.486272	236.413	19.5312 %	11.8323	118.09	2010-10-09 21:03:48	
L1_LS	basic	10.0	Success	0.156399	232.254	100.0000 %	12.2109	110.145	2010-10-09 21:04:03	
SCD	basic	10.0	Close	0.098257	239.573	17.9688 %	11.7496	0.476865	2010-10-09 21:03:59	
SMIDAS	basic	10.0	Disqualified	0.292456	353.075	86.7188 %	4.17653	1.21605	2010-10-24 10:31:24	
SpaRSA	basic	10.0	Close	0.351972	253.052	10.1562 %	12.0002	133.05	2010-10-09 21:03:40	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-09 21:03:51	errmsg=""
SpaRSA	maxiter_1e6	10.0	Success	0.471558	232.215	35.9375 %	12.1692	110.523	2010-09-06 12:11:12	
AMP	basic	10.0	Disqualified	0.071803	773.26	0.0000 %		773.26	2010-10-09 21:04:28	sweeps: 1 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	Disqualified	0.664607	358.985	7.0312 %	32.2362	36.6227	2010-10-10 17:32:53	iterations: 500 conv: -1 sparsity level: 0.070312
Hard_I0	basic	10.0	Close	0.259512	258.243	7.0312 %	14.2797	115.446	2010-10-09 23:16:05	iters: 572 conv: -1 err_mse: 0.90192 iter_time: 0.24307

SparcoProblem902.mat

Jitteren Sampling of Cosine Wave Sparco Toolbox

<http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco>



n (# of data points)	m (# of features)	% of non-zeros	Comments
200	1000	99.989	Jitteren Sampling of Cosine Wave

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	6	0.5	0.001
shotgun_smart_atomic	4	10.0	0.001

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	x _0/m	x _1	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.005	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shoots: 7000
shotgun_smart_atomic	trace 2	0.5	Success	0.002	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shoots: 7000
shotgun_smart_atomic	trace 4	0.5	Success	0.002	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shoots: 7000
shotgun_smart_atomic	trace 6	0.5	Success	0.001	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shoots: 7000
shotgun_smart_atomic	trace 8	0.5	Success	0.002	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shoots: 7000
FPC_AS	basic	0.5	Success	0.081841	0.224866	0.0000 %		0.224866	2010-10-10 20:40:47	
GPSR_BB	basic	0.5	Success	0.784788	0.224866	0.0000 %		0.224866	2010-10-10 20:40:09	
L1_LS	basic	0.5	Success	0.066796	0.224866	0.0000 %		0.224866	2010-10-10 20:40:40	
SCD	basic	0.5	Success	0.553145	0.224866	0.0000 %		0.000562	2010-10-10 20:40:27	
SMIDAS	basic	0.5	Success	2.49911	0.224866	0.0000 %		0.000562	2010-10-24 11:17:00	
SpaRSA	basic	0.5	Success	0.064499	0.224866	0.0000 %		0.224866	2010-10-10 20:40:36	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-10 20:40:43	errmsg=""
AMP	basic	0.5	Success	0.304119	0.224866	0.0000 %		0.224866	2010-10-10 20:42:05	sweeps: 45 conv: 0 diverged: 1 lambda:

CoSaMP	basic	0.5	Disqualified	56.959	2.77848	13.4000 %	5.52982	0.01357	2010-10-10 20:41:57	iterations: 500 conv: -1 sparsity level: 0.134
Hard_I0	basic	0.5	Disqualified	1.59065	1.83993	13.4000 %	3.67973	6.3e-05	2010-10-10 20:40:57	iters: 423 conv: -1 err_mse: 3.135e-07 iter_time: 1.5537
shotgun_smart_atomic trace	1	10.0	Success	0.005	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shots: 7000
shotgun_smart_atomic trace	2	10.0	Success	0.002	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shots: 7000
shotgun_smart_atomic trace	4	10.0	Success	0.001	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shots: 7000
shotgun_smart_atomic trace	6	10.0	Success	0.001	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shots: 7000
shotgun_smart_atomic trace	8	10.0	Success	0.002	0.224866	0.0000 %		0.224866	2011-01-30 13:00:39	Shots: 7000
FPC_AS	basic	10.0	Success	0.058429	0.224866	0.0000 %		0.224866	2010-10-10 20:42:43	
GPSR_BB	basic	10.0	Success	0.042864	0.224866	0.0000 %		0.224866	2010-10-10 20:42:09	
L1_LS	basic	10.0	Success	0.034963	0.224866	0.0000 %		0.224866	2010-10-10 20:42:36	
SCD	basic	10.0	Success	0.41387	0.224866	0.0000 %		0.000562	2010-10-10 20:42:25	
SpaRSA	basic	10.0	Success	0.048202	0.224866	0.0000 %		0.224866	2010-10-10 20:42:32	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-10 20:42:39	errmsg=""
AMP	basic	10.0	Success	0.140694	0.224866	0.0000 %		0.224866	2010-10-10 20:43:03	sweeps: 45 conv: 0 diverged: 1 lambda:
CoSaMP	basic	10.0	Disqualified	1.59079	88.2256	50.0000 %	8.82222	0.003399	2010-10-10 20:42:56	iterations: 2 conv: -1 sparsity level: 0.5
Hard_I0	basic	10.0	Disqualified	0.052608	93.8667	50.0000 %	9.38667		2010-10-10 20:42:50	iters: 13 conv: -1 err_mse: 1.0322e-09 iter_time: 0.037094

SparcoProblem903.mat

Sparse Spike Deconvolution Sparco Toolbox

<http://www.cs.ubc.ca/labs/scl/sparco/index.php/Main/HomePageSparcSparco>



n (# of data points)	m (# of features)	% of non-zeros	Comments
1024	1024	96.824	Sparse Spike Deconvolution

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	1.709
shotgun_smart_atomic	8	10.0	1.418

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	3.731	6.45566	6.8359 %	12.8714	0.019949	2011-01-30 14:30:40	Shots: 923648
shotgun_smart_atomic	trace 2	0.5	Success	3.972	6.45568	6.8359 %	12.8714	0.019966	2011-01-30 14:30:40	Shots: 923648
shotgun_smart_atomic	trace 4	0.5	Success	2.585	6.45569	7.1289 %	12.8715	0.019936	2011-01-30 14:30:40	Shots: 916480
shotgun_smart_atomic	trace 6	0.5	Success	2.075	6.45565	7.1289 %	12.8715	0.019891	2011-01-30 14:30:41	Shots: 948224
shotgun_smart_atomic	trace 8	0.5	Success	1.709	6.45566	7.0312 %	12.8715	0.019919	2011-01-30 14:30:41	Shots: 934912
FPC_AS	basic	0.5	Disqualified	13.4917	10.4351	22.9492 %	17.8487	1.51073	2010-10-09 22:34:52	
GPSR_BB	basic	0.5	Disqualified	11.4757	10.3924	11.5234 %	12.916	3.93443	2010-10-09 22:34:35	
L1_LS	basic	0.5	Success	19.7906	6.45768	100.0000 %	12.8734	0.021002	2010-10-09 22:37:00	
SCD	basic	0.5	error="MATLAB:badsubscript"						2010-10-09 21:14:06	errmsg="Attempted to access out2(1); index out of bounds becau
SCD	basic	0.5	error="MATLAB:badsubscript"						2010-10-09 22:37:47	errmsg="Attempted to access out2(1); index out of bounds becau
SMIDAS	basic	0.5	Disqualified	-1.0	- 100000.0	- 9765.6250 %	- 100000.0	- 100000.0	2010-10-22 21:51:13	SCD can not work with data matrix with values outside the range [-1,1]
SpaRSA	basic	0.5	Close	11.5447	7.02157	20.1172 %	12.887	0.578057	2010-10-09 22:37:16	
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-09 21:11:34	errmsg=""
SpaRSA	maxiter_1e6	0.5	error=""						2010-10-09 22:34:56	errmsg=""
SpaRSA	maxiter_1e6	0.5	error=""						2010-09-05 14:50:53	errmsg=""
AMP	basic	0.5	Disqualified	0.12611	3274.12	0.0000 %		3274.12	2010-	sweeps: 1 conv: 0

									10-09 22:38:07	diverged: 1 lambda:
Hard_I0	basic	0.5	Disqualified	4.85999	411.107	0.4883 %	8.1586	407.028	2010-10-09 22:37:59	iters: 93 conv: -1 err_mse: 0.39749 iter_time: 4.8424
shotgun_smart_atomic trace	1	10.0	Success	4.011	122.001	5.9570 %	11.6338	5.66248	2011-01-30 14:30:40	Shoots: 1068032
shotgun_smart_atomic trace	2	10.0	Success	3.119	122.001	5.9570 %	11.6338	5.66249	2011-01-30 14:30:40	Shoots: 1068032
shotgun_smart_atomic trace	4	10.0	Success	1.909	122.001	5.8594 %	11.634	5.66061	2011-01-30 14:30:41	Shoots: 1026048
shotgun_smart_atomic trace	6	10.0	Success	1.489	122.001	5.8594 %	11.6343	5.65803	2011-01-30 14:30:41	Shoots: 989184
shotgun_smart_atomic trace	8	10.0	Success	1.418	122.001	5.9570 %	11.634	5.66085	2011-01-30 14:30:41	Shoots: 1051648
FPC_AS	basic	10.0	Disqualified	13.2105	640.484	17.2852 %	51.6211	124.273	2010-10-09 22:39:00	
GPSR_BB	basic	10.0	Close	11.6364	124.924	8.1055 %	11.598	8.94389	2010-10-09 22:38:43	
L1_LS	basic	10.0	Success	5.81828	122.055	100.0000 %	11.6385	5.67027	2010-10-09 22:40:53	
SCD	basic	10.0	error="MATLAB:badsubscript"						2010-10-09 21:16:55	errmsg="Attempted to access out2(1); index out of bounds becau
SCD	basic	10.0	error="MATLAB:badsubscript"						2010-10-09 22:41:40	errmsg="Attempted to access out2(1); index out of bounds becau
SMIDAS	basic	10.0	Disqualified	-1.0	- 100000.0	- 9765.6250 %	- 100000.0	- 100000.0	2010-10-22 21:51:17	SCD can not work with data matrix with values outside the range [-1,1]
SpaRSA	basic	10.0	Success	11.5637	122.302	8.7891 %	11.6339	5.96231	2010-10-09 22:41:08	
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-09 21:14:42	errmsg=""
SpaRSA	maxiter_1e6	10.0	error=""						2010-10-09 22:39:04	errmsg=""
SpaRSA	maxiter_1e6	10.0	error=""						2010-09-05 14:53:10	errmsg=""
AMP	basic	10.0	Disqualified	0.083147	3274.12	0.0000 %		3274.12	2010-10-09 22:42:09	sweeps: 1 conv: 0 diverged: 1 lambda:
Hard_I0	basic	10.0	Close	13.6474	140.025	9.9609 %	13.6174	3.85122	2010-10-09 22:42:01	iters: 617 conv: -1 err_mse: 0.003761 iter_time: 13.624

testphoto05_12_12.mat

(anonymized) @ , compressed imaging datasets with very sparse binary random measurement matrices

n (# of data points)	m (# of features)	% of non-zeros	Comments
477	954	7.2797	
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(A)'(\text{abs}(A)1)\text{-ones}]/(d^2-d)$	$[(A)'((A)1)\text{-ones}]/(d^2-d)$
168.42	0.0347790	0.0725210	-0.0002220

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	1	0.5	0.035
shotgun_smart_atomic	1	10.0	0.004

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	trace 1	0.5	Success	0.035	89.4828	52.5157 %	176.974	0.995642	2011-01-30 14:00:33	Shoots: 144054
shotgun_smart_atomic	trace 2	0.5	Success	0.143	89.4894	51.7820 %	177.009	0.984752	2011-01-30 14:00:33	Shoots: 159318
shotgun_smart_atomic	trace 4	0.5	Success	0.116	89.5249	52.8302 %	177.06	0.994937	2011-01-30 14:00:33	Shoots: 180306
shotgun_smart_atomic	trace 6	0.5	Success	0.113	89.502	51.5723 %	177.046	0.979282	2011-01-30 14:00:34	Shoots: 194616
shotgun_smart_atomic	trace 8	0.5	Success	0.098	89.5351	51.7820 %	177.09	0.990378	2011-01-30 14:00:34	Shoots: 170766
FPC_AS	basic	0.5	Success	1.16064	90.3033	64.5702 %	177.989	1.30904	2010-07-29 18:33:08	
GPSR_BB	basic	0.5	Success	0.510958	89.6341	52.2013 %	177.279	0.994396	2010-07-29 18:33:12	
L1_LS	basic	0.5	Success	0.630062	89.4195	100.0000 %	176.911	0.964135	2010-07-29 18:33:16	
SMIDAS	basic	0.5	error="MATLAB:badsubscript"						2010-10-23 19:12:47	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	0.5	Success	0.213797	89.715	55.0314 %	177.437	0.996538	2010-07-29 18:33:20	
SpaRSA	maxiter_1e6	0.5	Success	0.219829	89.715	55.0314 %	177.437	0.996538	2010-07-29 18:33:24	
AMP	basic	0.5	Disqualified	0.046739	11454.8	0.0000 %		11454.8	2010-11-05 23:20:57	sweeps: 22 conv: 0 diverged: 1 sparsity: 1
CoSaMP	basic	0.5	Disqualified	0.512311	408.601	50.0000 %	241.088	288.057	2010-11-05 23:19:15	iterations: 2 conv: -1 sparsity level: 1
Hard_I0	basic	0.5	Disqualified	0.05671	147.915	100.0000 %	295.704	0.062981	2010-11-05 23:10:42	iters: 46 conv: -0.95788 err_mse: 0.00013204 iter_time: 0.040459 sparsity 1

shotgun_smart_atomic trace	1	10.0	Success	0.004	1572.31	26.8344 %	141.526	157.053	2011-01-30 14:00:33	Shoots: 19080
shotgun_smart_atomic trace	2	10.0	Success	0.01	1572.31	26.9392 %	141.523	157.08	2011-01-30 14:00:33	Shoots: 19080
shotgun_smart_atomic trace	4	10.0	Success	0.009	1572.31	26.8344 %	141.51	157.213	2011-01-30 14:00:33	Shoots: 23850
shotgun_smart_atomic trace	6	10.0	Success	0.011	1572.31	26.8344 %	141.506	157.253	2011-01-30 14:00:34	Shoots: 28620
shotgun_smart_atomic trace	8	10.0	Success	0.011	1572.31	26.7296 %	141.511	157.2	2011-01-30 14:00:34	Shoots: 27666
FPC_AS	basic	10.0	Success	0.224425	1572.31	26.7296 %	141.521	157.103	2010-07-29 18:33:29	
GPSR_BB	basic	10.0	Success	0.096839	1572.32	26.7296 %	141.504	157.282	2010-07-29 18:33:33	
L1_LS	basic	10.0	Success	0.180876	1572.56	100.0000 %	141.63	156.263	2010-07-29 18:33:36	
SMIDAS	basic	10.0	error="MATLAB:badsubscript"						2010-10-23 19:12:52	errmsg="Attempted to access out2(1); index out of bounds becau
SpaRSA	basic	10.0	Success	0.095189	1572.31	26.9392 %	141.516	157.148	2010-07-29 18:33:40	
SpaRSA	maxiter_1e6	10.0	Success	0.101494	1572.31	26.9392 %	141.516	157.148	2010-07-29 18:33:44	
AMP	basic	10.0	Disqualified	0.097721	11454.8	0.0000 %		11454.8	2010-11-05 23:21:01	sweeps: 80 conv: 0 diverged: 1 sparsity: 0.2673
CoSaMP	basic	10.0	Disqualified	44.3961	2543.39	26.7296 %	194.521	598.185	2010-11-05 23:20:03	iterations: 500 conv: -1 sparsity level: 0.2673
Hard_I0	basic	10.0	Maybe	0.118559	1863.58	26.7296 %	182.868	34.8971	2010-11-05 23:10:54	iters: 93 conv: -1 err_mse: 0.07316 iter_time: 0.1017 sparsity 0.2673

uniform_random_projection1K_3K.mat

Uniform Random Projection Arian Maleki

n (# of data points)	m (# of features)	% of non-zeros	Comments
1000	3000	100.0	Uniform Random Projection
Shotgun P	Average absolute non-diag A'A	$[\text{abs}(\mathbf{A})'(\text{abs}(\mathbf{A})\mathbf{1})-\text{ones}]/(d^2-d)$	$[(\mathbf{A})'((\mathbf{A})\mathbf{1})-\text{ones}]/(d^2-d)$
999.70	0.0206110	0.6373980	0.0006670

Hall of fame:

Algorithm	Configuration	Lambda	Time sec
shotgun_smart_atomic	8	0.5	0.032
GPSR_BB	basic	10.0	0.043822
FPC_AS	basic	100.0	0.063347

Detailed results

Algorithm	Configuration	Lambda	Result	Time sec	Objective	$\ x\ _0/m$	$\ x\ _1$	L2err	Updated	Notes
shotgun_smart_atomic	1	0.5	Success	0.076	17.451	1.3333 %	29.8041	2.54894	2010-10-11 05:45:28	Shots: 18000
shotgun_smart_atomic	2	0.5	Success	0.049	17.451	1.3333 %	29.8041	2.54894	2010-10-11 05:45:28	Shots: 18040
shotgun_smart_atomic	4	0.5	Success	0.036	17.451	1.3333 %	29.8041	2.54895	2010-10-11 05:45:28	Shots: 18042
shotgun_smart_atomic	8	0.5	Success	0.032	17.451	1.3333 %	29.8043	2.54888	2010-10-11 05:45:29	Shots: 18040
FPC_AS	basic	0.5	Success	0.242141	17.451	1.3333 %	29.8023	2.54986	2010-10-10 20:57:12	
AMP	basic	0.5	Close	1.13529	19.998	1.3333 %	39.9961		2010-11-05 21:48:06	sweeps: 24 conv: 1 diverged: 0 lambda:
CoSaMP	basic	0.5	Close	9.80763	20.0	1.3333 %	40.0		2010-11-05 21:47:39	iterations: 500 conv: -1 sparsity level: 0.013333
Hard_I0	basic	0.5	Close	0.160065	19.9986	1.3333 %	39.9972	1e-06	2010-11-05 21:48:30	iters: 6 conv: -1 err_mse: 1.0547e-09 iter_time: 0.14294 sparsity 0.013333
shotgun_smart_atomic trace	1	10.0	Success	0.258	40.1959	0.0000 %		40.1959	2011-01-30 14:30:41	Shots: 39000
shotgun_smart_atomic trace	2	10.0	Success	0.098	40.1959	0.0000 %		40.1959	2011-01-30 14:30:41	Shots: 39000
shotgun_smart_atomic trace	4	10.0	Success	0.069	40.1959	0.0000 %		40.1959	2011-01-30 14:30:41	Shots: 39000
shotgun_smart_atomic trace	6	10.0	Success	0.064	40.1959	0.0000 %		40.1959	2011-01-30 14:30:41	Shots: 39000
shotgun_smart_atomic trace	8	10.0	Success	0.061	40.1959	0.0000 %		40.1959	2011-01-30 14:30:41	Shots: 39000
FPC_AS	basic	10.0	Success	0.214024	40.1959	0.0000 %		40.1959	2011-01-29 22:01:01	exit status zero is optimal iter 0 obj: Inf
GPSR_BB	basic	10.0	Success	0.043822	40.1959	0.0000 %		40.1959	2011-01-29 21:59:35	
L1_LS	basic	10.0	Success	0.092446	40.1959	0.0000 %		40.1959	2011-01-29 21:58:07	
SCD	basic	10.0	Success	3.33848	40.1958	0.0000 %		0.020098	2011-01-29 21:59:27	
SMIDAS	basic	10.0	Success	11.4082	40.648	0.5333 %	4e-05	0.020324	2011-01-29 22:00:57	

SpaRSA	basic	10.0	Success	0.201727	40.1959	0.0000 %	40.1959	2011-01-29 21:58:03	
SpaRSA	maxiter_1e6	10.0	error="MATLAB:TooManyInputs"					2011-01-29 21:58:17	errmsg="Error using => wrapper_sparsa_highiter
AMP	basic	10.0	Success	15.6024	40.1959	0.0000 %	40.1959	2011-01-29 22:01:30	sweeps: 500 conv: 0 diverged: 0 sparsity: 0
CoSaMP	basic	10.0	Success	0.255774	40.1959	0.0000 %	40.1959	2011-01-29 22:01:10	iterations: 1 conv: -1 sparsity level: 0
Hard_l0	basic	10.0	Success	0.101582	40.1959	0.0000 %	40.1959	2011-01-29 22:01:05	iters: 2 conv: -1 err_mse: 0.040196 iter_time: 0.05315 sparsity 0
FPC_AS	basic	100.0	Success	0.063347	40.1959	0.0000 %	40.1959	2010-10-10 21:02:04	