Evaluation of AI-based Sudoku Solvers

March 22, 2022

1 Sudoku solvers dimension/difficulty/time/accuracy comparison

1.1 case-to-case

	dimension	difficulty	average time	average time variance	variance of time variance batches
0	2	100	3.197900e-05	1.995972e-09	3.252023e-17
1	2	10	4.570091e-06	9.407751e-11	4.123022e-19
2	2	20	1.084382e-05	1.188260e-10	4.137017e-20
3	2	30	1.060409e-05	6.458871e-10	1.658300e-17
4	2	40	1.178555e-05	1.405210e-10	3.012390e-20
5	2	50	1.434109e-05	2.428281e-10	3.458247e-19
6	2	60	1.645064e-05	1.810980e-10	4.973509e-20
7	2	70	1.909609e-05	1.930976e-10	4.787027e-20
8	2	80	2.027645e-05	1.549995e-10	2.427461e-20
9	2	90	2.147527e-05	1.774975e-10	3.141536e-20
10	3	100	3.807174e-01	8.644583e-01	3.517876e+00
11	3	10	3.840827e-05	1.954886e-08	1.395091e-14
12	3	20	6.532182e-05	3.970475e-08	2.018022e-14
13	3	30	8.818191e-05	2.004970e-08	5.076971e-15
14	3	40	2.101705e-04	1.150434e-07	4.615942e-14
15	3	50	8.476805e-04	8.340695e-06	1.617445e-09
16	3	60	6.755691e-03	5.679839e-04	5.400615e-06
17	3	70	3.670816e-02	2.426841e-02	1.968326e-02
18	3	80	1.393438e-01	1.149047e+00	7.631741e+01
19	3	90	3.147635e-01	4.717674e+00	1.355560e+03

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
0	2	100	1.0	0.0	0.0
1	2	10	1.0	0.0	0.0
2	2	20	1.0	0.0	0.0
3	2	30	1.0	0.0	0.0
4	2	40	1.0	0.0	0.0
5	2	50	1.0	0.0	0.0
6	2	60	1.0	0.0	0.0
7	2	70	1.0	0.0	0.0
8	2	80	1.0	0.0	0.0
9	2	90	1.0	0.0	0.0
10	3	100	1.0	0.0	0.0
11	3	10	1.0	0.0	0.0
12	3	20	1.0	0.0	0.0
13	3	30	1.0	0.0	0.0
14	3	40	1.0	0.0	0.0
15	3	50	1.0	0.0	0.0
16	3	60	1.0	0.0	0.0
17	3	70	1.0	0.0	0.0
18	3	80	1.0	0.0	0.0
19	3	90	1.0	0.0	0.0

1.2 case-to-group

	dimension	difficulty	average time	average time variance	variance of time variance batches
20	2	100	3.751864e-05	1.787772e-09	8.468738e-18
21	2	10	5.582182e-06	1.180510e-10	6.451244e-19
22	2	20	8.406636e-06	8.837887e-11	9.620037e-21
23	2	30	8.157636e-06	6.247442e-11	7.825577e-21
24	2	40	1.380218e-05	4.226388e-10	4.176757e-19
25	2	50	1.709755e-05	3.449336e-10	1.433393e-19
26	2	60	1.823382e-05	4.745888e-10	4.732453e-19
27	2	70	2.867636e-05	8.497426e-09	2.375270e-15
28	2	80	3.052745e-05	7.897957e-09	2.798571e-15
29	2	90	2.836082e-05	9.010315e-10	7.135540e-19
30	3	100	1.381165e-01	8.859070e-02	2.193613e-02
31	3	10	2.629800e-05	1.493400e-08	5.941529e-15
32	3	20	4.156027e-05	1.177730e-08	4.988626e-15
33	3	30	5.355782e-05	2.281463e-08	8.720772e-15
34	3	40	1.092791e-04	5.818732e-08	2.407922e-14
35	3	50	3.706555e-04	8.309723e-07	6.386459e-12
36	3	60	3.092190e-03	1.393108e-04	1.938070e-07
37	3	70	1.643371e-02	4.725806e-03	2.304641e-04
38	3	80	5.047678e-02	7.910346e-02	2.696185e-01
39	3	90	1.025226e-01	7.783331e-02	2.262000e-02

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
20	2	100	1.0	0.0	0.0
21	2	10	1.0	0.0	0.0
22	2	20	1.0	0.0	0.0
23	2	30	1.0	0.0	0.0
24	2	40	1.0	0.0	0.0
25	2	50	1.0	0.0	0.0
26	2	60	1.0	0.0	0.0
27	2	70	1.0	0.0	0.0
28	2	80	1.0	0.0	0.0
29	2	90	1.0	0.0	0.0
30	3	100	1.0	0.0	0.0
31	3	10	1.0	0.0	0.0
32	3	20	1.0	0.0	0.0
33	3	30	1.0	0.0	0.0
34	3	40	1.0	0.0	0.0
35	3	50	1.0	0.0	0.0
36	3	60	1.0	0.0	0.0
37	3	70	1.0	0.0	0.0
38	3	80	1.0	0.0	0.0
39	3	90	1.0	0.0	0.0

1.3 constraint

	dimension	difficulty	average time	average time variance	variance of time variance batches
40	2	100	7.851491e-05	4.760183e-09	8.310824e-17
41	2	10	4.439000e-06	8.457565e-11	3.606529e-19
42	2	20	7.344636e-06	4.484229e-11	1.244253e-20
43	2	30	1.395945e-05	1.683576e-10	2.794096e-20
44	2	40	1.620627e-05	2.602796e-10	1.896545e-19
45	2	50	2.863591e-05	6.760083e-10	4.260717e-19
46	2	60	3.733055e-05	9.752718e-10	5.373389e-19
47	2	70	4.949509e-05	1.595064e-09	2.398877e-18
48	2	80	6.663064e-05	1.167890e-08	5.270683e-15
49	2	90	8.967600e-05	4.182103e-08	5.653419e-14
50	3	100	1.270792e+00	1.004521e+01	5.629204e+02
51	3	10	3.278491e-05	8.969099e-09	5.993516e-15
52	3	20	8.833382e-05	3.586370e-08	1.869717e-14
53	3	30	1.905037e-04	6.209887e-08	3.475744e-14
54	3	40	4.994155e-04	5.824538e-07	2.156938e-12
55	3	50	2.314155e-03	2.649780e-05	2.923061e-09
56	3	60	2.656989e-02	1.418309e-02	3.426414e-03
57	3	70	1.418433e-01	3.449985e-01	1.313995e+00
58	3	80	3.634747e-01	1.175323e+00	8.326358e+00
59	3	90	1.125888e+00	3.658195e+01	6.274428e+04

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
40	2	100	1.0	0.0	0.0
41	2	10	1.0	0.0	0.0
42	2	20	1.0	0.0	0.0
43	2	30	1.0	0.0	0.0
44	2	40	1.0	0.0	0.0
45	2	50	1.0	0.0	0.0
46	2	60	1.0	0.0	0.0
47	2	70	1.0	0.0	0.0
48	2	80	1.0	0.0	0.0
49	2	90	1.0	0.0	0.0
50	3	100	1.0	0.0	0.0
51	3	10	1.0	0.0	0.0
52	3	20	1.0	0.0	0.0
53	3	30	1.0	0.0	0.0
54	3	40	1.0	0.0	0.0
55	3	50	1.0	0.0	0.0
56	3	60	1.0	0.0	0.0
57	3	70	1.0	0.0	0.0
58	3	80	1.0	0.0	0.0
59	3	90	1.0	0.0	0.0

1.4 crook

	dimension	difficulty	average time	average time variance	variance of time variance batches
60	2	100	3.485426e-04	7.007291e-08	4.215430e-14
61	2	10	4.684827e-05	3.102518e-09	3.635124e-16
62	2	20	8.444191e-05	2.755609e-08	1.066922e-14
63	2	30	1.019970e-04	1.300020e-08	4.770783e-15
64	2	40	1.458030e-04	2.722830e-08	1.293661e-14
65	2	50	2.342067e-04	5.387052e-08	3.114637e-14
66	2	60	2.340855e-04	4.552018e-08	1.694189e-14
67	2	70	2.768937e-04	4.837813e-08	2.055781e-14
68	2	80	3.160370e-04	5.452490e-08	1.910913e-14
69	2	90	3.472320e-04	6.153950e-08	3.307394e-14
70	3	100	7.779032e-03	1.054603e-05	1.256439e-10
71	3	10	7.186160e-04	3.601245e-07	7.291792e-13
72	3	20	1.442408e-03	8.784801e-07	3.347611e-12
73	3	30	2.334052e-03	1.784336e-06	1.096113e-11
74	3	40	3.288498e-03	2.420678e-06	1.519907e-11
75	3	50	4.293442e-03	3.306209e-06	2.108177e-11
76	3	60	5.200511e-03	4.410746e-06	3.328452e-11
77	3	70	6.139156e-03	5.649841e-06	3.233010e-11
78	3	80	6.907602e-03	8.322350e-06	9.740410e-11
79	3	90	7.974403e-03	1.978145e-05	2.775283e-09

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
60	2	100	1.0	0.0	0.0
61	2	10	1.0	0.0	0.0
62	2	20	1.0	0.0	0.0
63	2	30	1.0	0.0	0.0
64	2	40	1.0	0.0	0.0
65	2	50	1.0	0.0	0.0
66	2	60	1.0	0.0	0.0
67	2	70	1.0	0.0	0.0
68	2	80	1.0	0.0	0.0
69	2	90	1.0	0.0	0.0
70	3	100	1.0	0.0	0.0
71	3	10	1.0	0.0	0.0
72	3	20	1.0	0.0	0.0
73	3	30	1.0	0.0	0.0
74	3	40	1.0	0.0	0.0
75	3	50	1.0	0.0	0.0
76	3	60	1.0	0.0	0.0
77	3	70	1.0	0.0	0.0
78	3	80	1.0	0.0	0.0
79	3	90	1.0	0.0	0.0

1.5 faisceau

	dimension	difficulty	average time	average time variance	variance of time variance batches
80	2	100	3.206591e-05	3.658619e-10	4.117299e-18
81	2	10	8.370455e-06	2.894319e-11	1.288513e-21
82	2	20	1.254382e-05	2.599842e-10	7.160424e-19
83	2	30	1.353991e-05	5.064965e-11	2.629300e-21
84	2	40	1.613009e-05	5.778496e-11	3.409009e-21
85	2	50	2.586164e-05	3.424351e-10	6.276641e-20
86	2	60	2.471836e-05	3.764251e-10	3.843057e-18
87	2	70	2.818627e-05	2.842959e-10	1.816170e-19
88	2	80	3.767591e-05	1.885091e-08	9.826446e-15
89	2	90	3.609973e-05	9.479194e-10	2.141798e-17
90	3	100	5.037241e-04	1.102286e-07	4.175570e-14
91	3	10	5.694555e-05	9.314082e-09	2.863684e-15
92	3	20	1.015015e-04	2.177059e-08	1.068839e-14
93	3	30	1.518856e-04	1.337649e-08	5.274122e-15
94	3	40	2.053995e-04	1.645299e-08	6.914552e-15
95	3	50	2.733927e-04	2.794805e-08	2.245015e-14
96	3	60	3.391094e-04	3.104487e-08	1.477195e-14
97	3	70	3.845261e-04	4.467515e-08	1.605564e-14
98	3	80	4.150456e-04	4.180906e-08	1.698773e-14
99	3	90	5.514976e-04	4.817938e-07	2.048060e-12

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
80	2	100	1.0	0.0	0.0
81	2	10	1.0	0.0	0.0
82	2	20	1.0	0.0	0.0
83	2	30	1.0	0.0	0.0
84	2	40	1.0	0.0	0.0
85	2	50	1.0	0.0	0.0
86	2	60	1.0	0.0	0.0
87	2	70	1.0	0.0	0.0
88	2	80	1.0	0.0	0.0
89	2	90	1.0	0.0	0.0
90	3	100	0.6746464646464653	0.018217211269699114	8.195272000087482e-05
91	3	10	1.0	0.0	0.0
92	3	20	1.0	0.0	0.0
93	3	30	1.0	0.0	0.0
94	3	40	1.0	0.0	0.0
95	3	50	0.9917508417508419	0.001961436915608245	8.883237541906316e-06
96	3	60	0.94983164983165	0.009881468381281277	3.0628116123183476e-05
97	3	70	0.8439169472502803	0.023802994529406908	7.760595040302534e-05
98	3	80	0.7554769921436589	0.02285014139398719	5.675877712800412e-05
99	3	90	0.715432098765433	0.02202494769367195	0.00011382133172673386

1.6 hill-climbing

	dimension	difficulty	average time	average time variance	variance of time variance batches
100	2	100	4.863472e-03	2.462494e-05	4.143338e-10
101	2	10	2.700478e-04	5.519840e-08	2.666400e-14
102	2	20	3.071243e-04	3.856070e-08	1.129453e-14
103	2	30	4.240999e-04	1.496397e-07	5.997353e-14
104	2	40	5.577353e-04	3.431768e-07	1.413932e-12
105	2	50	1.050133e-03	1.543857e-06	4.734190e-12
106	2	60	1.523543e-03	4.015525e-06	8.454351e-11
107	2	70	2.459293e-03	8.302870e-06	1.206870e-10
108	2	80	3.462007e-03	1.676510e-05	5.904610e-10
109	2	90	4.614376e-03	5.858610e-05	4.485364e-08
110	3	10	3.433617e-03	1.579205e-05	2.416318e-09
111	3	20	1.333341e-02	2.852342e-04	7.985190e-07

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
100	2	100	1.0	0.0	0.0
101	2	10	1.0	0.0	0.0
102	2	20	1.0	0.0	0.0
103	2	30	1.0	0.0	0.0
104	2	40	1.0	0.0	0.0
105	2	50	1.0	0.0	0.0
106	2	60	1.0	0.0	0.0
107	2	70	1.0	0.0	0.0
108	2	80	1.0	0.0	0.0
109	2	90	1.0	0.0	0.0
110	3	10	1.0	0.0	0.0
111	3	20	1.0	0.0	0.0

1.7 linear

	dimension	difficulty	average time	average time variance	variance of time variance batches
112	2	100	2.613482e-02	4.024005e-06	1.746227e-11
113	2	10	2.598508e-02	4.994272e-06	4.074611e-11
114	2	20	2.588916e-02	4.499788e-06	2.535383e-11
115	2	30	2.599286e-02	4.863600e-06	2.121620e-11
116	2	40	2.581488e-02	3.900220e-06	1.857805e-11
117	2	50	2.587290e-02	4.321807e-06	2.451576e-11
118	2	60	2.589363e-02	4.122540e-06	2.351603e-11
119	2	70	2.606445e-02	4.496012e-06	2.870173e-11
120	2	80	2.592215e-02	4.085562e-06	3.496243e-11
121	2	90	2.602893e-02	5.572752e-06	3.235440e-10
122	3	100	9.085551e-02	4.137525e-05	1.678414e-10
123	3	10	7.700013e-02	3.204976e-05	8.077971e-11
124	3	20	7.700124e-02	3.146147e-05	9.874291e-11
125	3	30	7.727492e-02	5.315363e-05	1.562739e-08
126	3	40	7.881113e-02	3.904560e-05	1.404211e-10
127	3	50	8.172137e-02	5.088985e-05	2.289944e-10
128	3	60	8.632193e-02	4.720821e-05	2.200554e-10
129	3	70	8.846491e-02	4.785142e-05	2.740228e-10
130	3	80	9.000148e-02	4.242523e-05	2.424489e-10
131	3	90	9.067108e-02	7.257836e-05	2.532135e-08

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
112	2	100	1.0	0.0	0.0
113	2	10	1.0	0.0	0.0
114	2	20	1.0	0.0	0.0
115	2	30	1.0	0.0	0.0
116	2	40	1.0	0.0	0.0
117	2	50	1.0	0.0	0.0
118	2	60	1.0	0.0	0.0
119	2	70	1.0	0.0	0.0
120	2	80	1.0	0.0	0.0
121	2	90	1.0	0.0	0.0
122	3	100	1.0	0.0	0.0
123	3	10	1.0	0.0	0.0
124	3	20	1.0	0.0	0.0
125	3	30	1.0	0.0	0.0
126	3	40	1.0	0.0	0.0
127	3	50	1.0	0.0	0.0
128	3	60	1.0	0.0	0.0
129	3	70	1.0	0.0	0.0
130	3	80	1.0	0.0	0.0
131	3	90	1.0	0.0	0.0

1.8 mrv

	dimension	difficulty	average time	average time variance	variance of time variance batches
132	2	100	2.775000e-05	5.850237e-11	4.685077e-21
133	2	10	4.713455e-06	2.911398e-10	3.751356e-18
134	2	20	6.911273e-06	2.963164e-11	2.417416e-21
135	2	30	1.271236e-05	3.446498e-10	9.984826e-19
136	2	40	1.254945e-05	6.163254e-11	9.641274e-21
137	2	50	2.261673e-05	4.090877e-10	4.398145e-19
138	2	60	2.033027e-05	6.802191e-11	5.132629e-21
139	2	70	2.293582e-05	1.464498e-10	5.504959e-19
140	2	80	2.597709e-05	7.737028e-11	7.205527e-21
141	2	90	2.980427e-05	4.388096e-09	1.467490e-15
142	3	100	3.012287e-03	1.757136e-05	4.418494e-10
143	3	10	3.553055e-05	1.332252e-09	3.419864e-17
144	3	20	7.582964e-05	2.440923e-09	6.401714e-17
145	3	30	1.336855e-04	2.155053e-08	8.945513e-15
146	3	40	1.785342e-04	8.818255e-09	1.967769e-15
147	3	50	2.750485e-04	6.276764e-08	2.026124e-14
148	3	60	3.784167e-04	1.181237e-07	3.297263e-14
149	3	70	7.699128e-04	9.049767e-07	3.441496e-12
150	3	80	1.718181e-03	6.960122e-06	5.730883e-11
151	3	90	2.199863e-03	7.080610e-06	6.879239e-11

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
132	2	100	1.0	0.0	0.0
133	2	10	1.0	0.0	0.0
134	2	20	1.0	0.0	0.0
135	2	30	1.0	0.0	0.0
136	2	40	1.0	0.0	0.0
137	2	50	1.0	0.0	0.0
138	2	60	1.0	0.0	0.0
139	2	70	1.0	0.0	0.0
140	2	80	1.0	0.0	0.0
141	2	90	1.0	0.0	0.0
142	3	100	1.0	0.0	0.0
143	3	10	1.0	0.0	0.0
144	3	20	1.0	0.0	0.0
145	3	30	1.0	0.0	0.0
146	3	40	1.0	0.0	0.0
147	3	50	1.0	0.0	0.0
148	3	60	1.0	0.0	0.0
149	3	70	1.0	0.0	0.0
150	3	80	1.0	0.0	0.0
151	3	90	1.0	0.0	0.0

1.9 quick-ann

		dimension	difficulty	average time	average time variance	variance of time variance batches
	152	2	100	2.944313e-02	2.774421e-05	5.641537e-08
	153	2	10	2.675118e-02	1.053419e-04	4.851761e-08
	154	2	20	2.974572e-02	5.182667e-05	4.808107e-08
	155	2	30	2.941623e-02	6.126665e-05	1.047684e-07
	156	2	40	3.016468e-02	2.925792e-05	4.656126e-08
	157	2	50	2.939558e-02	2.577868e-05	4.800753e-08
	158	2	60	2.957121e-02	2.534840e-05	4.573244e-08
	159	2	70	2.940420e-02	2.760262e-05	5.566783e-08
	160	2	80	2.949898e-02	2.750988e-05	5.520359e-08
	161	2	90	2.977960e-02	3.272055e-05	3.562549e-08
	162	3	100	3.482220e-02	2.458973e-05	4.330412e-08
	163	3	10	3.497897e-02	5.357831e-05	1.107677e-07
	164	3	20	3.503387e-02	2.589568e-05	4.704858e-08
	165	3	30	3.491451e-02	2.716219e-05	5.493040e-08
	166	3	40	3.498947e-02	2.573799e-05	4.717679e-08
	167	3	50	3.502983e-02	2.565232e-05	4.790226e-08
	168	3	60	3.520865e-02	5.258647e-05	1.091167e-07
	169	3	70	3.521829e-02	2.509375e-05	4.488713e-08
	170	3	80	3.518229e-02	2.813881e-05	5.770641e-08
	171	3	90	3.581639e-02	2.054750e-04	2.293465e-06
	172	4	100	5.815151e-02	4.489100e-03	0.000000e+00
	173	4	40	5.619245e-02	2.906217e-04	0.000000e+00
	174	4	60	5.592578e-02	2.749585e-06	0.000000e+00
	175	4	80	5.544200e-02	9.956660e-07	0.000000e+00

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
152	2	100	0.8111363636363637	0.008549276859504188	6.154812920346759e-06
153	2	10	1.0	0.0	0.0
154	2	20	0.9993181818181818	6.345557851239625e-05	8.951670061279116e-08
155	2	30	0.994375	0.000540092329545467	2.859435163880546e-07
156	2	40	0.9892045454545455	0.0007073217975206751	2.878707449062138e-07
157	2	50	0.9607954545454546	0.0038110149793388294	2.952757129886748e-06
158	2	60	0.944034090909091	0.005784720428719082	3.5561935146538403e-06
159	2	70	0.8956818181818181	0.007264023760330567	3.97255199706731e-06
160	2	80	0.8631818181818182	0.007644421487603346	3.92889941653042e-06
161	2	90	0.8552272727272727	0.008714152892561902	6.285523036229594e-06
162	3	100	0.5893602693602713	0.0017802990624539322	3.3911309582219797e-07
163	3	10	0.9990796857463525	1.4394600702120256e-05	4.448255703648115e-10
164	3	20	0.9887542087542049	0.00021023251595642011	7.468944215683443e-09
165	3	30	0.9589113355779955	0.000817852927579821	2.6840418547618773e-08
166	3	40	0.9048933782267121	0.002479026957440724	8.520294235079064e-08
167	3	50	0.8263524130190799	0.003603287646385281	1.327145179661675e-07
168	3	60	0.7401795735129066	0.00405810190696856	2.7164246866273353e-07
169	3	70	0.676195286195286	0.002758965008609607	2.676536347106058e-07
170	3	80	0.6341414141414152	0.002122609811797995	2.3767567061700578e-07
171	3	90	0.6066442199775552	0.0019114320660149212	3.115786230851298e-07
172	4	100	0.9376875	0.0009542495117187478	0.0
173	4	40	0.576734375	0.0007596018066406246	0.0
174	4	60	0.9271328125	0.0006313214721679667	0.0
175	4	80	0.9296171875	0.0008832042846679729	0.0

1.10 smart-ann

	dimension	difficulty	average time	average time variance	variance of time variance batches
176	2	100	1.119147e-01	6.982609e-04	2.274140e-07
177	2	10	2.719301e-02	1.251606e-04	5.557582e-08
178	2	20	3.172644e-02	1.264584e-04	4.982299e-08
179	2	30	4.211882e-02	3.545372e-04	1.229592e-07
180	2	40	4.743357e-02	3.262485e-04	9.333553e-08
181	2	50	6.431694e-02	6.565269e-04	1.226479e-07
182	2	60	7.010439e-02	5.268437e-04	1.554122e-07
183	2	70	8.635050e-02	8.451764e-04	1.601254e-07
184	2	80	9.680343e-02	7.238106e-04	2.060865e-07
185	2	90	9.972651e-02	8.853367e-04	2.369274e-07
186	3	100	8.828152e-01	2.608085e-02	8.015462e-05
187	3	10	4.190906e-02	2.129979e-04	4.400498e-08
188	3	20	6.547405e-02	4.108069e-04	1.547593e-07
189	3	30	9.627915e-02	1.033617e-03	7.000272e-07
190	3	40	1.414442e-01	2.987596e-03	1.768485e-06
191	3	50	2.255063e-01	1.175275e-02	1.067755e-05
192	3	60	3.739161e-01	2.831548e-02	4.738556e-05
193	3	70	5.745506e-01	3.616353e-02	5.849485e-05
194	3	80	7.415593e-01	3.149673e-02	5.022928e-05
195	3	90	8.127244e-01	2.668684e-02	6.232246e-05
196	4	100	1.632968e-01	3.827872e-03	0.000000e+00
197	4	40	1.773572e+00	9.253761e-02	0.000000e+00
198	4	60	1.880524e-01	3.156344e-03	0.000000e+00
199	4	80	1.811371e-01	4.169151e-03	0.000000e+00

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
176	2	100	0.9911363636363636	0.0021941632231405233	1.414005270942899e-05
177	2	10	1.0	0.0	0.0
178	2	20	1.0	0.0	0.0
179	2	30	0.9996022727272728	4.6006585743801254e-05	9.116753879836641e-08
180	2	40	0.9996590909090909	4.2497417355371816e-05	9.508827948910608e-08
181	2	50	0.998465909090909	0.00020006133780991838	4.414153712978541e-07
182	2	60	0.9986363636363637	0.00029643595041322214	1.8738993578339512e-06
183	2	70	0.9939204545454545	0.0016640334452479243	1.5841431139303796e-05
184	2	80	0.992840909090909	0.0018166451446280881	1.6935800537126033e-05
185	2	90	0.9959090909090909	0.0009704803719008116	5.942352130254925e-06
186	3	100	0.6802805836139169	0.015149768164246182	3.978782776039456e-05
187	3	10	0.9999663299663301	4.145457568577755e-07	4.617237059966525e-12
188	3	20	0.9994163860830525	1.3238256111432488e-05	1.2847000395650642e-09
189	3	30	0.9960718294051617	0.00012978015596795995	3.056939439801186e-08
190	3	40	0.9895510662177309	0.000470415465290144	2.0168897764938363e-07
191	3	50	0.9615151515151499	0.00377158024943285	6.775952879932871e-06
192	3	60	0.9067789001122329	0.01020023958250669	1.573400753456741e-05
193	3	70	0.820549943883278	0.017106541030708657	3.364284931397345e-05
194	3	80	0.7546464646464651	0.016623773462269512	2.415719017957833e-05
195	3	90	0.708810325476993	0.016396446696671202	4.828790345964947e-05
196	4	100	0.9880859375	9.227752685546873e-05	0.0
197	4	40	0.568796875	0.0007929299316406249	0.0
198	4	60	0.98471875	9.637841796874989e-05	0.0
199	4	80	0.9856328125	0.00010641961669921882	0.0

1.11   stochastic

	dimension	difficulty	average time	average time variance	variance of time variance batches
200	2	100	6.360509e-03	1.137920e-04	5.403399e-07
201	2	10	6.281071e-03	3.622654e-05	5.418242e-10
202	2	20	6.265426e-03	3.761085e-05	1.211978e-09
203	2	30	6.396644e-03	1.374378e-04	8.211432e-07
204	2	40	6.485410e-03	3.978786e-05	8.259538e-10
205	2	50	6.663674e-03	4.372428e-05	1.982181e-09
206	2	60	6.557755e-03	3.924065e-05	9.541447e-10
207	2	70	6.769016e-03	4.659661e-05	1.780782e-09
208	2	80	6.642398e-03	4.649874e-05	2.934726e-09
209	2	90	6.554753e-03	4.260452e-05	1.127521e-09

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
200	2	100	1.0	0.0	0.0
201	2	10	1.0	0.0	0.0
202	2	20	1.0	0.0	0.0
203	2	30	1.0	0.0	0.0
204	2	40	1.0	0.0	0.0
205	2	50	1.0	0.0	0.0
206	2	60	1.0	0.0	0.0
207	2	70	1.0	0.0	0.0
208	2	80	1.0	0.0	0.0
209	2	90	1.0	0.0	0.0

1.12 vanilla

	dimension	difficulty	average time	average time variance	variance of time variance batches
210	2	100	4.713018e-05	1.704109e-09	2.553037e-18
211	2	10	1.181682e-05	2.979569e-10	1.892657e-18
212	2	20	1.516355e-05	3.515285e-10	4.053147e-19
213	2	30	1.678145e-05	3.889825e-10	5.059560e-19
214	2	40	2.482536e-05	6.296179e-10	2.258311e-19
215	2	50	2.386500e-05	6.258014e-10	6.743542e-19
216	2	60	2.096209e-05	3.118149e-10	1.325595e-19
217	2	70	3.294891e-05	1.874894e-09	1.297712e-16
218	2	80	4.729091e-05	3.370513e-08	8.644665e-14
219	2	90	4.569491e-05	8.628173e-09	4.885685e-15
220	3	100	2.846464e-01	6.995866e-01	4.867427e+00
221	3	10	3.803945e-05	6.592078e-10	1.628970e-19
222	3	20	5.297300e-05	1.465691e-09	1.645444e-18
223	3	30	1.078873e-04	2.076369e-08	9.993865e-15
224	3	40	1.753418e-04	1.131490e-07	3.381034e-13
225	3	50	5.839050e-04	1.616915e-06	2.187441e-11
226	3	60	5.836747e-03	1.560231e-03	1.344713e-04
227	3	70	2.790812e-02	1.147977e-02	1.444770e-03
228	3	80	8.677804e-02	1.198107e-01	3.064799e-01
229	3	90	1.678644e-01	2.844652e-01	1.715671e+00

	dimension	difficulty	average accuracy	average accuracy variance	variance of accuracy variance batches
210	2	100	1.0	0.0	0.0
211	2	10	1.0	0.0	0.0
212	2	20	1.0	0.0	0.0
213	2	30	1.0	0.0	0.0
214	2	40	1.0	0.0	0.0
215	2	50	1.0	0.0	0.0
216	2	60	1.0	0.0	0.0
217	2	70	1.0	0.0	0.0
218	2	80	1.0	0.0	0.0
219	2	90	1.0	0.0	0.0
220	3	100	1.0	0.0	0.0
221	3	10	1.0	0.0	0.0
222	3	20	1.0	0.0	0.0
223	3	30	1.0	0.0	0.0
224	3	40	1.0	0.0	0.0
225	3	50	1.0	0.0	0.0
226	3	60	1.0	0.0	0.0
227	3	70	1.0	0.0	0.0
228	3	80	1.0	0.0	0.0
229	3	90	1.0	0.0	0.0

2 Resolution Time Evolution Plot

3   Resolution Accuracy Evolution Plot