

Supplementary Materials: Do Randomized Algorithms Improve the Efficiency of Minimal Learning Machine?

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1. RMSE tables

- 2 Tables S1–S9 report the mean and standard deviation of MLM test error, measured as RMSE value.
- 3 The data table with $K = 70$ for RMSE is shown in the main text and is not repeated here due to that.

Table S1. RMSE for $K = 10$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}
Lstsq	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
Lstsq (nr)	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
np.inv	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
np.inv (nr)	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
np.solve	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
np.solve (nr)	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
np.svd	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
sp.svd	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
Cho.Dec	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
rKrSVD02	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
rKrSVD04	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
rKrSVD06	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
rKrSVD08	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
rKrSVD10	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
skrSVD02	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
skrSVD04	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
skrSVD06	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	6.17	2.24
skrSVD08	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
skrSVD10	2.59	2.16	9.55	1.46	3.06	1.94	2.58	7.53	-	-
SVDU	2.62	2.16	9.58	1.63	3.56	3.14	-	-	-	-

Table S2. RMSE for $K = 20$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}
Lstsq	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
Lstsq (nr)	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
np.inv	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
np.inv (nr)	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
np.solve	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
np.solve (nr)	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
np.svd	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
sp.svd	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
Cho.Dec	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
rKrSVD02	2.63	2.28	7.88	1.48	2.54	1.5	2.49	7.99	6.19	2.22
rKrSVD04	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
rKrSVD06	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
rKrSVD08	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
rKrSVD10	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
skrSVD02	2.63	2.28	7.88	1.48	2.54	1.5	2.49	7.99	6.19	2.22
skrSVD04	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
skrSVD06	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	6.19	2.22
skrSVD08	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
skrSVD10	2.63	2.28	7.87	1.48	2.54	1.5	2.49	7.99	-	-
SVDU	2.64	2.33	8.64	1.56	2.98	2.43	-	-	-	-

Table S3. RMSE for $K = 30$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}
Lstsq	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
Lstsq (nr)	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
np.inv	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
np.inv (nr)	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
np.solve	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
np.solve (nr)	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
np.svd	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
sp.svd	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
Cho.Dec	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
rKrSVD02	2.64	2.17	7.83	1.45	2.54	1.52	2.47	8.09	6.18	2.18
rKrSVD04	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
rKrSVD06	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
rKrSVD08	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
rKrSVD10	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
skrSVD02	2.64	2.22	7.68	1.46	2.49	1.55	2.46	8.08	6.18	2.22
skrSVD04	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
skrSVD06	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	6.2	2.21
skrSVD08	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
skrSVD10	2.67	2.19	7.39	1.46	2.39	1.47	2.45	8.14	-	-
SVDU	2.66	2.39	8.11	1.56	2.69	2.23	-	-	-	-

Table S4. RMSE for $K = 40$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}
Lstsq	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
Lstsq (nr)	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
np.inv	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
np.inv (nr)	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
np.solve	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
np.solve (nr)	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
np.svd	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
sp.svd	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
Cho.Dec	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
rKrSVD02	2.65	2.29	7.81	1.35	2.56	1.47	2.47	8.2	6.19	2.22
rKrSVD04	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
rKrSVD06	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
rKrSVD08	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
rKrSVD10	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
skrSVD02	2.65	2.27	7.65	1.41	2.49	1.53	2.46	8.13	6.18	2.2
skrSVD04	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.19
skrSVD06	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	6.24	2.2
skrSVD08	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
skrSVD10	2.7	2.24	7.04	1.33	2.31	1.46	2.45	8.33	-	-
SVDU	2.69	2.42	7.76	1.54	2.53	1.96	-	-	-	-

Table S5. RMSE for $K = 50$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}
Lstsq	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
Lstsq (nr)	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
np.inv	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
np.inv (nr)	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
np.solve	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
np.solve (nr)	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
np.svd	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
sp.svd	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
Cho.Dec	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
rKrSVD02	2.68	2.23	7.86	1.4	2.55	1.54	2.47	8.13	6.2	2.19
rKrSVD04	2.72	2.25	7.06	1.35	2.31	1.45	2.45	8.24	6.24	2.2
rKrSVD06	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
rKrSVD08	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
rKrSVD10	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
skrSVD02	2.66	2.25	7.73	1.47	2.48	1.54	2.46	8.21	6.18	2.23
skrSVD04	2.72	2.25	6.98	1.36	2.29	1.46	2.44	8.3	6.24	2.18
skrSVD06	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	6.26	2.2
skrSVD08	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
skrSVD10	2.75	2.29	6.95	1.35	2.26	1.45	2.44	8.34	-	-
SVDU	2.71	2.45	7.48	1.51	2.42	1.82	-	-	-	-

Table S6. RMSE for $K = 60$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}
Lstsq	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.27	2.19
Lstsq (nr)	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
np.inv	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.27	2.19
np.inv (nr)	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
np.solve	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.27	2.19
np.solve (nr)	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
np.svd	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.27	2.19
sp.svd	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
Cho.Dec	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.27	2.19
rKrSVD02	2.67	2.22	7.96	1.45	2.56	1.57	2.47	8.64	6.21	2.24
rKrSVD04	2.72	2.3	7.1	1.37	2.3	1.44	2.45	8.2	6.24	2.22
rKrSVD06	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.27	2.19
rKrSVD08	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
rKrSVD10	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
skrSVD02	2.66	2.28	7.77	1.46	2.49	1.63	2.46	8.3	6.18	2.21
skrSVD04	2.72	2.28	6.97	1.37	2.28	1.43	2.44	8.26	6.24	2.2
skrSVD06	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	6.29	2.22
skrSVD08	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
skrSVD10	2.76	2.26	6.83	1.36	2.23	1.45	2.44	8.41	-	-
SVDU	2.71	2.41	7.28	1.54	2.34	1.75	-	-	-	-

Table S7. RMSE for $K = 80$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	-	-
Lstsq	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
Lstsq (nr)	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
np.inv	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
np.inv (nr)	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
np.solve	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
np.solve (nr)	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
np.svd	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
sp.svd	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
Cho.Dec	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
rKrSVD02	2.68	2.41	8.01	1.39	2.58	1.53	2.48	8.32	-	-
rKrSVD04	2.74	2.3	7.13	1.36	2.32	1.43	2.45	8.33	-	-
rKrSVD06	2.73	2.37	6.88	1.36	2.22	1.45	2.44	8.47	-	-
rKrSVD08	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
rKrSVD10	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
skrSVD02	2.66	2.32	7.84	1.46	2.51	1.65	2.45	8.43	-	-
skrSVD04	2.71	2.34	6.99	1.37	2.28	1.42	2.44	8.34	-	-
skrSVD06	2.74	2.36	6.84	1.36	2.21	1.46	2.43	8.44	-	-
skrSVD08	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
skrSVD10	2.77	2.39	6.78	1.35	2.18	1.48	2.43	8.4	-	-
SVDU	2.75	2.41	6.94	1.41	2.22	1.55	-	-	-	-

Table S8. RMSE for $K = 90$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	-	-
Lstsq	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
Lstsq (nr)	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
np.inv	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
np.inv (nr)	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
np.solve	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
np.solve (nr)	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
np.svd	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
sp.svd	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
Cho.Dec	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
rKrSVD02	2.7	2.39	7.97	1.44	2.6	1.53	2.47	8.5	-	-
rKrSVD04	2.73	2.4	7.1	1.35	2.32	1.45	2.45	8.39	-	-
rKrSVD06	2.73	2.35	6.85	1.36	2.23	1.49	2.44	8.55	-	-
rKrSVD08	2.76	2.44	6.75	1.35	2.18	1.47	2.43	8.45	-	-
rKrSVD10	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
skrSVD02	2.67	2.32	7.83	1.47	2.52	1.59	2.45	8.37	-	-
skrSVD04	2.71	2.26	6.96	1.38	2.28	1.44	2.43	8.38	-	-
skrSVD06	2.73	2.37	6.81	1.37	2.21	1.46	2.43	8.47	-	-
skrSVD08	2.76	2.46	6.74	1.35	2.17	1.48	2.43	8.44	-	-
skrSVD10	2.77	2.45	6.72	1.36	2.16	1.49	2.42	8.48	-	-
SVDU	2.77	2.38	6.79	1.36	2.19	1.49	-	-	-	-

Table S9. RMSE for $K = 100$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-4}	-	-
Lstsq	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
Lstsq (nr)	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
np.inv	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
np.inv (nr)	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
np.solve	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
np.solve (nr)	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
np.svd	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
sp.svd	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
Cho.Dec	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
rKrSVD02	2.69	2.35	8.03	1.4	2.61	1.66	2.47	8.51	-	-
rKrSVD04	2.73	2.36	7.13	1.33	2.32	1.45	2.44	8.58	-	-
rKrSVD06	2.75	2.41	6.87	1.35	2.23	1.45	2.43	8.62	-	-
rKrSVD08	2.76	2.32	6.79	1.35	2.18	1.52	2.43	8.46	-	-
rKrSVD10	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
skrSVD02	2.66	2.31	7.84	1.43	2.54	1.63	2.45	8.38	-	-
skrSVD04	2.69	2.39	6.99	1.37	2.28	1.45	2.43	8.46	-	-
skrSVD06	2.73	2.34	6.82	1.37	2.21	1.44	2.43	8.52	-	-
skrSVD08	2.77	2.35	6.76	1.35	2.17	1.51	2.42	8.5	-	-
skrSVD10	2.78	2.43	6.71	1.36	2.15	1.5	2.42	8.48	-	-
SVDU	2.78	2.43	6.71	1.36	2.15	1.5	-	-	-	-

2. Process time tables

- Tables S10–S19 report the mean and standard deviation of process time taken in OLS evaluation.

Table S10. Process time (s) for $K = 10$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-3}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^1
Lstsq	0.71	3.46	2.93	0.75	0.87	0.18	1.05	3.19	0.68	0.09
Lstsq (nr)	0.61	3.26	2.67	0.7	0.8	0.14	1.01	3.19	-	-
np.inv	0.4	3.84	1.44	0.66	0.86	2.88	0.57	2.37	0.21	0.17
np.inv (nr)	0.33	6.36	1.42	1.02	0.89	3.46	0.52	3.81	-	-
np.solve	0.4	6.03	1.78	45.32	0.85	5.36	0.53	1.74	0.17	0.06
np.solve (nr)	0.31	3.62	1.54	26.85	0.79	1.85	0.53	1.5	-	-
np.svd	0.69	4.93	3.86	1.02	1.35	0.33	0.99	1.71	0.99	0.53
sp.svd	0.83	4.86	3.88	2.58	1.32	0.36	0.9	1.48	-	-
Cho.Dec	0.71	4.82	1.46	0.4	0.3	0.06	0.36	1.57	0.19	0.05
rKrSVD02	1.38	7.81	8.18	4.46	3.02	3.01	2.02	3.11	2.75	3.08
rKrSVD04	2.66	24.14	18.28	5.84	5.41	3.46	4.89	46.35	7.98	12.9
rKrSVD06	5.86	175.01	27.47	11.01	7.68	6.67	8.82	138.23	15.73	28.32
rKrSVD08	9.75	31.69	31.5	13.87	10.12	3.88	13.63	246.86	-	-
rKrSVD10	9.3	23.94	36.57	24.79	11.61	8.62	18.98	367.6	-	-
skrSVD02	2.08	4.19	12.58	19.79	3.31	0.85	2.32	3.86	3.08	3.69
skrSVD04	4.18	8.45	21.29	6.05	5.98	4.55	5.16	51.83	8.68	14.9
skrSVD06	7.95	19.95	30.11	11.45	8.11	8.98	9.21	139.95	16.59	31.63
skrSVD08	7.69	58.72	34.12	28.07	9.74	2.79	14.1	250.61	-	-
skrSVD10	10.43	78.93	37.07	23.16	11.72	3.65	19.49	371.08	-	-
SVDU	0.23	0.86	0.5	0.29	0.11	0.06	-	-	-	-

Table S11. Process time (s) for $K = 20$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-1}	1×10^{-2}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^1
Lstsq	1.41	4.43	0.91	0.17	4.47	3.55	3.08	5.12	4.68	2.74
Lstsq (nr)	1.29	4.04	0.87	0.14	4.33	3.26	2.95	4.61	-	-
np.inv	1.05	7.34	1.06	7.99	3.49	8.57	0.8	2.74	0.63	0.41
np.inv (nr)	0.96	5.6	0.91	0.34	3.38	5.06	0.79	3.68	-	-
np.solve	0.99	5.77	1.12	9.15	3.42	5.89	0.73	3.05	0.49	0.18
np.solve (nr)	0.91	5.81	0.91	0.51	3.44	9.17	0.71	2.67	-	-
np.svd	1.53	4.54	1.35	0.52	4.3	2.1	2.95	4.31	4.78	5.58
sp.svd	1.65	3.57	1.29	0.36	4.21	1.46	2.73	4.03	-	-
Cho.Dec	0.91	4.61	0.24	0.05	0.67	0.13	0.52	0.93	0.61	0.32
rKrSVD02	2.09	4.03	1.44	0.38	4.74	3.3	3.34	4.66	5.19	5.1
rKrSVD04	3.58	16.01	2.68	0.73	8.29	2.49	6.81	52.26	11.24	16.8
rKrSVD06	6.93	17.37	3.77	4.25	10.87	7.11	11.04	144.73	19.5	33.04
rKrSVD08	10.79	31.3	4.25	3.81	13.31	3.89	16.18	256.66	-	-
rKrSVD10	10.6	118.74	4.77	3.96	14.81	4.42	22.12	384.69	-	-
skrSVD02	2.93	4.98	1.76	0.56	5.23	2.41	3.88	5.42	5.88	6.58
skrSVD04	5.19	41.87	3.07	1.92	9.00	6.62	7.37	59.56	12.44	19.19
skrSVD06	9.02	18.26	4.12	2.81	11.4	5.04	11.99	153.22	21.39	37.31
skrSVD08	8.87	16.33	4.57	4.16	13.99	4.12	17.37	269.13	-	-
skrSVD10	11.68	37.99	4.93	4.56	15.75	4.59	23.63	404.46	-	-
SVDU	69.47	415.75	45.84	73.05	166.61	242.93	-	-	-	-

Table S12. Process time (s) for $K = 30$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-2}	1×10^1	1×10^1	1×10^3	1×10^2
Lstsq	3.71	1.00	2.74	0.54	1.09	7.48	6.98	0.82	2.17	2.33
Lstsq (nr)	3.54	1.01	2.65	0.6	1.06	7.67	6.79	0.92	-	-
np.inv	2.19	1.03	2.2	4.91	0.7	11.07	1.34	0.4	0.13	0.07
np.inv (nr)	2.64	37.42	2.17	3.04	0.7	9.26	1.28	0.47	-	-
np.solve	2.3	17.7	2.31	7.95	0.71	12.19	1.18	0.42	0.1	0.05
np.solve (nr)	2.54	37.45	2.14	2.07	0.69	11.2	1.14	0.41	-	-
np.svd	3.33	0.89	2.9	0.9	0.75	5.67	5.92	1.97	1.46	2.05
sp.svd	3.43	0.87	2.85	1.67	0.73	10.34	5.67	2.47	-	-
Cho.Dec	1.28	0.63	0.37	0.17	0.13	0.47	1.02	0.27	0.12	0.05
rKrSVD02	2.37	0.43	1.68	1.77	0.58	5.12	4.07	0.69	0.8	0.94
rKrSVD04	5.2	3.98	3.71	0.92	1.02	8.73	9.06	5.44	2.34	3.6
rKrSVD06	8.84	1.75	5.52	3.44	1.44	15.73	13.95	14.31	2.94	4.96
rKrSVD08	12.8	3.13	6.00	1.43	1.7	4.86	19.48	25.75	-	-
rKrSVD10	12.6	2.84	6.61	1.84	1.89	7.39	25.86	39.04	-	-
skrSVD02	4.2	2.91	2.18	0.41	0.63	5.53	4.69	0.81	0.88	1.15
skrSVD04	6.9	4.89	4.12	0.93	1.11	9.29	9.96	6.84	2.5	3.99
skrSVD06	11.17	8.82	5.82	2.83	1.51	6.59	15.3	16.58	3.15	5.52
skrSVD08	11.09	1.96	6.34	4.52	1.78	4.73	21.21	29.17	-	-
skrSVD10	13.91	2.73	6.84	3.52	1.98	5.32	27.85	43.78	-	-
SVDU	104.84	45.74	75.01	116.65	29.85	178.95	-	-	-	-

Table S13. Process time (s) for $K = 40$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-2}	1×10^2	1×10^1	1×10^3	1×10^2
Lstsq	4.62	3.25	5.03	2.36	1.89	14.76	1.4	2.86	5.49	7.26
Lstsq (nr)	4.46	4.3	4.91	2.41	1.82	5.5	1.38	2.88	-	-
np.inv	5.57	48.52	3.54	5.7	1.03	14.65	0.21	0.7	0.23	0.14
np.inv (nr)	5.29	27.8	3.49	8.37	1.00	6.74	0.2	0.75	-	-
np.solve	5.49	37.29	3.64	9.38	1.00	11.00	0.18	0.39	0.17	0.09
np.solve (nr)	5.71	66.33	3.57	8.18	1.00	13.42	0.17	0.55	-	-
np.svd	5.5	1.52	4.04	1.08	1.15	13.44	1.15	9.97	3.25	5.00
sp.svd	5.57	1.43	3.87	0.98	1.13	4.29	1.13	10.69	-	-
Cho.Dec	1.52	0.61	0.56	0.12	0.19	0.32	0.17	0.3	0.22	0.08
rKrSVD02	2.56	0.52	2.05	0.9	0.73	6.3	0.49	0.85	0.72	0.63
rKrSVD04	6.52	1.48	4.47	2.43	1.29	5.7	1.27	8.4	3.28	4.54
rKrSVD06	10.23	2.03	6.04	3.58	1.75	12.19	2.41	29.93	5.72	8.46
rKrSVD08	14.88	20.39	7.19	4.75	2.17	5.4	2.54	32.29	-	-
rKrSVD10	15.19	6.86	8.06	7.06	2.4	7.93	3.24	46.71	-	-
skrSVD02	4.75	26.04	2.53	0.49	0.75	4.98	0.56	1.12	0.84	0.88
skrSVD04	8.52	9.27	4.92	3.4	1.41	4.16	1.4	11.11	3.55	5.19
skrSVD06	12.7	9.88	6.38	3.92	1.84	4.06	2.57	33.22	6.04	9.89
skrSVD08	13.03	2.55	7.59	6.37	2.23	5.55	2.74	36.77	-	-
skrSVD10	16.61	7.5	8.08	1.96	2.49	21.2	3.49	53.82	-	-
SVDU	49.86	22.8	114.78	142.93	44.98	389.7	-	-	-	-

Table S14. Process time (s) for $K = 50$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-2}	1×10^2	1×10^1	1×10^3	1×10^2
Lstsq	8.08	5.85	9.25	12.04	2.78	6.92	2.88	1.63	9.81	12.28
Lstsq (nr)	7.74	1.57	8.99	7.82	2.75	10.53	2.88	1.77	-	-
np.inv	8.8	57.52	5.46	8.24	1.5	15.93	0.29	0.11	0.36	0.18
np.inv (nr)	8.48	47.64	5.27	3.89	1.47	13.35	0.28	0.1	-	-
np.solve	9.83	106.89	5.65	12.11	1.47	19.87	0.24	0.06	0.26	0.17
np.solve (nr)	9.56	91.57	5.43	10.09	1.44	21.34	0.23	0.07	-	-
np.svd	8.75	2.76	5.79	4.22	1.72	15.16	2.46	2.89	5.87	10.18
sp.svd	8.85	9.66	5.6	4.26	1.67	5.67	2.44	2.93	-	-
Cho.Dec	1.89	0.59	0.76	0.21	0.29	0.43	0.25	0.06	0.34	0.15
rKrSVD02	2.68	0.54	2.32	1.09	0.82	5.99	0.54	0.08	0.8	0.64
rKrSVD04	6.93	1.74	5.07	5.29	1.51	14.08	1.64	1.24	4.28	5.93
rKrSVD06	12.14	3.19	7.42	6.47	2.18	5.86	3.43	4.25	8.08	12.9
rKrSVD08	17.44	21.88	8.38	2.85	2.72	9.11	5.18	7.79	-	-
rKrSVD10	18.96	22.02	10.05	2.32	3.07	8.59	4.57	6.54	-	-
skrSVD02	4.71	0.95	2.95	3.29	0.87	2.57	0.64	0.11	0.94	1.06
skrSVD04	9.56	2.00	5.68	3.08	1.66	7.34	1.8	1.61	4.6	7.26
skrSVD06	14.66	4.14	7.76	5.55	2.33	5.17	3.66	4.92	8.31	13.98
skrSVD08	16.06	3.53	8.71	1.87	2.78	6.87	5.49	8.53	-	-
skrSVD10	20.1	4.7	10.12	5.4	3.09	13.74	4.88	7.3	-	-
SVDU	199.23	35.27	146.85	180.49	61.48	503.14	-	-	-	-

Table S15. Process time (s) for $K = 60$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-3}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^1	1×10^3	1×10^2
Lstsq	1.13	2.35	12.32	2.64	4.00	0.97	6.44	5.73	16.29	20.62
Lstsq (nr)	1.1	2.52	12.17	5.76	4.00	1.31	6.47	5.93	-	-
np.inv	1.25	27.89	7.52	13.18	1.83	1.21	0.39	0.15	0.54	0.27
np.inv (nr)	1.27	52.01	7.2	7.32	1.83	1.65	0.38	0.09	-	-
np.solve	1.25	15.13	7.55	13.1	1.84	1.63	0.33	0.08	0.39	0.27
np.solve (nr)	1.36	85.89	7.49	12.9	1.8	1.37	0.32	0.07	-	-
np.svd	1.2	4.31	6.72	6.18	2.28	1.7	7.22	12.24	14.76	20.75
sp.svd	1.2	3.7	6.46	2.16	2.22	1.04	7.24	12.59	-	-
Cho.Dec	0.22	0.72	0.99	0.7	0.35	0.09	0.34	0.09	0.51	0.24
rKrSVD02	0.29	1.45	2.55	0.68	0.91	1.04	0.6	0.1	0.91	0.65
rKrSVD04	0.73	5.64	5.37	1.19	1.62	1.15	2.05	1.7	5.33	7.02
rKrSVD06	1.44	3.42	8.38	2.4	2.59	0.78	4.48	5.72	10.02	14.59
rKrSVD08	2.06	5.59	10.03	14.34	3.24	1.15	6.76	10.6	-	-
rKrSVD10	2.23	14.4	11.4	7.67	3.67	0.84	9.18	15.63	-	-
skrSVD02	0.49	1.00	3.14	0.69	0.94	0.65	0.71	0.12	1.04	0.85
skrSVD04	1.01	2.13	6.15	2.02	1.8	0.77	2.24	2.23	5.52	7.67
skrSVD06	1.76	3.98	9.09	9.73	2.76	1.2	4.7	6.64	10.49	16.59
skrSVD08	1.97	4.4	10.2	10.9	3.29	1.21	7.00	11.43	-	-
skrSVD10	2.39	5.66	11.41	7.82	3.71	0.87	9.44	17.01	-	-
SVDU	22.81	26.09	191.38	218.18	79.62	39.45	-	-	-	-

Table S16. Process time (s) for $K = 70$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^1	1×10^3	1×10^2
Lstsq	1.55	0.51	17.81	10.81	5.39	1.7	11.92	13.41	24.55	31.52
Lstsq (nr)	1.52	0.31	17.65	3.89	5.34	1.38	11.9	13.17	-	-
np.inv	1.74	7.97	9.17	14.43	2.32	1.83	0.5	0.18	0.75	0.33
np.inv (nr)	1.69	6.2	8.91	10.69	2.32	1.69	0.48	0.18	-	-
np.solve	1.93	10.79	8.9	9.21	2.25	1.3	0.42	0.11	0.55	0.35
np.solve (nr)	1.6	1.52	8.95	10.73	2.25	1.49	0.41	0.11	-	-
np.svd	1.56	1.52	8.48	6.57	2.81	0.54	9.2	15.63	19.32	21.7
sp.svd	1.51	1.36	8.21	7.04	2.78	0.57	9.28	15.47	-	-
Cho.Dec	0.25	0.1	1.34	0.38	0.49	0.12	0.45	0.28	0.71	0.31
rKrSVD02	0.31	0.29	2.78	0.77	0.95	0.7	0.66	0.09	1.01	0.75
rKrSVD04	0.77	0.87	5.92	7.53	1.85	1.3	2.49	2.24	6.21	9.00
rKrSVD06	1.63	1.96	9.17	5.75	2.93	1.23	5.39	6.9	11.45	16.65
rKrSVD08	2.41	2.95	11.63	5.26	3.89	2.25	8.5	13.00	-	-
rKrSVD10	2.63	2.75	13.65	6.34	4.48	0.99	11.4	18.04	-	-
skrSVD02	0.52	0.13	3.41	0.65	1.04	0.84	0.78	0.13	1.16	1.08
skrSVD04	1.05	0.23	6.61	1.9	1.96	0.38	2.67	2.47	6.3	9.28
skrSVD06	2.07	0.6	9.9	6.16	3.11	1.71	5.64	7.34	12.2	19.83
skrSVD08	2.3	0.72	11.71	2.4	3.98	1.47	8.66	12.95	-	-
skrSVD10	2.76	0.98	13.21	2.75	4.5	0.87	11.67	18.74	-	-
SVDU	27.22	2.78	234.85	154.78	103.73	74.91	-	-	-	-

Table S17. Process time (s) for $K = 80$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^1	-	-
Lstsq	2.9	5.12	2.17	13.28	6.63	1.82	19.42	23.55	-	-
Lstsq (nr)	2.81	3.25	2.17	22.53	7.54	5.2	19.4	25.48	-	-
np.inv	2.38	7.07	1.12	15.77	2.74	1.56	0.64	0.24	-	-
np.inv (nr)	2.34	6.05	1.09	11.02	2.72	1.43	0.62	0.31	-	-
np.solve	2.48	8.07	1.11	13.21	2.71	1.49	0.53	0.19	-	-
np.solve (nr)	2.44	7.84	1.13	19.49	2.71	1.58	0.52	0.23	-	-
np.svd	1.91	1.05	0.99	4.23	3.45	1.13	11.89	19.1	-	-
sp.svd	1.87	0.51	0.97	8.00	3.44	0.9	11.96	19.96	-	-
Cho.Dec	0.29	0.28	0.17	1.12	0.59	0.5	0.58	0.37	-	-
rKrSVD02	0.32	0.18	0.3	1.89	1.04	0.58	0.73	0.12	-	-
rKrSVD04	0.82	0.21	0.69	8.89	2.14	0.83	1.88	0.95	-	-
rKrSVD06	1.77	1.51	0.97	1.73	3.1	0.61	6.44	8.85	-	-
rKrSVD08	2.77	2.35	1.32	4.1	4.48	1.19	10.38	15.63	-	-
rKrSVD10	3.03	0.94	1.61	3.38	5.32	1.43	14.11	22.47	-	-
skrSVD02	0.55	0.43	0.38	2.65	1.12	0.27	0.86	0.18	-	-
skrSVD04	1.14	0.95	0.81	10.46	2.38	0.67	2.1	1.26	-	-
skrSVD06	2.27	2.27	1.05	1.98	3.32	1.1	6.83	9.38	-	-
skrSVD08	2.77	2.79	1.35	3.41	4.64	2.22	10.8	16.22	-	-
skrSVD10	3.29	5.16	1.51	5.56	5.19	0.91	14.56	24.14	-	-
SVDU	35.08	6.2	27.53	163.82	129.56	55.15	-	-	-	-

Table S18. Process time (s) for $K = 90$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^1	-	-
Lstsq	3.57	2.6	2.57	14.37	8.24	2.01	28.74	37.33	-	-
Lstsq (nr)	3.58	5.09	2.52	5.86	8.25	3.67	29.04	40.28	-	-
np.inv	2.73	5.36	1.33	9.29	3.15	1.94	0.8	0.4	-	-
np.inv (nr)	2.61	0.81	1.31	10.47	3.11	1.8	0.78	0.45	-	-
np.solve	2.77	3.57	1.36	20.7	3.14	1.89	0.66	0.37	-	-
np.solve (nr)	2.79	8.19	1.31	12.11	3.08	1.91	0.64	0.36	-	-
np.svd	2.12	1.52	1.21	12.51	4.22	1.42	14.37	24.44	-	-
sp.svd	2.08	2.17	1.15	11.00	4.11	2.00	14.33	23.87	-	-
Cho.Dec	0.36	0.17	0.2	0.76	0.76	0.11	0.71	0.46	-	-
rKrSVD02	0.33	0.23	0.33	1.37	1.13	0.24	0.8	0.24	-	-
rKrSVD04	0.87	0.73	0.73	2.3	2.3	0.94	1.98	1.06	-	-
rKrSVD06	1.89	0.49	1.04	6.45	3.4	1.16	7.27	9.87	-	-
rKrSVD08	2.97	2.74	1.42	16.97	4.85	1.13	11.75	18.25	-	-
rKrSVD10	3.33	4.54	1.77	9.05	5.98	1.43	16.58	26.35	-	-
skrSVD02	0.58	0.75	0.4	2.18	1.2	0.73	0.95	0.27	-	-
skrSVD04	1.29	1.5	0.82	1.49	2.47	1.08	2.22	1.37	-	-
skrSVD06	2.45	3.05	1.11	5.12	3.58	0.77	7.67	10.3	-	-
skrSVD08	2.87	4.24	1.47	2.41	4.97	0.87	12.42	19.99	-	-
skrSVD10	3.42	3.04	1.73	3.02	5.98	1.56	17.22	28.6	-	-
SVDU	39.98	4.21	34.13	214.64	156.52	43.84	-	-	-	-

Table S19. Process time (s) for $K = 100$. Bolded numbers differ statistically from *Lstsq*.

Dataset	BC		BH		AC		CA		CE	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Method / coef.	1×10^{-1}	1×10^{-2}	1×10^1	1×10^{-2}	1×10^1	1×10^{-1}	1×10^2	1×10^2	-	-
Lstsq	4.72	3.07	3.05	6.98	9.48	2.51	41.14	6.4	-	-
Lstsq (nr)	4.75	6.44	3.06	6.89	9.44	2.34	40.96	6.03	-	-
np.inv	3.58	8.24	1.57	17.92	3.42	2.04	1.01	0.07	-	-
np.inv (nr)	3.47	8.22	1.55	17.07	3.45	3.02	0.98	0.07	-	-
np.solve	3.65	9.79	1.52	11.55	3.43	2.05	0.83	0.06	-	-
np.solve (nr)	3.62	10.12	1.51	15.6	3.36	2.15	0.81	0.06	-	-
np.svd	2.5	1.63	1.46	4.52	4.89	1.15	17.71	3.17	-	-
sp.svd	2.41	0.61	1.36	7.84	4.74	1.93	17.62	3.27	-	-
Cho.Dec	0.42	0.34	0.26	0.42	0.94	0.38	0.89	0.04	-	-
rKrSVD02	0.35	0.09	0.4	6.79	1.15	0.58	0.88	0.02	-	-
rKrSVD04	0.95	0.28	0.77	2.17	2.42	1.9	2.11	0.13	-	-
rKrSVD06	2.00	0.51	1.15	14.89	3.57	0.84	8.42	1.28	-	-
rKrSVD08	3.1	1.41	1.5	3.82	5.18	0.89	13.52	2.23	-	-
rKrSVD10	3.68	1.82	2.01	6.03	6.66	1.23	19.4	3.29	-	-
skrSVD02	0.59	0.45	0.47	6.26	1.23	0.28	1.03	0.03	-	-
skrSVD04	1.38	1.1	0.89	2.17	2.58	0.88	2.35	0.17	-	-
skrSVD06	2.55	0.8	1.21	8.18	3.81	1.11	8.69	1.33	-	-
skrSVD08	2.99	1.43	1.58	3.19	5.33	0.94	13.81	2.4	-	-
skrSVD10	3.86	3.13	1.96	4.61	6.8	1.85	19.79	3.41	-	-
SVDU	42.67	5.79	37.78	184.8	178.72	43.06	-	-	-	-

3. RMSE and process time tables for additional simulations

Tables Table S20 and Table S21 report the mean and standard deviation of MLM test error measured as RMSE value and process time taken in OLS evaluation for the additional simulations with *Census* and tables Table S22, Table S23 for *Mnist*. Contrary to other data tables, Table S20, Table S21, Table S22 and Table S23 are for one dataset only.

Table S20. RMSE for *Census* at reference point percentages [10%, 100%] for *Cholesky Decomposition* (CD) and for random SVD with remaining rank percentages [1%, 10%]. Bolded numbers differ statistically from *Cholesky Decomposition*.

sk_rank_svd_xxx												
Method	CD		001		002		003		004		005	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
RefP / coef.	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}
10	6.17	3.98	6.44	3.86	6.28	3.81	6.22	3.79	6.19	4.01	6.18	4.07
20	6.15	4.19	6.43	3.89	6.27	3.61	6.19	3.7	6.17	3.88	6.15	3.98
30	6.17	4.41	6.43	3.87	6.26	3.74	6.19	3.8	6.16	3.91	6.14	4.06
40	6.18	4.49	6.43	3.85	6.26	3.72	6.19	3.72	6.16	4.01	6.14	3.96
50	6.19	4.39	6.43	3.98	6.26	3.83	6.19	3.75	6.16	4.02	6.14	3.94
60	6.21	4.41	6.43	3.97	6.26	3.73	6.19	3.73	6.15	4.01	6.14	4.00
70	6.22	4.18	6.43	3.79	6.25	3.78	6.18	3.84	6.15	4.06	6.13	4.05
80	6.23	4.09	6.43	3.89	6.25	3.73	6.18	3.79	6.15	3.97	6.13	3.98
90	6.24	4.03	6.43	4.01	6.25	3.77	6.18	3.91	6.15	4.07	6.13	4.09
100	6.26	4.04	6.43	3.8	6.25	3.76	6.18	3.9	6.15	4.08	6.13	4.08

sk_rank_svd_xxx												
Method	CD		006		007		008		009		010	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
RefP / coef.	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}
10	6.17	3.98	6.17	3.98	6.17	4.01	6.17	3.99	6.17	3.99	6.17	4.1
20	6.15	4.19	6.14	4.07	6.13	4.18	6.13	4.18	6.13	4.27	6.14	4.24
30	6.17	4.41	6.14	4.19	6.13	4.21	6.13	4.28	6.13	4.39	6.13	4.31
40	6.18	4.49	6.14	4.21	6.13	4.21	6.12	4.35	6.12	4.39	6.12	4.44
50	6.19	4.39	6.13	4.09	6.12	4.13	6.12	4.3	6.12	4.26	6.11	4.29
60	6.21	4.41	6.13	4.2	6.12	4.22	6.11	4.37	6.11	4.35	6.11	4.22
70	6.22	4.18	6.12	4.14	6.12	4.27	6.11	4.44	6.11	4.3	6.1	4.44
80	6.23	4.09	6.12	4.05	6.12	4.11	6.11	4.31	6.1	4.35	6.1	4.28
90	6.24	4.03	6.13	4.07	6.11	4.26	6.11	4.32	6.1	4.33	6.1	4.3
100	6.26	4.04	6.12	4.11	6.12	4.13	6.11	4.41	6.1	4.18	6.1	4.32

Table S21. Process time in seconds for *Census* at reference point percentages [10%, 100%] for *Cholesky Decomposition* (CD) and for random SVD with remaining rank percentages [1%, 10%]. Bolded numbers differ statistically from *Cholesky Decomposition*.

sk_rank_svd_xxx												
Method	CD		001		002		003		004		005	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
RefP / coef.	1x10 ²	1x10 ³	1x10 ²	1x10 ²	1x10 ²	1x10 ³	1x10 ²	1x10 ³	1x10 ²	1x10 ²	1x10 ²	1x10 ³
10	0.2	0.003	0.19	0.03	0.28	0.01	0.4	0.001	0.51	0.01	0.65	0.01
20	0.67	0.08	0.39	0.08	0.53	0.01	0.68	0.02	0.83	0.69	1.06	0.15
30	1.48	0.77	0.7	1.14	0.84	0.06	1.08	0.2	1.27	3.45	1.52	0.46
40	2.33	0.67	1.01	2.02	1.25	0.32	1.65	0.72	1.8	11.58	2.03	1.32
50	4.02	2.73	1.51	6.99	1.94	1.58	2.52	1.07	2.53	23.02	3.00	2.56
60	6.04	2.82	2.28	22.99	3.00	1.84	3.46	1.75	3.46	31.76	4.03	2.98
70	7.86	10.91	3.19	72.58	3.68	8.36	4.12	7.32	4.12	82.01	4.67	8.93
80	9.58	3.44	3.26	12.22	3.69	1.85	4.27	2.56	4.21	9.97	4.83	1.91
90	12.87	5.73	4.01	3.44	4.46	1.54	5.13	2.1	5.09	2.31	5.82	2.04
100	15.72	8.17	4.75	21.91	5.07	1.45	5.65	1.83	5.78	2.39	6.46	1.61
sk_rank_svd_xxx												
Method	CD		006		007		008		009		010	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
RefP / coef.	1x10 ²	1x10 ³	1x10 ²	1x10 ³	1x10 ²	1x10 ²	1x10 ²	1x10 ³	1x10 ²	1x10 ³	1x10 ²	1x10 ³
10	0.2	0.003	0.78	0.03	0.93	0.74	1.08	0.16	1.25	0.25	1.44	0.45
20	0.67	0.08	1.24	0.28	1.43	4.02	1.64	0.64	1.86	1.03	2.11	1.27
30	1.48	0.77	1.76	0.82	1.98	9.53	2.27	1.55	2.56	2.24	2.84	3.06
40	2.33	0.67	2.37	2.42	2.52	19.17	2.89	2.97	3.21	4.12	3.61	5.66
50	4.02	2.73	3.28	3.03	3.46	31.41	3.73	4.37	3.98	4.64	4.65	6.47
60	6.04	2.82	4.39	4.36	4.41	53.18	4.78	6.23	5.2	6.49	5.84	6.27
70	7.86	10.91	5.04	10.24	5.24	93.42	5.54	9.31	6.21	13.84	6.76	19.2
80	9.58	3.44	5.03	1.13	5.44	12.35	5.76	1.24	6.16	2.4	6.69	2.29
90	12.87	5.73	6.15	2.15	6.4	5.86	6.96	1.67	7.45	2.22	8.00	2.83
100	15.72	8.17	6.82	1.17	7.21	5.36	7.72	0.87	8.28	1.78	8.74	1.79

Table S22. RMSE for *Mnist* at reference point percentages [10%, 100%] for *Cholesky Decomposition* (CD) and for random SVD with remaining rank percentages [1%, 10%]. Bolded numbers differ statistically from *Cholesky Decomposition*.

sk_rank_svd_xxx												
Method	CD		001		002		003		004		005	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
RefP / coef.	1×10^{-2}	1×10^{-6}	1×10^{-1}	1×10^{-6}	1×10^{-1}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}
10	9.33	1.6	1.19	1.64	1.06	1.56	10.11	1.65	9.86	1.57	9.69	1.59
20	8.67	1.62	1.18	1.78	1.05	1.65	9.95	1.49	9.62	1.51	9.42	1.55
30	8.32	1.61	1.18	1.54	1.05	1.38	9.89	1.62	9.53	1.66	9.3	1.61
40	8.08	1.63	1.18	1.48	1.05	1.47	9.85	1.54	9.49	1.77	9.23	1.52
50	7.91	1.67	1.18	1.71	1.04	1.55	9.83	1.66	9.46	1.69	9.19	1.73
60	7.77	1.75	1.18	1.57	1.04	1.49	9.83	1.56	9.44	1.71	9.17	1.68
70	7.66	1.76	1.18	1.61	1.04	1.65	9.81	1.59	9.43	1.58	9.15	1.6
80	7.56	1.69	1.18	1.48	1.04	1.68	9.81	1.53	9.41	1.71	9.13	1.55
90	7.48	1.73	1.18	1.62	1.04	1.73	9.8	1.56	9.41	1.46	9.12	1.59
100	7.41	1.71	1.18	1.61	1.04	1.59	9.8	1.71	9.41	1.69	9.11	1.67

sk_rank_svd_xxx												
Method	CD		006		007		008		009		010	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
RefP / coef.	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}	1×10^{-2}	1×10^{-6}
10	9.33	1.6	9.57	1.6	9.48	1.59	9.42	1.63	9.36	1.62	9.33	1.6
20	8.67	1.62	9.27	1.55	9.16	1.57	9.07	1.52	9.00	1.52	8.95	1.6
30	8.32	1.61	9.13	1.6	9.01	1.59	8.91	1.63	8.84	1.56	8.77	1.59
40	8.08	1.63	9.06	1.46	8.92	1.54	8.82	1.55	8.73	1.52	8.66	1.48
50	7.91	1.67	9.00	1.68	8.86	1.58	8.75	1.6	8.66	1.64	8.59	1.59
60	7.77	1.75	8.97	1.73	8.82	1.55	8.7	1.61	8.61	1.65	8.53	1.59
70	7.66	1.76	8.94	1.63	8.79	1.56	8.67	1.63	8.57	1.63	8.49	1.57
80	7.56	1.69	8.92	1.56	8.76	1.55	8.64	1.55	8.53	1.6	8.45	1.51
90	7.48	1.73	8.91	1.54	8.74	1.5	8.61	1.59	8.51	1.54	8.42	1.52
100	7.41	1.71	8.89	1.56	8.73	1.51	8.59	1.58	8.48	1.56	8.4	1.42

Table S23. Process time in seconds for *Mnist* at reference point percentages [10%, 100%] for *Cholesky Decomposition* (CD) and for random SVD with remaining rank percentages [1%, 10%]. Bolded numbers differ statistically from *Cholesky Decomposition*.

sk_rank_svd_xxx												
Method	CD		001		002		003		004		005	
RefP / coef.	\bar{x} 1x10 ³	σ 1x10 ⁶	\bar{x} 1x10 ³	σ 1x10 ⁴	\bar{x} 1x10 ³	σ 1x10 ⁴	\bar{x} 1x10 ³	σ 1x10 ⁴	\bar{x} 1x10 ³	σ 1x10 ⁴	\bar{x} 1x10 ³	σ 1x10 ⁴
10	0.33	0.00001	0.27	0.002	0.41	0.01	0.57	0.03	0.74	0.09	0.98	0.24
20	1.34	0.003	0.79	1.05	1.01	1.12	1.28	2.04	1.52	3.33	1.84	6.28
30	3.08	0.01	1.48	1.82	1.75	1.23	2.05	1.41	2.38	3.64	2.77	5.88
40	5.68	0.03	2.42	3.18	2.76	3.56	3.14	2.48	3.51	4.44	4.03	8.6
50	9.5	1.41	3.91	51.79	4.26	36.16	4.62	24.57	5.03	14.91	5.6	16.25
60	14.73	3.66	5.4	52.39	5.93	64.04	6.54	89.37	7.17	117.21	7.87	135.29
70	20.25	3.81	6.82	49.46	7.37	30.29	8.09	84.25	8.77	120.31	9.46	113.56
80	27.08	2.96	8.32	0.34	9.00	0.53	9.66	1.23	10.36	2.03	11.12	3.58
90	43.64	131.52	12.36	1167.41	13.02	1133.69	14.34	1660.08	14.79	1646.39	15.23	1575.86
100	52.6	138.29	13.51	225.74	14.14	147.14	14.89	182.74	15.84	230.71	16.81	219.76
sk_rank_svd_xxx												
Method	CD		006		007		008		009		010	
RefP / coef.	\bar{x} 1x10 ³	σ 1x10 ⁶	\bar{x} 1x10 ³	σ 1x10 ⁵	\bar{x} 1x10 ³	σ 1x10 ⁵	\bar{x} 1x10 ³	σ 1x10 ⁵	\bar{x} 1x10 ³	σ 1x10 ⁵	\bar{x} 1x10 ³	σ 1x10 ⁵
10	0.33	0.00001	1.39	0.06	1.72	0.15	2.06	0.2	2.37	0.28	2.75	0.5
20	1.34	0.003	2.25	1.25	2.7	1.47	3.18	2.26	3.71	2.75	4.38	4.74
30	3.08	0.01	3.27	1.15	3.79	1.33	4.23	1.82	4.89	2.49	5.52	3.49
40	5.68	0.03	4.6	1.61	5.17	1.57	5.85	2.96	6.38	3.54	7.15	5.29
50	9.5	1.41	6.21	4.53	6.86	6.12	7.5	9.34	8.18	8.19	9.19	16.37
60	14.73	3.66	8.62	22.9	9.56	30.78	10.37	37.53	10.99	39.53	12.11	50.69
70	20.25	3.81	10.26	15.76	11.1	15.99	12.04	31.91	13.09	43.39	14.00	34.44
80	27.08	2.96	11.94	0.82	12.81	1.15	13.69	1.32	14.59	1.49	15.69	1.75
90	43.64	131.52	16.12	150.63	16.96	107.47	18.4	162.85	20.02	184.62	20.93	136.39
100	52.6	138.29	17.74	32.43	18.78	20.1	19.83	20.77	21.2	28.97	22.41	29.42

4. Deep neural network results

Tables S24 and S25 report the mean, standard deviation and the best (minimum) RMSE and process time taken of the used DNN on the studied datasets.

Table S24. RMSE for neural networks.

Dataset / coef.	FNN-4		FNN-2	
	\bar{x} 1x10 ⁻²	σ 1x10 ⁻³	\bar{x} 1x10 ⁻²	σ 1x10 ⁻³
BreastCancer	25.7	22.88	25.52	22.9
BostonHousing	10.23	10.33	9.86	11.09
AirplaneCompanies	6.89	4.4	7.19	4.29
ComputerActivity	2.48	0.62	2.49	0.62
Census	6.7	1.99	6.71	2.00
Mnist	6.1	3.28	8.28	1.54
AuN2-4k	3.18	1.00	3.42	0.83
AuN2-8k	2.67	0.68	2.97	0.73
AuN2-12k	2.15	0.73	3.42	0.83
AuN10-4k	1.17	0.45	1.21	0.47
AuN10-8k	0.85	0.21	0.88	0.29
AuN10-12k	1.4	6.22	15.49	207.22
AuN100-4k	1.96	1.35	38.75	156.31
AuN100-8k	1.83	1.28	37.6	193.52
AuN100-12k	1.96	1.35	38.75	156.31

Table S25. Process time (s) for neural networks.

Dataset / coef.	FNN-4		FNN-2	
	\bar{x} 1x10 ³	σ 1x10 ²	\bar{x} 1x10 ³	σ 1x10 ²
BreastCancer	0.06	0.01	0.06	0.01
BostonHousing	0.15	0.02	0.13	0.03
AirplaneCompanies	0.23	0.02	0.18	0.06
ComputerActivity	2.4	0.51	2.22	0.21
Census	4.54	1.08	3.97	1.3
Mnist	28.4	23.94	43.36	9.47
AuN2-4k	1.05	0.36	1.00	0.4
AuN2-8k	2.22	0.51	2.15	0.34
AuN2-12k	3.53	0.44	1.00	0.4
AuN10-4k	1.86	1.24	1.39	1.22
AuN10-8k	4.21	1.87	3.16	1.41
AuN10-12k	18.74	108.95	3.34	23.19
AuN100-4k	24.03	61.34	6.16	7.29
AuN100-8k	47.11	82.71	10.35	30.74
AuN100-12k	24.03	61.34	6.17	7.13

5. Au_{38Q} RMSE and process time tables

Tables S26–S35 report the normalized test RMSE of MLM on the variants of Au_{38Q} dataset. Similarly

Tables S36–S45 report the process time taken in OLS evaluation.

Table S26. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 10$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	3.27	1.54	2.97	2.39	7.67	2.23	1.89	6.22	1.76
sk_rrSVD_001	5.3	1.98	4.9	4.46	7.15	4.32	3.93	9.44	3.71
sk_rrSVD_002	4.56	1.62	4.08	3.7	7.61	3.5	3.09	7.59	2.96
sk_rrSVD_003	4.17	1.49	3.79	3.22	8.77	2.97	2.61	6.96	2.45
sk_rrSVD_004	3.91	1.55	3.5	2.92	8.44	2.64	2.32	7.5	2.15
sk_rrSVD_005	3.7	1.5	3.33	2.72	8.2	2.5	2.16	7.04	1.98
sk_rrSVD_006	3.54	1.52	3.19	2.59	7.65	2.4	2.05	7.02	1.89
sk_rrSVD_007	3.43	1.56	3.09	2.51	8.04	2.33	1.98	6.48	1.85
sk_rrSVD_008	3.35	1.61	3.04	2.45	7.81	2.28	1.94	6.37	1.8
sk_rrSVD_009	3.3	1.55	3.00	2.42	7.95	2.24	1.91	6.38	1.78
sk_rrSVD_010	3.27	1.54	2.97	2.39	7.67	2.23	1.89	6.25	1.76

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.99	7.85	1.85	1.52	5.48	1.41	1.21	3.2	1.13
sk_rrSVD_001	2.94	9.79	2.75	2.47	5.92	2.34	2.17	4.22	2.1
sk_rrSVD_002	2.59	9.94	2.41	2.12	5.14	2.00	1.8	3.17	1.71
sk_rrSVD_003	2.39	9.04	2.24	1.94	4.65	1.85	1.61	3.03	1.55
sk_rrSVD_004	2.26	8.76	2.13	1.81	4.91	1.74	1.49	2.98	1.39
sk_rrSVD_005	2.19	8.61	2.01	1.72	5.47	1.6	1.4	3.15	1.32
sk_rrSVD_006	2.13	8.36	1.96	1.65	5.16	1.56	1.34	2.95	1.27
sk_rrSVD_007	2.08	8.26	1.94	1.6	5.51	1.49	1.29	3.15	1.22
sk_rrSVD_008	2.04	7.81	1.91	1.57	5.41	1.45	1.25	3.24	1.18
sk_rrSVD_009	2.01	7.92	1.88	1.54	5.5	1.42	1.22	3.18	1.15
sk_rrSVD_010	1.99	7.85	1.85	1.52	5.48	1.41	1.21	3.2	1.13

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	2.00	7.5	1.83	1.53	5.15	1.45	1.21	3.56	1.15
sk_rrSVD_001	2.98	8.82	2.8	2.5	6.08	2.37	2.17	4.83	2.08
sk_rrSVD_002	2.61	8.22	2.44	2.13	5.57	2.01	1.8	4.32	1.68
sk_rrSVD_003	2.4	7.94	2.26	1.95	5.27	1.85	1.61	3.62	1.52
sk_rrSVD_004	2.28	7.44	2.13	1.83	4.45	1.74	1.49	3.54	1.41
sk_rrSVD_005	2.19	7.55	2.03	1.73	4.79	1.66	1.4	3.51	1.31
sk_rrSVD_006	2.13	7.72	1.96	1.67	4.94	1.58	1.33	3.58	1.25
sk_rrSVD_007	2.08	7.33	1.92	1.62	5.2	1.53	1.28	3.55	1.22
sk_rrSVD_008	2.05	7.38	1.9	1.58	5.02	1.51	1.25	3.52	1.19
sk_rrSVD_009	2.02	7.71	1.85	1.55	5.21	1.47	1.22	3.56	1.16
sk_rrSVD_010	2.00	7.5	1.83	1.53	5.15	1.45	1.21	3.56	1.15

Table S27. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 20$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	2.55	1.17	2.31	1.71	4.92	1.63	1.28	3.75	1.21
sk_rrSVD_001	5.23	1.83	4.81	4.44	8.2	4.26	3.89	8.89	3.68
sk_rrSVD_002	4.48	1.23	4.2	3.65	7.35	3.49	3.01	7.63	2.83
sk_rrSVD_003	4.08	1.25	3.78	3.14	8.54	2.94	2.47	6.73	2.34
sk_rrSVD_004	3.79	1.33	3.52	2.77	7.18	2.59	2.15	5.06	2.05
sk_rrSVD_005	3.55	1.47	3.19	2.52	6.62	2.39	1.93	4.8	1.85
sk_rrSVD_006	3.36	1.28	3.11	2.35	5.95	2.25	1.78	4.81	1.68
sk_rrSVD_007	3.19	1.38	2.93	2.21	6.06	2.09	1.66	4.12	1.56
sk_rrSVD_008	3.07	1.21	2.84	2.1	5.78	1.99	1.57	4.08	1.48
sk_rrSVD_009	2.96	1.27	2.69	2.02	5.41	1.91	1.5	4.27	1.41
sk_rrSVD_010	2.87	1.35	2.63	1.95	5.92	1.85	1.45	4.05	1.38

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.62	6.15	1.51	1.14	3.87	1.05	0.88	2.33	0.83
sk_rrSVD_001	2.88	9.65	2.69	2.44	5.49	2.34	2.15	3.48	2.06
sk_rrSVD_002	2.55	8.9	2.37	2.07	5.04	1.97	1.77	3.21	1.69
sk_rrSVD_003	2.33	6.85	2.22	1.89	4.00	1.82	1.57	2.41	1.53
sk_rrSVD_004	2.19	6.72	2.01	1.75	3.94	1.67	1.45	2.83	1.39
sk_rrSVD_005	2.09	6.7	1.95	1.64	3.73	1.53	1.34	2.78	1.26
sk_rrSVD_006	2.02	6.44	1.91	1.55	3.65	1.43	1.24	2.75	1.17
sk_rrSVD_007	1.96	6.71	1.83	1.47	3.47	1.37	1.17	2.8	1.08
sk_rrSVD_008	1.9	6.51	1.77	1.41	3.24	1.33	1.11	2.44	1.05
sk_rrSVD_009	1.85	6.42	1.73	1.36	3.09	1.28	1.07	2.42	1.01
sk_rrSVD_010	1.81	6.6	1.68	1.32	3.15	1.25	1.02	2.14	0.98

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.63	6.16	1.53	1.15	4.07	1.03	0.87	2.96	0.82
sk_rrSVD_001	2.94	8.98	2.73	2.47	5.68	2.35	2.15	4.89	2.06
sk_rrSVD_002	2.57	7.74	2.42	2.08	5.15	1.97	1.76	3.15	1.72
sk_rrSVD_003	2.34	7.37	2.24	1.89	4.83	1.8	1.57	3.2	1.51
sk_rrSVD_004	2.19	6.01	2.07	1.76	3.96	1.67	1.44	3.23	1.37
sk_rrSVD_005	2.1	5.57	1.98	1.65	4.12	1.57	1.33	3.52	1.26
sk_rrSVD_006	2.03	6.29	1.89	1.56	4.17	1.49	1.24	3.51	1.17
sk_rrSVD_007	1.97	5.98	1.84	1.47	3.96	1.39	1.16	2.99	1.11
sk_rrSVD_008	1.91	6.37	1.78	1.42	3.66	1.35	1.11	3.06	1.05
sk_rrSVD_009	1.86	6.26	1.76	1.37	3.66	1.26	1.06	2.92	0.99
sk_rrSVD_010	1.82	6.07	1.71	1.33	3.64	1.23	1.02	2.81	0.96

Table S28. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 30$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	2.17	0.93	1.99	1.4	4.73	1.29	1.02	3.4	0.94
sk_rrSVD_001	5.2	1.97	4.73	4.4	8.09	4.27	3.88	8.11	3.7
sk_rrSVD_002	4.46	1.33	4.14	3.62	6.94	3.52	2.99	8.03	2.78
sk_rrSVD_003	4.06	1.43	3.74	3.11	7.1	2.97	2.42	6.16	2.32
sk_rrSVD_004	3.74	1.18	3.51	2.71	6.88	2.54	2.09	5.49	1.96
sk_rrSVD_005	3.52	1.16	3.26	2.44	5.66	2.33	1.87	5.13	1.76
sk_rrSVD_006	3.32	1.12	3.11	2.28	5.73	2.15	1.7	4.22	1.6
sk_rrSVD_007	3.12	1.19	2.83	2.13	5.24	2.00	1.56	4.36	1.48
sk_rrSVD_008	2.97	1.16	2.7	2.02	3.98	1.93	1.46	3.58	1.39
sk_rrSVD_009	2.85	1.14	2.6	1.92	5.27	1.8	1.39	3.31	1.33
sk_rrSVD_010	2.74	1.08	2.48	1.84	4.75	1.74	1.33	3.51	1.26

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.42	4.34	1.34	0.96	2.91	0.9	0.72	1.66	0.68
sk_rrSVD_001	2.86	9.84	2.67	2.43	4.53	2.35	2.14	3.99	2.05
sk_rrSVD_002	2.52	7.88	2.4	2.06	4.6	1.96	1.76	3.01	1.7
sk_rrSVD_003	2.31	6.66	2.19	1.87	4.31	1.79	1.57	2.67	1.51
sk_rrSVD_004	2.17	6.33	2.07	1.74	4.14	1.64	1.43	2.81	1.37
sk_rrSVD_005	2.06	6.52	1.96	1.62	3.25	1.53	1.32	2.57	1.25
sk_rrSVD_006	1.99	5.95	1.89	1.52	3.2	1.45	1.22	2.68	1.13
sk_rrSVD_007	1.92	6.79	1.82	1.44	2.51	1.37	1.14	2.21	1.06
sk_rrSVD_008	1.87	6.31	1.74	1.37	2.76	1.31	1.08	2.23	1.02
sk_rrSVD_009	1.81	5.81	1.68	1.31	2.33	1.26	1.02	1.93	0.96
sk_rrSVD_010	1.76	6.23	1.65	1.27	2.23	1.22	0.97	1.75	0.92

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.43	5.27	1.34	0.96	2.64	0.88	0.72	2.16	0.68
sk_rrSVD_001	2.9	7.49	2.69	2.46	5.57	2.34	2.14	4.28	2.05
sk_rrSVD_002	2.54	7.74	2.38	2.07	4.5	2.00	1.74	3.66	1.69
sk_rrSVD_003	2.3	6.01	2.21	1.88	3.41	1.81	1.55	3.11	1.49
sk_rrSVD_004	2.16	5.44	2.04	1.74	3.58	1.66	1.42	3.31	1.36
sk_rrSVD_005	2.07	5.31	1.97	1.63	3.27	1.56	1.31	3.03	1.24
sk_rrSVD_006	2.00	4.8	1.91	1.53	2.8	1.48	1.21	2.93	1.15
sk_rrSVD_007	1.93	4.97	1.85	1.44	3.24	1.39	1.13	2.47	1.09
sk_rrSVD_008	1.87	5.68	1.77	1.38	2.92	1.32	1.07	2.39	1.02
sk_rrSVD_009	1.82	5.62	1.73	1.32	2.46	1.26	1.01	2.34	0.96
sk_rrSVD_010	1.77	5.66	1.68	1.27	2.46	1.22	0.96	2.37	0.9

Table S29. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 40$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.95	0.82	1.78	1.21	3.67	1.14	0.88	2.4	0.83
sk_rrSVD_001	5.19	1.74	4.76	4.4	7.99	4.24	3.87	8.84	3.69
sk_rrSVD_002	4.45	1.23	4.2	3.62	6.91	3.49	2.96	6.92	2.81
sk_rrSVD_003	4.04	1.33	3.71	3.08	6.85	2.94	2.41	5.83	2.24
sk_rrSVD_004	3.72	1.24	3.5	2.68	7.86	2.51	2.06	4.71	1.96
sk_rrSVD_005	3.49	1.08	3.23	2.42	6.03	2.32	1.84	4.66	1.73
sk_rrSVD_006	3.28	1.19	3.04	2.23	5.36	2.1	1.66	3.92	1.59
sk_rrSVD_007	3.07	1.17	2.77	2.09	4.33	2.01	1.53	3.74	1.44
sk_rrSVD_008	2.92	1.11	2.66	1.97	4.68	1.84	1.43	3.41	1.38
sk_rrSVD_009	2.8	1.05	2.57	1.87	4.57	1.78	1.35	2.95	1.3
sk_rrSVD_010	2.69	1.07	2.44	1.79	5.00	1.69	1.28	2.86	1.23

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.3	4.45	1.22	0.85	2.54	0.8	0.64	1.47	0.61
sk_rrSVD_001	2.85	8.26	2.69	2.42	4.43	2.33	2.13	3.82	2.07
sk_rrSVD_002	2.52	7.51	2.38	2.05	4.51	1.96	1.76	3.09	1.7
sk_rrSVD_003	2.3	5.88	2.19	1.87	3.93	1.79	1.56	2.47	1.5
sk_rrSVD_004	2.14	5.18	2.06	1.73	3.54	1.62	1.43	2.43	1.38
sk_rrSVD_005	2.05	5.75	1.94	1.61	3.18	1.55	1.31	2.71	1.25
sk_rrSVD_006	1.97	5.65	1.87	1.51	3.49	1.43	1.2	2.37	1.15
sk_rrSVD_007	1.91	5.39	1.81	1.42	3.08	1.36	1.13	1.99	1.07
sk_rrSVD_008	1.85	5.88	1.69	1.35	2.55	1.31	1.06	1.88	1.01
sk_rrSVD_009	1.79	5.61	1.68	1.29	2.23	1.26	1.00	2.02	0.96
sk_rrSVD_010	1.74	5.71	1.62	1.25	2.2	1.2	0.95	2.01	0.91

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.3	4.35	1.23	0.85	2.24	0.79	0.63	1.78	0.59
sk_rrSVD_001	2.88	7.24	2.72	2.46	6.01	2.33	2.14	4.46	2.05
sk_rrSVD_002	2.53	6.57	2.41	2.05	4.89	1.93	1.75	3.3	1.69
sk_rrSVD_003	2.29	6.05	2.17	1.87	4.29	1.81	1.54	3.47	1.47
sk_rrSVD_004	2.15	5.5	2.03	1.74	3.7	1.67	1.42	2.85	1.35
sk_rrSVD_005	2.05	5.55	1.96	1.61	3.35	1.56	1.3	2.78	1.22
sk_rrSVD_006	1.99	4.88	1.91	1.51	2.87	1.45	1.2	2.41	1.15
sk_rrSVD_007	1.92	4.89	1.84	1.42	3.27	1.37	1.12	2.23	1.07
sk_rrSVD_008	1.85	5.35	1.76	1.36	2.75	1.32	1.05	2.31	1.01
sk_rrSVD_009	1.79	5.2	1.71	1.3	2.6	1.26	0.99	2.26	0.95
sk_rrSVD_010	1.75	5.11	1.67	1.25	2.68	1.2	0.94	2.24	0.9

Table S30. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 50$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.79	0.71	1.67	1.09	3.2	1.04	0.8	2.07	0.76
sk_rrSVD_001	5.18	1.71	4.76	4.38	7.36	4.2	3.87	7.28	3.71
sk_rrSVD_002	4.43	1.44	4.1	3.61	6.63	3.49	2.96	7.24	2.81
sk_rrSVD_003	4.02	1.32	3.67	3.07	6.98	2.94	2.4	5.94	2.26
sk_rrSVD_004	3.71	1.32	3.46	2.66	6.07	2.5	2.05	4.3	1.93
sk_rrSVD_005	3.47	1.17	3.18	2.4	6.05	2.25	1.82	3.95	1.75
sk_rrSVD_006	3.26	1.23	2.95	2.21	5.64	2.06	1.64	3.14	1.59
sk_rrSVD_007	3.07	1.11	2.78	2.07	4.45	1.96	1.51	3.05	1.44
sk_rrSVD_008	2.9	1.07	2.6	1.96	3.81	1.87	1.41	2.67	1.34
sk_rrSVD_009	2.76	0.99	2.53	1.84	3.96	1.76	1.32	2.56	1.27
sk_rrSVD_010	2.65	1.02	2.39	1.76	3.68	1.66	1.26	2.71	1.21

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.21	4.34	1.11	0.78	2.14	0.75	0.6	1.29	0.58
sk_rrSVD_001	2.83	7.67	2.68	2.42	4.46	2.32	2.14	3.76	2.06
sk_rrSVD_002	2.52	6.51	2.37	2.05	4.92	1.96	1.75	3.18	1.7
sk_rrSVD_003	2.28	6.11	2.18	1.87	3.94	1.79	1.56	2.55	1.5
sk_rrSVD_004	2.14	5.36	2.05	1.73	3.71	1.64	1.42	2.08	1.38
sk_rrSVD_005	2.04	4.99	1.93	1.61	2.88	1.54	1.3	2.62	1.24
sk_rrSVD_006	1.97	5.46	1.86	1.5	3.25	1.43	1.2	2.55	1.14
sk_rrSVD_007	1.9	5.4	1.78	1.41	2.84	1.35	1.11	2.11	1.07
sk_rrSVD_008	1.84	5.65	1.73	1.34	2.52	1.29	1.05	2.07	1.00
sk_rrSVD_009	1.77	5.64	1.65	1.28	2.07	1.24	0.99	2.28	0.93
sk_rrSVD_010	1.72	4.93	1.62	1.23	1.93	1.19	0.94	1.89	0.9

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.21	3.84	1.15	0.79	2.26	0.73	0.58	1.61	0.54
sk_rrSVD_001	2.89	8.37	2.71	2.45	5.12	2.36	2.14	3.78	2.06
sk_rrSVD_002	2.52	6.48	2.4	2.05	5.03	1.95	1.74	2.83	1.69
sk_rrSVD_003	2.29	6.04	2.13	1.86	3.93	1.8	1.54	3.08	1.48
sk_rrSVD_004	2.14	4.69	2.03	1.72	3.86	1.64	1.42	2.69	1.37
sk_rrSVD_005	2.05	5.29	1.96	1.61	3.79	1.56	1.3	2.39	1.25
sk_rrSVD_006	1.97	4.54	1.88	1.51	3.01	1.45	1.19	2.6	1.14
sk_rrSVD_007	1.91	5.09	1.79	1.42	3.07	1.35	1.11	2.14	1.06
sk_rrSVD_008	1.85	4.62	1.75	1.34	2.83	1.3	1.05	2.15	1.00
sk_rrSVD_009	1.78	4.41	1.71	1.28	2.81	1.22	0.99	2.13	0.94
sk_rrSVD_010	1.73	4.86	1.66	1.23	2.53	1.19	0.93	2.11	0.89

Table S31. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 60$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.68	0.66	1.58	1.01	3.07	0.96	0.74	2.11	0.69
sk_rrSVD_001	5.17	1.62	4.73	4.39	7.84	4.26	3.87	7.33	3.72
sk_rrSVD_002	4.43	1.33	4.04	3.61	6.4	3.49	2.94	6.38	2.81
sk_rrSVD_003	4.02	1.21	3.71	3.07	5.83	2.97	2.4	5.35	2.27
sk_rrSVD_004	3.7	1.31	3.45	2.66	6.09	2.52	2.04	3.77	1.92
sk_rrSVD_005	3.46	1.12	3.25	2.38	5.71	2.23	1.8	4.23	1.71
sk_rrSVD_006	3.25	1.22	2.96	2.2	5.9	2.03	1.64	3.53	1.55
sk_rrSVD_007	3.03	1.13	2.77	2.05	5.05	1.91	1.5	3.19	1.43
sk_rrSVD_008	2.88	1.15	2.57	1.94	4.41	1.86	1.39	2.52	1.34
sk_rrSVD_009	2.74	0.99	2.48	1.83	3.47	1.75	1.31	2.49	1.25
sk_rrSVD_010	2.62	1.01	2.41	1.74	3.86	1.64	1.25	2.59	1.19

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.14	3.46	1.07	0.74	1.86	0.71	0.57	1.23	0.54
sk_rrSVD_001	2.83	7.82	2.68	2.42	4.34	2.32	2.13	3.76	2.07
sk_rrSVD_002	2.51	6.65	2.36	2.06	4.72	1.97	1.75	2.99	1.69
sk_rrSVD_003	2.28	6.00	2.16	1.87	4.07	1.79	1.55	2.17	1.51
sk_rrSVD_004	2.13	5.3	2.02	1.72	3.69	1.65	1.42	2.36	1.37
sk_rrSVD_005	2.03	4.93	1.94	1.6	3.12	1.53	1.3	2.3	1.26
sk_rrSVD_006	1.97	5.13	1.86	1.5	3.37	1.43	1.19	2.32	1.15
sk_rrSVD_007	1.89	5.66	1.79	1.41	2.81	1.36	1.11	1.76	1.07
sk_rrSVD_008	1.84	5.34	1.74	1.33	2.55	1.28	1.04	1.97	0.99
sk_rrSVD_009	1.77	5.35	1.66	1.28	2.34	1.24	0.98	1.88	0.94
sk_rrSVD_010	1.71	5.17	1.62	1.22	2.15	1.17	0.93	1.89	0.9

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.14	3.46	1.08	0.74	2.1	0.69	0.55	1.6	0.51
sk_rrSVD_001	2.87	8.7	2.72	2.45	4.57	2.37	2.13	3.58	2.06
sk_rrSVD_002	2.51	5.35	2.43	2.04	4.53	1.96	1.74	2.89	1.68
sk_rrSVD_003	2.28	5.66	2.14	1.86	3.95	1.79	1.54	3.37	1.47
sk_rrSVD_004	2.14	4.56	2.04	1.73	3.46	1.65	1.41	2.58	1.35
sk_rrSVD_005	2.05	5.28	1.94	1.6	3.38	1.54	1.29	2.5	1.24
sk_rrSVD_006	1.97	5.24	1.89	1.5	2.73	1.45	1.18	2.21	1.14
sk_rrSVD_007	1.91	4.62	1.82	1.41	3.08	1.36	1.1	2.13	1.06
sk_rrSVD_008	1.84	4.31	1.75	1.33	2.96	1.27	1.04	2.06	0.99
sk_rrSVD_009	1.78	4.78	1.68	1.28	2.86	1.21	0.98	2.14	0.94
sk_rrSVD_010	1.72	4.99	1.64	1.22	2.53	1.17	0.92	1.79	0.89

Table S32. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 70$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.59	0.62	1.47	0.95	2.86	0.89	0.7	1.78	0.66
sk_rrSVD_001	5.18	1.57	4.9	4.37	7.85	4.16	3.86	6.43	3.71
sk_rrSVD_002	4.43	1.51	4.08	3.6	6.61	3.41	2.96	7.09	2.84
sk_rrSVD_003	4.03	1.17	3.79	3.05	7.3	2.82	2.39	4.83	2.3
sk_rrSVD_004	3.68	1.26	3.44	2.64	5.43	2.51	2.03	4.5	1.91
sk_rrSVD_005	3.46	1.19	3.21	2.37	5.49	2.25	1.8	3.97	1.73
sk_rrSVD_006	3.24	1.23	3.00	2.19	5.6	2.04	1.63	2.95	1.56
sk_rrSVD_007	3.02	1.33	2.72	2.05	4.44	1.96	1.49	3.1	1.42
sk_rrSVD_008	2.86	1.09	2.65	1.92	4.02	1.82	1.39	2.98	1.33
sk_rrSVD_009	2.72	0.99	2.53	1.81	3.63	1.73	1.3	2.31	1.25
sk_rrSVD_010	2.61	0.96	2.41	1.73	3.72	1.65	1.24	2.74	1.18

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.09	3.5	1.03	0.71	1.78	0.68	0.55	1.05	0.53
sk_rrSVD_001	2.82	8.33	2.68	2.42	4.25	2.34	2.13	3.87	2.06
sk_rrSVD_002	2.51	6.51	2.4	2.06	4.5	1.97	1.75	3.01	1.67
sk_rrSVD_003	2.27	5.83	2.17	1.87	3.42	1.8	1.55	2.35	1.5
sk_rrSVD_004	2.13	4.9	2.04	1.72	3.49	1.66	1.42	2.07	1.38
sk_rrSVD_005	2.04	4.92	1.95	1.6	3.37	1.5	1.3	2.04	1.26
sk_rrSVD_006	1.97	5.62	1.86	1.5	3.27	1.42	1.19	2.13	1.14
sk_rrSVD_007	1.89	6.35	1.75	1.4	3.12	1.33	1.1	1.87	1.06
sk_rrSVD_008	1.83	5.33	1.72	1.33	2.83	1.26	1.04	1.79	1.00
sk_rrSVD_009	1.76	5.01	1.66	1.27	2.26	1.23	0.98	1.75	0.95
sk_rrSVD_010	1.7	4.72	1.61	1.22	2.06	1.18	0.93	1.86	0.89

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.09	3.41	1.02	0.71	1.89	0.66	0.53	1.54	0.49
sk_rrSVD_001	2.88	7.6	2.72	2.44	4.74	2.35	2.13	3.58	2.07
sk_rrSVD_002	2.52	5.42	2.44	2.04	4.18	1.97	1.73	2.85	1.65
sk_rrSVD_003	2.27	5.46	2.15	1.86	3.62	1.78	1.53	3.23	1.47
sk_rrSVD_004	2.14	5.22	2.06	1.72	3.34	1.64	1.41	3.03	1.34
sk_rrSVD_005	2.04	4.82	1.95	1.6	3.18	1.54	1.29	2.47	1.24
sk_rrSVD_006	1.97	5.2	1.88	1.49	2.49	1.43	1.18	2.12	1.15
sk_rrSVD_007	1.9	4.23	1.83	1.4	2.54	1.34	1.1	2.06	1.05
sk_rrSVD_008	1.84	4.65	1.75	1.33	2.76	1.27	1.03	2.01	0.99
sk_rrSVD_009	1.77	4.27	1.7	1.27	2.37	1.22	0.98	1.94	0.94
sk_rrSVD_010	1.72	4.79	1.63	1.22	2.58	1.17	0.92	1.85	0.88

Table S33. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 80$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.52	0.57	1.4	0.91	2.86	0.84	0.66	1.53	0.63
sk_rrSVD_001	5.18	1.76	4.83	4.38	5.87	4.27	3.86	8.02	3.69
sk_rrSVD_002	4.42	1.44	4.06	3.6	6.24	3.45	2.96	8.79	2.73
sk_rrSVD_003	4.02	1.3	3.73	3.04	6.04	2.87	2.38	4.95	2.26
sk_rrSVD_004	3.68	1.22	3.41	2.65	6.38	2.49	2.02	4.51	1.93
sk_rrSVD_005	3.45	1.07	3.24	2.36	5.25	2.25	1.79	4.21	1.72
sk_rrSVD_006	3.22	1.19	2.94	2.18	4.75	2.03	1.63	3.48	1.54
sk_rrSVD_007	3.01	1.2	2.69	2.04	4.43	1.92	1.49	3.66	1.41
sk_rrSVD_008	2.84	1.19	2.56	1.91	4.22	1.82	1.38	3.14	1.3
sk_rrSVD_009	2.7	1.00	2.53	1.81	3.7	1.72	1.29	2.61	1.23
sk_rrSVD_010	2.6	0.89	2.39	1.72	3.65	1.63	1.23	2.6	1.17

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.06	3.23	1.00	0.69	1.68	0.66	0.53	1.03	0.51
sk_rrSVD_001	2.82	7.83	2.67	2.42	4.3	2.33	2.13	4.32	2.05
sk_rrSVD_002	2.51	6.83	2.39	2.05	3.94	1.97	1.75	2.99	1.68
sk_rrSVD_003	2.27	6.6	2.16	1.87	3.91	1.79	1.55	2.23	1.5
sk_rrSVD_004	2.12	4.94	2.01	1.72	3.39	1.65	1.42	2.17	1.38
sk_rrSVD_005	2.03	4.46	1.95	1.6	3.1	1.52	1.3	2.29	1.25
sk_rrSVD_006	1.96	5.53	1.84	1.49	3.4	1.4	1.18	2.1	1.13
sk_rrSVD_007	1.89	5.58	1.76	1.4	2.85	1.34	1.1	1.51	1.07
sk_rrSVD_008	1.82	5.25	1.71	1.33	2.83	1.26	1.04	1.71	1.00
sk_rrSVD_009	1.76	5.14	1.68	1.26	2.29	1.22	0.98	1.81	0.93
sk_rrSVD_010	1.7	5.04	1.61	1.21	1.99	1.17	0.93	1.67	0.89

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.06	2.98	1.00	0.69	1.75	0.65	0.52	1.47	0.48
sk_rrSVD_001	2.87	8.03	2.73	2.44	4.84	2.37	2.14	3.5	2.07
sk_rrSVD_002	2.51	5.9	2.39	2.04	4.61	1.97	1.73	2.95	1.66
sk_rrSVD_003	2.27	5.4	2.15	1.86	3.86	1.77	1.54	3.25	1.47
sk_rrSVD_004	2.13	4.71	2.05	1.73	3.27	1.65	1.41	2.71	1.34
sk_rrSVD_005	2.03	5.03	1.93	1.6	3.86	1.54	1.29	2.51	1.23
sk_rrSVD_006	1.96	6.09	1.84	1.49	2.67	1.44	1.18	2.26	1.14
sk_rrSVD_007	1.9	4.62	1.81	1.4	2.83	1.35	1.1	2.19	1.04
sk_rrSVD_008	1.84	4.54	1.74	1.32	2.51	1.27	1.03	1.82	0.99
sk_rrSVD_009	1.77	4.52	1.68	1.27	2.66	1.21	0.97	1.93	0.93
sk_rrSVD_010	1.71	4.7	1.63	1.22	2.21	1.17	0.91	2.06	0.87

Table S34. Normalized RMSE mean, standard deviation and best result for Au₃₈Q $K = 90$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.47	0.6	1.35	0.87	2.68	0.81	0.64	1.55	0.61
sk_rrSVD_001	5.18	1.72	4.83	4.38	7.6	4.13	3.86	8.15	3.64
sk_rrSVD_002	4.42	1.4	4.13	3.6	7.06	3.42	2.96	8.12	2.77
sk_rrSVD_003	4.02	1.22	3.73	3.04	5.78	2.93	2.37	5.35	2.26
sk_rrSVD_004	3.69	1.24	3.4	2.63	5.82	2.47	2.02	4.46	1.89
sk_rrSVD_005	3.44	1.2	3.18	2.36	5.25	2.2	1.79	4.23	1.7
sk_rrSVD_006	3.21	1.13	2.94	2.18	4.32	2.04	1.62	3.37	1.54
sk_rrSVD_007	3.02	1.07	2.81	2.03	4.1	1.93	1.48	3.5	1.39
sk_rrSVD_008	2.84	1.12	2.63	1.9	4.27	1.8	1.38	3.19	1.32
sk_rrSVD_009	2.69	1.04	2.48	1.8	3.98	1.71	1.29	2.35	1.23
sk_rrSVD_010	2.59	0.95	2.4	1.71	3.59	1.63	1.22	2.49	1.18

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.03	3.02	0.97	0.67	1.64	0.64	0.51	0.97	0.5
sk_rrSVD_001	2.82	8.04	2.67	2.42	4.14	2.33	2.13	3.9	2.04
sk_rrSVD_002	2.49	7.29	2.32	2.05	3.98	1.98	1.75	3.01	1.67
sk_rrSVD_003	2.26	5.83	2.18	1.87	3.69	1.8	1.55	2.31	1.49
sk_rrSVD_004	2.12	5.36	2.03	1.72	3.85	1.64	1.42	2.25	1.37
sk_rrSVD_005	2.03	5.08	1.96	1.6	2.91	1.51	1.3	2.1	1.25
sk_rrSVD_006	1.96	5.62	1.86	1.49	3.34	1.41	1.18	2.37	1.14
sk_rrSVD_007	1.89	5.66	1.78	1.4	2.82	1.33	1.1	1.52	1.06
sk_rrSVD_008	1.82	5.37	1.72	1.32	2.97	1.28	1.04	1.56	1.00
sk_rrSVD_009	1.75	4.86	1.66	1.26	2.38	1.22	0.97	1.7	0.94
sk_rrSVD_010	1.69	4.73	1.61	1.21	1.91	1.17	0.92	1.54	0.89

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.03	2.88	0.98	0.66	1.85	0.62	0.5	1.43	0.47
sk_rrSVD_001	2.87	7.04	2.7	2.45	5.06	2.36	2.14	3.11	2.07
sk_rrSVD_002	2.5	5.91	2.38	2.04	4.14	1.95	1.73	3.4	1.65
sk_rrSVD_003	2.27	5.29	2.16	1.86	3.45	1.8	1.53	3.16	1.47
sk_rrSVD_004	2.12	4.36	2.06	1.72	3.57	1.64	1.41	2.77	1.34
sk_rrSVD_005	2.02	4.8	1.93	1.6	3.54	1.53	1.29	2.31	1.24
sk_rrSVD_006	1.96	5.39	1.83	1.49	3.14	1.44	1.18	2.08	1.14
sk_rrSVD_007	1.9	4.77	1.8	1.39	3.11	1.34	1.09	2.25	1.04
sk_rrSVD_008	1.84	4.77	1.73	1.32	2.41	1.28	1.03	1.76	1.00
sk_rrSVD_009	1.77	3.91	1.69	1.26	2.31	1.2	0.97	1.79	0.94
sk_rrSVD_010	1.71	4.65	1.63	1.21	2.67	1.17	0.91	1.87	0.88

Table S35. Normalized RMSE mean, standard deviation and best result for $\text{Au}_{38\text{Q}}$ $K = 100$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-3}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.43	0.62	1.32	0.84	2.54	0.78	0.61	1.6	0.59
sk_rrSVD_001	5.18	1.76	4.84	4.37	8.33	4.21	3.87	8.71	3.61
sk_rrSVD_002	4.42	1.45	4.11	3.6	7.29	3.39	2.94	7.38	2.77
sk_rrSVD_003	4.01	1.28	3.76	3.05	5.49	2.91	2.37	4.96	2.26
sk_rrSVD_004	3.68	1.2	3.45	2.64	5.31	2.52	2.02	4.32	1.91
sk_rrSVD_005	3.44	1.32	3.18	2.35	5.58	2.2	1.79	4.23	1.7
sk_rrSVD_006	3.22	1.3	2.88	2.17	4.88	2.03	1.61	3.26	1.55
sk_rrSVD_007	3.01	1.05	2.71	2.03	4.41	1.95	1.48	3.31	1.39
sk_rrSVD_008	2.83	1.16	2.55	1.9	5.05	1.79	1.37	2.95	1.32
sk_rrSVD_009	2.68	1.07	2.47	1.79	3.58	1.71	1.29	2.4	1.23
sk_rrSVD_010	2.58	0.94	2.39	1.71	4.00	1.63	1.22	2.34	1.16

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.01	2.92	0.94	0.65	1.66	0.62	0.5	1.04	0.48
sk_rrSVD_001	2.82	8.02	2.67	2.42	5.27	2.3	2.13	3.25	2.03
sk_rrSVD_002	2.5	6.33	2.37	2.05	4.29	1.96	1.75	2.91	1.69
sk_rrSVD_003	2.27	6.29	2.17	1.87	3.72	1.78	1.55	2.06	1.49
sk_rrSVD_004	2.12	5.82	2.02	1.72	3.37	1.64	1.42	2.11	1.38
sk_rrSVD_005	2.03	4.92	1.94	1.59	2.96	1.54	1.3	1.95	1.25
sk_rrSVD_006	1.96	5.92	1.86	1.49	3.35	1.41	1.18	2.09	1.14
sk_rrSVD_007	1.89	5.38	1.79	1.4	2.89	1.33	1.1	1.73	1.05
sk_rrSVD_008	1.83	5.13	1.72	1.32	2.66	1.25	1.03	1.51	1.00
sk_rrSVD_009	1.75	5.35	1.65	1.26	2.64	1.21	0.97	1.75	0.94
sk_rrSVD_010	1.69	4.21	1.63	1.21	2.23	1.16	0.92	1.47	0.89

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}	1×10^{-2}	1×10^{-4}	1×10^{-2}
cho_dec	1.01	2.85	0.96	0.64	1.82	0.6	0.49	1.45	0.45
sk_rrSVD_001	2.87	7.59	2.72	2.44	4.65	2.34	2.14	3.74	2.07
sk_rrSVD_002	2.5	5.47	2.4	2.04	4.41	1.96	1.73	3.11	1.65
sk_rrSVD_003	2.26	5.00	2.13	1.87	3.62	1.79	1.53	2.8	1.48
sk_rrSVD_004	2.13	4.41	2.05	1.72	3.33	1.65	1.41	2.81	1.34
sk_rrSVD_005	2.02	5.05	1.92	1.6	3.48	1.53	1.29	2.28	1.24
sk_rrSVD_006	1.96	4.81	1.83	1.49	3.16	1.44	1.18	2.35	1.12
sk_rrSVD_007	1.9	5.04	1.81	1.39	3.18	1.34	1.09	1.94	1.05
sk_rrSVD_008	1.83	4.6	1.74	1.32	2.57	1.26	1.03	1.84	0.99
sk_rrSVD_009	1.76	3.81	1.66	1.26	2.58	1.2	0.96	1.61	0.93
sk_rrSVD_010	1.71	4.43	1.62	1.21	2.59	1.17	0.91	1.79	0.88

Table S36. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 10$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^{-1}	1×10^1
cho_dec	1.05	0.38	0.98	3.76	3.49	3.43	0.55	2.39	0.53
sk_rrSVD_001	0.95	1.06	0.88	1.95	3.92	1.64	0.51	7.04	0.46
sk_rrSVD_002	1.12	1.12	1.06	3.06	7.71	2.59	0.81	10.63	0.72
sk_rrSVD_003	1.62	1.47	1.54	4.63	9.72	3.94	1.13	15.28	1.01
sk_rrSVD_004	2.04	1.73	1.97	5.98	12.23	5.18	1.42	14.28	1.3
sk_rrSVD_005	2.53	1.79	2.44	7.56	15.93	6.45	1.72	14.32	1.62
sk_rrSVD_006	2.96	1.13	2.83	8.68	13.3	7.74	1.94	8.11	1.89
sk_rrSVD_007	3.43	1.29	3.32	9.65	11.19	8.89	2.3	6.78	2.25
sk_rrSVD_008	3.85	0.62	3.75	10.6	5.12	10.11	2.72	8.88	2.63
sk_rrSVD_009	4.4	3.15	4.22	11.9	8.65	11.27	3.21	14.08	3.04
sk_rrSVD_010	4.79	3.38	3.00	13.05	5.41	12.53	3.44	4.63	3.38

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^{-1}	1×10^1
cho_dec	1.21	3.68	0.82	3.63	2.31	3.36	0.55	2.56	0.53
sk_rrSVD_001	1.09	2.39	0.7	1.82	3.35	1.6	0.5	6.55	0.47
sk_rrSVD_002	1.17	2.59	0.77	2.86	4.00	2.53	0.78	10.06	0.72
sk_rrSVD_003	1.49	3.54	0.92	4.14	6.49	3.7	1.08	14.6	0.99
sk_rrSVD_004	1.88	4.14	1.12	5.48	7.52	5.05	1.42	15.25	1.32
sk_rrSVD_005	2.24	4.31	1.36	7.05	11.77	6.29	1.75	19.59	1.61
sk_rrSVD_006	2.63	4.76	1.63	8.3	12.4	7.55	1.96	9.46	1.89
sk_rrSVD_007	3.07	5.95	1.88	9.3	8.86	8.74	2.3	7.65	2.21
sk_rrSVD_008	3.52	6.37	2.16	10.34	6.25	9.89	2.73	6.17	2.66
sk_rrSVD_009	3.88	6.79	2.44	11.57	8.02	11.08	3.25	18.94	3.01
sk_rrSVD_010	4.3	7.07	2.75	12.8	7.16	12.24	3.47	7.97	3.38

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	1.18	1.41	1.05	3.55	0.25	3.24	0.52	0.11	0.5
sk_rrSVD_001	1.03	1.9	0.82	1.92	0.34	1.66	0.51	0.55	0.46
sk_rrSVD_002	1.19	1.56	1.07	3.05	0.66	2.6	0.84	1.62	0.72
sk_rrSVD_003	1.57	0.76	1.52	4.53	0.92	3.82	1.22	2.06	1.01
sk_rrSVD_004	1.98	0.59	1.92	6.02	1.12	5.13	1.49	1.7	1.32
sk_rrSVD_005	2.43	0.61	2.37	7.62	1.64	6.33	1.81	2.02	1.62
sk_rrSVD_006	2.8	0.62	2.74	8.8	1.74	7.5	1.95	0.67	1.86
sk_rrSVD_007	3.25	1.04	3.17	9.87	1.45	8.96	2.32	1.08	2.21
sk_rrSVD_008	3.75	2.16	3.63	10.96	1.14	10.24	2.78	1.34	2.64
sk_rrSVD_009	4.32	1.17	4.12	12.28	1.34	11.46	3.17	1.52	3.01
sk_rrSVD_010	4.66	0.84	4.54	13.49	1.09	12.67	3.45	0.64	3.36

Table S37. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 20$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^{-1}	1×10^1
cho_dec	2.3	1.43	2.09	0.57	0.15	5.41	1.45	6.98	1.38
sk_rrSVD_001	1.1	1.81	0.92	0.37	0.24	3.45	0.97	6.32	0.89
sk_rrSVD_002	1.29	2.57	1.03	0.53	0.47	4.79	1.35	13.02	1.21
sk_rrSVD_003	1.76	4.54	1.29	0.69	0.79	6.25	1.72	15.3	1.6
sk_rrSVD_004	2.16	5.24	1.59	0.89	1.45	7.7	2.13	16.52	1.97
sk_rrSVD_005	2.61	6.61	1.95	1.06	1.63	9.28	2.49	11.52	2.37
sk_rrSVD_006	3.23	8.44	2.39	1.23	1.83	11.03	2.92	7.91	2.78
sk_rrSVD_007	3.84	9.41	2.79	1.43	2.06	12.6	3.34	8.78	3.21
sk_rrSVD_008	4.51	11.55	3.19	1.6	1.91	14.38	3.98	6.23	3.82
sk_rrSVD_009	5.1	12.69	3.61	1.74	1.45	16.13	4.7	15.21	4.42
sk_rrSVD_010	5.78	13.00	4.11	1.89	1.08	18.1	4.91	5.86	4.8

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	2.35	3.04	2.11	0.57	0.34	5.49	1.45	0.82	1.34
sk_rrSVD_001	1.19	1.94	0.94	0.39	0.52	3.47	0.97	0.93	0.85
sk_rrSVD_002	1.47	2.71	1.08	0.53	0.71	4.78	1.36	1.6	1.15
sk_rrSVD_003	1.95	3.71	1.3	0.71	1.13	6.18	1.78	2.02	1.51
sk_rrSVD_004	2.5	5.4	1.6	0.89	1.56	7.56	2.22	2.42	1.93
sk_rrSVD_005	2.98	5.69	1.89	1.02	1.49	9.01	2.49	1.69	2.3
sk_rrSVD_006	3.61	5.5	2.28	1.18	1.76	10.73	2.87	0.93	2.76
sk_rrSVD_007	4.27	7.55	2.68	1.34	1.79	12.16	3.31	1.4	3.17
sk_rrSVD_008	4.78	8.02	3.1	1.5	1.63	13.92	3.96	2.03	3.77
sk_rrSVD_009	5.45	8.95	3.45	1.68	1.59	15.67	4.6	1.95	4.25
sk_rrSVD_010	6.18	10.29	3.9	1.88	1.92	17.6	4.87	1.03	4.74

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	2.55	2.58	2.1	0.57	0.22	5.41	1.48	1.19	1.37
sk_rrSVD_001	1.26	2.51	0.94	0.39	0.5	3.38	0.99	1.09	0.87
sk_rrSVD_002	1.43	2.77	1.02	0.57	1.05	4.55	1.47	1.76	1.2
sk_rrSVD_003	1.91	3.57	1.25	0.75	1.17	5.97	1.93	2.11	1.57
sk_rrSVD_004	2.34	4.29	1.54	0.97	1.61	7.69	2.2	2.46	1.97
sk_rrSVD_005	2.82	5.08	1.84	1.14	1.95	9.18	2.49	1.71	2.32
sk_rrSVD_006	3.59	8.43	2.25	1.28	1.97	10.81	2.91	1.46	2.78
sk_rrSVD_007	4.05	8.19	2.61	1.43	1.96	12.32	3.27	1.09	3.16
sk_rrSVD_008	4.64	9.27	3.03	1.6	2.08	14.02	3.92	0.84	3.78
sk_rrSVD_009	5.38	11.12	3.44	1.74	1.84	15.71	4.65	1.56	4.28
sk_rrSVD_010	6.15	14.37	3.89	1.91	1.9	17.36	4.84	1.18	4.66

Table S38. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 30$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	2.43	1.64	2.21	1.04	1.06	0.97	2.91	0.88	2.79
sk_rrSVD_001	1.32	0.93	1.22	0.55	0.67	0.5	1.51	1.44	1.38
sk_rrSVD_002	1.54	1.9	1.39	0.8	1.63	0.65	2.02	2.22	1.8
sk_rrSVD_003	2.07	3.8	1.79	1.02	1.91	0.83	2.49	2.52	2.2
sk_rrSVD_004	2.46	4.86	2.08	1.2	1.8	1.00	2.93	2.13	2.71
sk_rrSVD_005	2.96	6.37	2.46	1.34	1.98	1.16	3.32	1.88	3.18
sk_rrSVD_006	3.58	9.08	2.97	1.56	2.2	1.39	3.8	1.47	3.64
sk_rrSVD_007	4.14	9.72	3.41	1.72	1.95	1.55	4.28	1.45	4.09
sk_rrSVD_008	4.83	11.74	3.92	1.9	1.53	1.76	5.05	1.7	4.84
sk_rrSVD_009	5.26	13.11	4.35	2.09	1.74	1.95	5.75	1.9	5.42
sk_rrSVD_010	5.33	8.51	4.88	2.29	1.57	2.17	6.04	1.14	5.86

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	2.57	2.29	2.18	1.04	0.59	1.00	2.98	1.75	2.83
sk_rrSVD_001	1.48	1.13	1.22	0.56	0.56	0.51	1.6	1.78	1.37
sk_rrSVD_002	1.81	1.99	1.47	0.8	1.41	0.66	2.12	2.5	1.76
sk_rrSVD_003	2.37	2.97	1.77	1.03	1.66	0.84	2.5	1.99	2.24
sk_rrSVD_004	2.99	3.73	2.09	1.22	1.64	0.98	2.98	2.44	2.74
sk_rrSVD_005	3.58	4.44	2.45	1.4	1.89	1.13	3.42	2.08	3.19
sk_rrSVD_006	4.34	6.41	2.99	1.58	2.29	1.34	3.9	1.65	3.66
sk_rrSVD_007	5.04	6.65	3.44	1.77	2.32	1.51	4.36	1.51	4.14
sk_rrSVD_008	5.71	7.14	3.91	1.87	1.69	1.73	5.2	1.82	4.86
sk_rrSVD_009	6.59	9.17	4.37	2.08	1.83	1.91	5.97	2.79	5.49
sk_rrSVD_010	7.15	10.85	4.89	2.25	1.52	2.1	6.32	2.59	5.95

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	2.62	2.79	2.18	1.03	0.81	0.97	2.88	0.39	2.81
sk_rrSVD_001	1.54	1.98	1.27	0.58	0.75	0.5	1.43	0.81	1.35
sk_rrSVD_002	1.81	3.46	1.39	0.83	1.47	0.66	2.04	2.44	1.72
sk_rrSVD_003	2.45	5.5	1.7	1.13	1.86	0.84	2.5	2.19	2.23
sk_rrSVD_004	2.91	5.69	2.00	1.3	1.89	0.99	2.94	1.83	2.74
sk_rrSVD_005	3.56	7.07	2.37	1.44	1.87	1.14	3.24	1.22	3.12
sk_rrSVD_006	4.25	7.43	2.9	1.64	2.11	1.36	3.73	1.32	3.58
sk_rrSVD_007	4.83	7.87	3.29	1.75	2.1	1.54	4.19	1.2	4.03
sk_rrSVD_008	5.54	9.28	3.76	1.89	1.69	1.72	4.87	1.29	4.72
sk_rrSVD_009	6.25	11.01	4.36	2.07	1.56	1.9	5.66	1.5	5.32
sk_rrSVD_010	6.66	12.71	4.83	2.3	1.77	2.12	5.9	1.21	5.81

Table S39. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 40$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	4.14	2.74	3.69	1.74	0.6	1.66	4.64	1.73	4.5
sk_rrSVD_001	2.01	1.94	1.71	0.75	0.87	0.68	2.16	1.57	2.00
sk_rrSVD_002	2.17	2.2	1.92	1.00	1.3	0.89	2.63	1.54	2.48
sk_rrSVD_003	2.8	3.7	2.43	1.25	1.78	1.08	3.21	2.36	3.01
sk_rrSVD_004	3.27	4.85	2.84	1.5	2.27	1.25	3.77	1.52	3.57
sk_rrSVD_005	3.78	6.43	3.24	1.73	2.47	1.5	4.26	1.59	4.05
sk_rrSVD_006	4.53	8.6	3.8	1.96	2.46	1.72	4.78	1.25	4.62
sk_rrSVD_007	5.22	9.41	4.34	2.11	2.02	1.94	5.26	0.98	5.12
sk_rrSVD_008	5.84	11.73	4.9	2.29	1.74	2.14	6.16	1.38	5.93
sk_rrSVD_009	6.28	11.68	5.42	2.51	1.83	2.36	6.92	2.26	6.6
sk_rrSVD_010	6.78	12.33	6.02	2.73	1.3	2.61	7.33	1.84	6.98

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	3.92	3.34	3.48	1.76	0.81	1.68	5.72	9.83	4.54
sk_rrSVD_001	1.98	3.1	1.67	0.76	1.00	0.69	2.29	2.13	2.03
sk_rrSVD_002	2.18	3.67	1.89	1.01	1.45	0.88	2.86	2.76	2.49
sk_rrSVD_003	2.76	5.19	2.33	1.25	1.83	1.07	3.33	2.59	3.00
sk_rrSVD_004	3.28	5.44	2.79	1.47	1.98	1.29	3.93	1.85	3.64
sk_rrSVD_005	3.81	6.72	3.15	1.66	2.03	1.48	4.4	2.1	4.08
sk_rrSVD_006	4.62	8.69	3.76	1.88	2.23	1.7	5.03	3.3	4.64
sk_rrSVD_007	5.25	9.77	4.26	2.07	2.11	1.9	5.51	2.35	5.16
sk_rrSVD_008	6.04	11.66	4.87	2.27	1.35	2.12	6.55	4.07	6.00
sk_rrSVD_009	6.25	12.88	5.3	2.56	2.14	2.37	7.29	3.94	6.67
sk_rrSVD_010	6.71	12.97	5.89	2.82	2.22	2.61	7.58	3.85	7.17

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	4.00	0.32	3.59	1.76	0.38	1.7	4.56	0.72	4.45
sk_rrSVD_001	2.03	0.25	1.72	0.75	0.33	0.7	2.11	0.87	2.01
sk_rrSVD_002	2.31	0.41	1.91	1.07	1.6	0.91	2.58	1.53	2.45
sk_rrSVD_003	3.02	0.75	2.35	1.4	2.01	1.1	3.12	1.3	2.99
sk_rrSVD_004	3.79	1.08	2.83	1.57	2.05	1.3	3.76	1.67	3.57
sk_rrSVD_005	4.28	1.15	3.18	1.75	2.13	1.5	4.23	1.47	4.05
sk_rrSVD_006	5.03	1.1	3.76	2.01	2.48	1.74	4.7	1.24	4.55
sk_rrSVD_007	5.71	1.19	4.29	2.16	2.07	1.94	5.24	1.39	5.07
sk_rrSVD_008	6.59	1.3	4.82	2.33	1.72	2.17	6.1	1.77	5.79
sk_rrSVD_009	6.94	1.41	5.31	2.58	1.69	2.38	6.88	1.88	6.56
sk_rrSVD_010	7.13	1.34	5.77	2.79	1.81	2.64	7.22	1.49	7.04

Table S40. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 50$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	5.66	2.42	5.37	2.54	0.89	2.43	7.43	7.86	6.62
sk_rrSVD_001	2.33	1.23	2.21	1.07	1.95	0.91	2.92	2.43	2.65
sk_rrSVD_002	2.74	3.44	2.51	1.39	2.22	1.15	3.51	2.35	3.18
sk_rrSVD_003	3.59	4.05	3.18	1.61	2.06	1.37	4.06	2.31	3.8
sk_rrSVD_004	4.2	6.04	3.53	1.81	2.07	1.58	4.68	1.85	4.41
sk_rrSVD_005	4.62	6.89	4.00	2.03	2.01	1.79	5.21	1.98	4.93
sk_rrSVD_006	5.29	8.84	4.44	2.27	2.03	2.08	5.78	1.66	5.56
sk_rrSVD_007	6.03	9.56	5.09	2.45	1.64	2.31	6.44	2.52	6.14
sk_rrSVD_008	6.51	10.00	5.63	2.69	1.17	2.55	7.35	1.87	7.02
sk_rrSVD_009	7.32	13.03	6.22	2.94	1.6	2.81	8.23	2.63	7.74
sk_rrSVD_010	7.76	12.23	6.95	3.2	1.41	3.05	8.69	2.2	8.41

Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	5.74	4.82	5.21	2.54	0.69	2.45	8.95	15.29	6.65
sk_rrSVD_001	2.41	3.36	2.15	1.05	1.86	0.89	3.28	5.62	2.68
sk_rrSVD_002	2.87	4.34	2.43	1.41	2.04	1.17	3.52	2.69	3.17
sk_rrSVD_003	3.65	7.86	3.00	1.66	1.78	1.38	4.27	5.82	3.79
sk_rrSVD_004	4.32	9.18	3.42	1.86	2.24	1.57	4.88	3.31	4.42
sk_rrSVD_005	4.83	8.62	3.83	2.07	2.39	1.77	5.49	3.6	5.04
sk_rrSVD_006	5.65	10.22	4.48	2.28	2.17	2.04	6.1	3.63	5.62
sk_rrSVD_007	6.46	11.91	5.01	2.51	2.18	2.28	6.96	4.38	6.23
sk_rrSVD_008	6.98	13.82	5.68	2.73	1.88	2.51	8.17	8.69	7.13
sk_rrSVD_009	7.02	9.81	6.25	2.96	1.85	2.79	8.86	7.59	7.73
sk_rrSVD_010	7.6	11.53	6.81	3.17	1.65	3.04	9.18	6.24	8.41

Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	6.01	5.99	5.49	2.55	0.74	2.45	6.76	0.8	6.63
sk_rrSVD_001	2.58	3.66	2.21	1.02	1.4	0.9	2.8	0.92	2.69
sk_rrSVD_002	3.37	6.01	2.66	1.49	2.59	1.13	3.37	1.84	3.16
sk_rrSVD_003	4.12	7.87	3.24	1.7	2.12	1.38	3.94	1.83	3.75
sk_rrSVD_004	4.65	8.63	3.67	1.92	1.74	1.61	4.65	2.00	4.37
sk_rrSVD_005	5.35	9.5	4.16	2.13	2.14	1.85	5.16	1.87	4.93
sk_rrSVD_006	6.15	11.17	4.79	2.42	2.51	2.08	5.69	1.94	5.42
sk_rrSVD_007	6.96	12.09	5.32	2.55	2.23	2.33	6.21	1.27	6.02
sk_rrSVD_008	7.56	12.58	6.06	2.74	1.99	2.53	7.21	1.91	6.91
sk_rrSVD_009	8.21	16.73	6.54	2.99	2.33	2.76	8.1	2.09	7.74
sk_rrSVD_010	8.6	14.9	7.09	3.19	1.3	3.02	8.45	1.33	8.2

Table S41. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 60$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	7.95	5.44	7.29	3.34	0.85	3.23	10.79	11.17	9.22
sk_rrSVD_001	3.27	1.79	2.79	1.2	1.03	1.09	3.7	1.79	3.52
sk_rrSVD_002	3.59	5.4	3.23	1.64	2.23	1.39	4.35	1.98	4.13
sk_rrSVD_003	4.62	7.08	3.99	1.88	2.1	1.63	5.03	2.07	4.78
sk_rrSVD_004	5.01	8.86	4.4	2.1	2.04	1.86	5.79	1.88	5.5
sk_rrSVD_005	5.76	8.66	4.71	2.36	2.17	2.12	6.41	1.62	6.14
sk_rrSVD_006	6.41	9.51	5.51	2.62	2.07	2.42	7.06	2.02	6.74
sk_rrSVD_007	7.25	9.66	6.06	2.84	1.5	2.7	7.81	2.95	7.39
sk_rrSVD_008	7.74	9.3	6.64	3.06	1.16	2.89	8.83	2.63	8.3
sk_rrSVD_009	8.34	11.04	7.34	3.33	1.39	3.16	9.69	2.78	9.17
sk_rrSVD_010	8.87	10.29	7.99	3.61	1.44	3.46	10.25	3.84	9.65
Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^{-1}	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	7.83	5.32	7.31	3.38	0.61	3.28	11.65	1.9	9.37
sk_rrSVD_001	3.12	3.21	2.72	1.19	1.38	1.1	4.43	0.89	3.54
sk_rrSVD_002	3.38	3.78	3.1	1.57	1.62	1.42	4.62	0.52	4.09
sk_rrSVD_003	4.39	5.54	3.8	1.81	1.7	1.67	5.67	0.82	4.75
sk_rrSVD_004	4.87	5.71	4.39	2.09	1.92	1.87	6.51	1.06	5.47
sk_rrSVD_005	5.58	6.94	4.9	2.33	2.26	2.09	6.67	0.57	6.15
sk_rrSVD_006	6.42	10.7	5.42	2.6	2.01	2.41	8.03	1.13	6.75
sk_rrSVD_007	7.19	10.25	5.98	2.87	2.1	2.66	8.22	0.72	7.42
sk_rrSVD_008	7.41	10.74	6.69	3.13	1.44	2.96	10.15	1.39	8.33
sk_rrSVD_009	8.04	10.98	7.19	3.36	1.67	3.18	10.65	1.19	9.37
sk_rrSVD_010	8.65	11.43	7.82	3.62	0.93	3.49	11.48	1.31	9.85
Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1	1×10^1
cho_dec	8.43	0.93	7.61	3.36	0.67	3.27	9.47	1.91	9.25
sk_rrSVD_001	3.58	0.38	3.21	1.19	1.01	1.11	3.66	1.51	3.49
sk_rrSVD_002	3.98	0.46	3.37	1.68	2.76	1.39	4.32	2.26	4.07
sk_rrSVD_003	5.44	1.00	4.39	1.89	2.31	1.64	4.9	1.97	4.67
sk_rrSVD_004	6.13	1.17	4.57	2.14	2.35	1.86	5.65	1.81	5.39
sk_rrSVD_005	6.83	1.2	5.24	2.36	2.45	2.1	6.15	1.2	6.01
sk_rrSVD_006	7.58	0.87	5.92	2.64	2.05	2.42	6.88	2.1	6.62
sk_rrSVD_007	8.89	1.5	6.57	2.82	1.78	2.59	7.5	1.84	7.28
sk_rrSVD_008	9.49	1.62	7.19	3.06	1.62	2.91	8.54	2.16	8.2
sk_rrSVD_009	10.07	1.87	7.72	3.29	1.27	3.13	9.38	1.87	9.04
sk_rrSVD_010	10.36	1.53	8.36	3.56	1.24	3.4	9.87	1.48	9.53

Table S42. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 70$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹
cho_dec	10.82	1.14	9.94	4.34	1.25	4.23	13.14	8.68	12.44
sk_rrSVD_001	3.89	0.52	3.5	1.48	1.24	1.39	4.82	3.09	4.48
sk_rrSVD_002	4.56	0.74	3.96	1.82	1.53	1.69	5.48	2.12	5.09
sk_rrSVD_003	5.64	0.8	4.69	2.1	1.4	1.96	6.22	2.8	5.78
sk_rrSVD_004	6.57	1.15	5.46	2.37	1.4	2.24	6.96	2.24	6.55
sk_rrSVD_005	7.29	1.25	5.95	2.68	1.92	2.52	7.55	2.09	7.25
sk_rrSVD_006	8.07	1.14	6.44	3.02	1.94	2.83	8.34	2.36	7.95
sk_rrSVD_007	9.13	1.63	7.07	3.28	1.77	3.06	9.02	2.74	8.67
sk_rrSVD_008	9.59	1.44	7.65	3.55	1.81	3.36	10.26	3.02	9.78
sk_rrSVD_009	9.98	1.65	8.42	3.82	1.6	3.66	11.09	3.5	10.58
sk_rrSVD_010	10.8	1.82	9.03	4.12	1.64	3.94	11.78	5.73	11.3
Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹
cho_dec	10.37	0.67	9.57	4.77	5.2	4.26	14.24	1.49	12.39
sk_rrSVD_001	3.88	0.45	3.53	1.54	1.48	1.36	5.2	0.65	4.48
sk_rrSVD_002	4.75	1.05	4.04	1.89	1.49	1.71	5.69	0.34	5.06
sk_rrSVD_003	5.85	1.07	4.87	2.15	1.8	1.97	7.21	1.4	5.89
sk_rrSVD_004	6.69	1.3	5.33	2.41	2.05	2.2	7.59	1.22	6.53
sk_rrSVD_005	7.15	1.12	5.84	2.63	1.37	2.51	8.2	1.11	7.25
sk_rrSVD_006	8.17	1.45	6.49	2.96	1.15	2.82	9.41	1.47	7.94
sk_rrSVD_007	8.68	1.37	7.11	3.35	1.72	3.13	10.04	1.22	8.81
sk_rrSVD_008	9.33	1.57	7.85	3.62	2.26	3.4	11.75	1.76	9.72
sk_rrSVD_009	10.19	1.96	8.42	3.88	1.65	3.71	12.88	1.8	10.7
sk_rrSVD_010	10.35	1.39	9.01	4.23	1.44	4.03	13.73	1.99	11.41
Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹
cho_dec	11.28	1.2	9.91	4.59	4.9	4.24	14.18	1.73	12.2
sk_rrSVD_001	4.19	0.6	3.61	1.46	0.73	1.38	4.92	0.68	4.4
sk_rrSVD_002	5.14	0.86	4.14	1.84	1.56	1.67	5.51	0.47	5.02
sk_rrSVD_003	6.93	1.31	4.92	2.12	1.47	1.94	6.56	1.02	5.67
sk_rrSVD_004	7.94	1.34	5.56	2.38	1.44	2.22	7.21	0.96	6.35
sk_rrSVD_005	8.63	1.23	6.05	2.65	1.82	2.49	7.66	0.75	6.85
sk_rrSVD_006	9.52	1.37	6.61	2.97	1.75	2.8	8.53	0.8	7.83
sk_rrSVD_007	10.68	1.68	7.3	3.35	2.07	3.1	9.48	1.04	8.48
sk_rrSVD_008	11.22	1.82	8.04	3.57	2.06	3.37	10.79	1.27	9.63
sk_rrSVD_009	11.71	2.04	8.72	3.79	1.72	3.52	11.67	1.07	10.41
sk_rrSVD_010	11.75	1.92	9.4	4.12	1.7	3.93	12.63	1.56	11.12

Table S43. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 80$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹
cho_dec	13.32	0.8	12.55	5.72	2.28	5.54	16.84	5.41	16.11
sk_rrSVD_001	4.38	0.44	4.03	1.84	0.88	1.73	5.75	1.86	5.5
sk_rrSVD_002	5.21	0.98	4.53	2.23	1.34	2.05	6.53	1.65	6.25
sk_rrSVD_003	6.66	1.02	5.63	2.57	1.47	2.37	7.24	1.96	6.91
sk_rrSVD_004	7.37	1.14	6.23	2.83	1.57	2.69	8.15	2.24	7.84
sk_rrSVD_005	8.23	1.36	6.87	3.14	1.6	2.99	8.87	2.08	8.57
sk_rrSVD_006	9.22	1.49	7.41	3.51	1.97	3.33	9.67	2.57	9.26
sk_rrSVD_007	9.85	1.43	8.34	3.75	1.59	3.61	10.4	2.26	9.98
sk_rrSVD_008	10.54	1.64	8.81	4.02	1.03	3.9	11.65	2.35	11.19
sk_rrSVD_009	11.04	1.66	9.45	4.31	0.91	4.17	12.58	2.33	12.15
sk_rrSVD_010	12.01	2.02	9.98	4.71	1.39	4.53	13.25	2.17	12.85
Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹
cho_dec	13.31	0.83	12.68	5.93	5.85	5.49	17.1	10.55	15.85
sk_rrSVD_001	4.31	0.3	4.04	1.93	2.17	1.72	5.66	1.82	5.41
sk_rrSVD_002	5.23	0.91	4.61	2.31	2.09	2.09	6.43	2.29	6.09
sk_rrSVD_003	6.85	1.57	5.6	2.59	1.93	2.38	7.18	2.7	6.83
sk_rrSVD_004	7.61	1.42	6.11	2.83	1.82	2.65	8.07	2.51	7.7
sk_rrSVD_005	8.3	1.3	6.67	3.12	1.73	2.91	8.76	2.35	8.41
sk_rrSVD_006	9.44	1.69	7.36	3.41	0.94	3.3	9.58	3.18	9.07
sk_rrSVD_007	10.14	1.87	7.98	3.71	1.15	3.57	10.3	2.3	9.88
sk_rrSVD_008	10.37	1.67	8.71	4.06	1.54	3.92	11.65	4.51	11.02
sk_rrSVD_009	10.69	1.69	9.31	4.34	1.35	4.18	12.49	3.22	11.7
sk_rrSVD_010	11.24	1.72	9.97	4.73	1.38	4.48	13.22	5.07	12.61
Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ¹
cho_dec	1.34	0.7	12.8	6.09	7.36	5.48	1.92	2.75	16.05
sk_rrSVD_001	0.45	0.38	4.15	1.86	1.2	1.72	0.6	0.56	5.45
sk_rrSVD_002	0.61	1.65	4.79	2.26	1.63	2.05	0.68	0.85	6.14
sk_rrSVD_003	0.77	1.59	5.72	2.64	1.97	2.39	0.81	1.32	6.94
sk_rrSVD_004	0.84	1.47	6.18	2.95	2.28	2.62	0.89	1.4	7.7
sk_rrSVD_005	0.95	1.73	6.71	3.22	2.35	2.9	0.94	1.17	8.47
sk_rrSVD_006	1.02	1.7	7.57	3.51	2.25	3.24	1.07	1.49	9.31
sk_rrSVD_007	1.12	1.67	8.41	3.74	1.67	3.48	1.13	1.5	10.01
sk_rrSVD_008	1.21	1.82	9.32	4.01	1.73	3.83	1.35	1.85	11.19
sk_rrSVD_009	1.29	2.14	10.06	4.35	1.7	4.11	1.41	1.69	12.29
sk_rrSVD_010	1.26	1.72	10.86	4.68	1.63	4.45	1.53	2.13	12.74

Table S44. Process time (s) mean, standard deviation and best result for Au₃₈Q $K = 90$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ²
cho_dec	15.73	0.41	15.18	6.9	3.12	6.55	2.14	8.02	2.05
sk_rrSVD_001	4.89	0.38	4.67	2.16	1.93	1.96	0.7	1.74	0.66
sk_rrSVD_002	5.98	1.06	5.24	2.53	1.52	2.32	0.79	2.36	0.75
sk_rrSVD_003	7.4	1.32	6.34	2.81	1.53	2.62	0.87	2.71	0.83
sk_rrSVD_004	8.01	0.79	7.18	3.16	2.29	2.95	0.96	2.8	0.9
sk_rrSVD_005	8.85	1.31	7.65	3.48	2.06	3.26	1.03	1.8	0.99
sk_rrSVD_006	9.82	1.55	8.21	3.95	2.19	3.7	1.12	2.23	1.07
sk_rrSVD_007	10.1	1.29	8.85	4.16	1.46	3.98	1.2	2.1	1.16
sk_rrSVD_008	11.06	1.65	9.58	4.5	2.03	4.26	1.34	3.35	1.28
sk_rrSVD_009	11.78	1.78	10.27	4.79	1.83	4.53	1.44	3.13	1.34
sk_rrSVD_010	12.63	2.27	10.95	5.02	0.93	4.87	1.51	1.95	1.46
Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ²
cho_dec	1.56	1.00	14.73	7.24	8.73	6.61	2.21	17.12	2.02
sk_rrSVD_001	0.5	0.72	4.56	2.17	1.74	1.94	0.69	1.93	0.66
sk_rrSVD_002	0.6	1.13	5.17	2.64	2.34	2.35	0.78	2.25	0.74
sk_rrSVD_003	0.77	1.69	6.3	2.88	1.69	2.66	0.87	4.44	0.82
sk_rrSVD_004	0.86	1.51	6.82	3.18	1.65	2.99	0.94	2.27	0.91
sk_rrSVD_005	0.92	1.62	7.36	3.5	2.2	3.27	1.02	2.45	0.97
sk_rrSVD_006	1.05	1.89	8.25	3.96	2.2	3.67	1.11	3.18	1.05
sk_rrSVD_007	1.1	1.94	8.98	4.23	1.71	4.00	1.19	2.89	1.15
sk_rrSVD_008	1.17	2.18	9.64	4.53	1.78	4.31	1.32	4.05	1.27
sk_rrSVD_009	1.2	1.74	10.37	4.86	1.9	4.62	1.45	6.13	1.37
sk_rrSVD_010	1.29	1.99	11.09	5.15	1.3	4.97	1.52	8.41	1.42
Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ²
cho_dec	1.59	0.72	15.2	7.45	10.6	6.54	2.59	4.12	2.04
sk_rrSVD_001	0.5	0.7	4.6	2.22	2.26	1.96	0.75	0.95	0.67
sk_rrSVD_002	0.64	1.39	5.23	2.63	2.17	2.35	0.81	0.58	0.73
sk_rrSVD_003	0.82	1.78	6.36	2.88	1.62	2.63	0.96	1.56	0.82
sk_rrSVD_004	0.89	1.72	6.92	3.16	1.75	2.97	1.06	1.59	0.92
sk_rrSVD_005	1.03	1.72	7.72	3.49	2.05	3.26	1.1	1.33	0.99
sk_rrSVD_006	1.07	1.47	8.46	3.97	1.98	3.66	1.28	2.17	1.06
sk_rrSVD_007	1.2	1.84	9.1	4.22	2.02	3.98	1.31	1.87	1.13
sk_rrSVD_008	1.26	1.77	9.79	4.44	1.49	4.2	1.55	2.23	1.28
sk_rrSVD_009	1.36	2.15	10.46	4.83	1.63	4.61	1.67	2.24	1.38
sk_rrSVD_010	1.4	1.83	11.17	5.14	2.16	4.84	1.71	2.68	1.45

Table S45. Process time (s) mean, standard deviation and best result for Au_{38Q} $K = 100$. Bolded means \bar{x} differ statistically from *Cholesky decomposition*.

Dataset	AuN2-4k			AuN2-8k			AuN2-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ²
cho_dec	1.94	0.91	18.61	8.55	3.65	8.16	2.71	11.00	2.58
sk_rrSVD_001	0.57	0.52	5.28	2.57	1.97	2.37	0.83	1.53	0.8
sk_rrSVD_002	0.67	0.92	5.97	2.93	1.28	2.81	0.91	2.08	0.88
sk_rrSVD_003	0.86	1.48	7.4	3.32	2.21	3.08	1.00	2.37	0.97
sk_rrSVD_004	0.94	1.65	8.11	3.69	1.94	3.51	1.1	2.56	1.06
sk_rrSVD_005	1.01	1.73	8.62	3.94	1.56	3.76	1.19	1.99	1.14
sk_rrSVD_006	1.09	1.93	9.22	4.39	1.78	4.21	1.28	2.56	1.24
sk_rrSVD_007	1.17	1.85	9.94	4.64	1.06	4.48	1.36	1.99	1.33
sk_rrSVD_008	1.29	2.22	10.75	5.11	1.85	4.82	1.51	3.39	1.47
sk_rrSVD_009	1.37	2.22	11.57	5.4	1.72	5.15	1.61	2.39	1.56
sk_rrSVD_010	1.4	1.86	12.4	5.74	1.82	5.47	1.69	4.38	1.65
Dataset	AuN10-4k			AuN10-8k			AuN10-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ²
cho_dec	1.89	0.6	17.95	8.73	6.14	8.13	2.85	24.1	2.55
sk_rrSVD_001	0.53	0.18	5.06	2.57	2.03	2.37	0.82	2.01	0.79
sk_rrSVD_002	0.64	0.86	5.8	2.99	1.96	2.77	0.9	3.3	0.86
sk_rrSVD_003	0.83	1.61	6.93	3.4	2.32	3.17	1.01	11.4	0.94
sk_rrSVD_004	0.91	1.34	7.64	3.71	2.27	3.49	1.08	3.91	1.04
sk_rrSVD_005	1.03	1.79	8.11	3.98	2.26	3.75	1.18	3.13	1.13
sk_rrSVD_006	1.14	1.8	9.12	4.46	2.01	4.22	1.28	5.59	1.23
sk_rrSVD_007	1.19	1.81	9.8	4.73	1.52	4.53	1.35	2.87	1.3
sk_rrSVD_008	1.29	1.96	10.56	5.2	1.94	4.87	1.53	8.67	1.45
sk_rrSVD_009	1.38	2.08	11.5	5.48	1.76	5.24	1.63	9.23	1.52
sk_rrSVD_010	1.46	2.32	12.21	5.73	1.76	5.48	1.72	10.91	1.62
Dataset	AuN100-4k			AuN100-8k			AuN100-12k		
	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)	\bar{x}	σ	min(x)
Method / coef.	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ¹	1x10 ²	1x10 ¹	1x10 ²
cho_dec	1.9	0.52	18.48	8.57	6.57	8.11	3.15	5.56	2.54
sk_rrSVD_001	0.56	0.45	5.23	2.56	2.06	2.37	0.9	1.5	0.79
sk_rrSVD_002	0.76	1.72	5.92	2.99	1.71	2.78	1.00	1.75	0.87
sk_rrSVD_003	0.91	1.64	7.03	3.36	1.92	3.13	1.17	2.57	0.94
sk_rrSVD_004	1.05	1.87	8.16	3.67	2.19	3.42	1.25	2.35	1.05
sk_rrSVD_005	1.06	1.39	8.58	3.97	2.14	3.75	1.29	1.86	1.13
sk_rrSVD_006	1.2	2.11	9.26	4.41	2.06	4.2	1.51	2.67	1.23
sk_rrSVD_007	1.23	1.78	10.12	4.7	2.06	4.48	1.51	2.4	1.3
sk_rrSVD_008	1.37	2.2	10.83	5.11	1.84	4.79	1.78	3.02	1.44
sk_rrSVD_009	1.41	1.88	11.77	5.42	2.09	5.12	1.88	2.55	1.58
sk_rrSVD_010	1.5	2.2	12.56	5.71	2.3	5.43	1.91	3.03	1.64