

***SOGA*: Inference of Probabilistic Programs by Second-order Gaussian Approximation Reproducibility Report**

Francesca Randone¹, Emilio Incerto², Luca Bortolussi¹, and Mirco Tribastone²

¹ University of Trieste, Italy

² IMT School for Advanced Studies Lucca, Italy

Table 3: Evaluation of *SOGA*'s runtimes for programs with increasing number of iterations (*it.*). For each model we report: number of paths in the program (*paths*), the number of components of the output distribution (*C*), *SOGA* run-time (*time*) and the relative error with respect to PSI results ($|\%e|$).

		<i>DiscreteRW</i>			<i>ContinuousRW</i>			<i>Bernoulli</i>		
<i>it.</i>	<i>paths</i>	<i>C</i>	<i>time</i>	$ \%e $	<i>C</i>	<i>time</i>	$ \%e $	<i>C</i>	<i>time</i>	$ \%e $
1	2	2.0	0.03	0.00	2.0	0.04	0.00	4.0	0.07	0.21
3	8	8.0	0.03	0.00	8.0	0.08	0.00	16.0	0.15	0.63
5	32	32.0	0.05	0.00	32.0	0.14	0.00	64.0	0.33	1.68
7	128	128.0	0.09	0.00	128.0	0.32	0.00	256.0	1.02	2.92
9	512	512.0	0.22	0.00	512.0	1.01	0.00	1024.0	3.79	4.41
11	2048	2048.0	0.81	0.00	2048.0	3.71	0.00	3672.0	14.05	1.42
13	8192	8192.0	2.84	0.00	8192.0	14.57	0.00	12445.0	49.44	0.81
15	32768	32768.0	10.82	0.00	32768.0	56.82	0.00	34697.0	173.23	0.35

		<i>ClinicalTrial</i>			<i>CoinBias</i>			<i>SurveyUnbias</i>		
<i>it.</i>	<i>paths</i>	<i>C</i>	<i>time</i>	$ \%e $	<i>C</i>	<i>time</i>	$ \%e $	<i>C</i>	<i>time</i>	$ \%e $
1	2	12.0	0.11	0.00	4.0	0.07	1.40	8.0	0.08	0.10
3	8	48.0	0.27	0.12	16.0	0.15	2.01	32.0	0.20	0.12
5	32	192.0	0.85	0.01	64.0	0.33	2.19	128.0	0.56	0.06
7	128	767.0	3.09	0.15	255.0	1.02	2.20	511.0	1.95	0.73
9	512	2981.0	11.35	0.16	976.0	3.78	0.18	1948.0	7.40	0.57
11	2048	10792.0	43.23	0.47	3342.0	13.56	2.04	6975.0	28.14	0.66
13	8192	35332.0	152.82	0.35	9840.0	44.05	1.93	21421.0	95.04	0.43
15	32768	85773.0	495.67	0.74	28423.0	136.22	2.91	61654.0	304.92	0.50