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

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

 $^{\rm 1}$ University of Trieste, Italy $^{\rm 2}$ 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 runtime (time) and the relative error with respect to PSI results (|%e|).

		DiscreteRW			Continuous RW			Bernoulli			
it.	paths	\overline{C}	time	%e	\overline{C}	time	%e	\overline{C}	time	%e	
1	2	2	0.02	0	2	0.05	0	_	nan	-	
3	8	8	0.03	0	8	0.11	0	-	nan	-	
5	32	32	0.04	0	32	0.16	0	-	nan	-	
7	128	128	0.08	0	128	0.33	0	-	nan	-	
9	512	512	0.20	0	512	0.92	0	-	nan	-	
11	2048	2048	0.64	0	2048	3.39	0	-	nan	-	
13	8192	8192	2.49	0	-	nan	-	-	nan	-	
15	32768	-	nan	-	-	nan	-	-	nan	-	
		ClinicalTrial			(CoinBias			Survey Unbias		
it.	paths	\overline{C}	time	%e	\overline{C}	time	%e	\overline{C}	time	%e	

	Clinical Trial			CoinBias			Survey Unbias		
it. paths	C	time	%e	C	time	%e	\overline{C}	time	%e
1 2	-	nan	-	-	nan	-	-	nan	-
3 8	-	nan	-	-	nan	-	-	nan	-
5 32	-	nan	-	-	nan	-	-	nan	-
7 128	-	nan	-	-	nan	-	-	nan	-
9 512	-	nan	-	-	nan	-	-	nan	-
$11 \ 2048$	-	nan	-	-	nan	-	-	nan	-
13 8192	-	nan	-	-	nan	-	-	nan	-
$15 \ 32768$	-	nan	-	-	nan	-	-	nan	-