Reihaneh Entezari, Radu Craiu and Jeffrey Rosenthal, The Canadian Journal of Statistics Award 2019

The *Canadian Journal of Statistics* Award is presented each year by the Statistical Society of Canada to the author(s) of an article published in the journal, in recognition of the outstanding quality of the methodological innovation and presentation. This year's winner is the article entitled "Likelihood inflating sampling algorithm." (Volume 46, no. 1, pp. 147-175) by R. Entezari, R.V. Craiu, and J. Rosenthal.

The paper investigates Markov Chain Monte Carlo (MCMC) sampling from a posterior distribution corresponding to a massive data set. This can be computationally prohibitive as producing a single sample requires a number of operation that is linear in the data size. A new parallel method, the likelihood inflating sample size algorithm (LISA), is proposed for carrying out the inference. It splits the data into smaller parts and runs the MCMC independently on each one, thereby creating several sub-posterior distributions. A strategy to combine the sub-posteriors from each part into a single posterior is proposed and studied in the context of a Bayesian Additive Regression Tree (BART) model. The committee was very impressed by the real data example that used data from the American Community Survey; its shows that the proposed LISA can provide inference that is as precise as a standard analysis with a substantial reduction in computational costs.

Reihaneh Entezari is a Data Scientist at Bosch Center for Artificial Intelligence. She received her PhD in Statistics from University of Toronto in 2018. Her research interests include Machine Learning, Bayesian Inference, Scalable Methods, Markov Chain Monte Carlo, Deep Learning, and Probability.

Radu V. Craiu is Professor and Chair of Statistical Sciences at the University of Toronto. He studied Mathematics at the University of Bucharest (BS 1995, MS 1996) and received a PhD from the Department of Statistics at The University of Chicago in 2001. He was trained to improve the efficiency of sampling algorithms, prove their theoretical validity and build new ones when needed. His main research interests are in computational methods in statistics, especially, Markov chain Monte Carlo algorithms (MCMC), Bayesian inference, copula models, model selection procedures and statistical genetics. He is currently Associate Editor for the *Journal of Computational and Graphical Statistics*, *The Canadian Journal of Statistics* and *STAT - The ISI's Journal for the Rapid Dissemination of Statistics Research*. He received the 2016 CRM-SSC prize and is an Elected Member of the International Statistical Institute.

Jeffrey Rosenthal is a professor of Statistics at the University of Toronto. He received his BSc from the University of Toronto at the age of 20, his PhD in Mathematics from Harvard University at the age of 24, and tenure at the University of Toronto at the age of 29. He received the 2006 CRM-SSC Prize, the 2007 COPSS Presidents'; Award, the 2013 SSC Gold Medal, and teaching awards at both Harvard and Toronto. He is a fellow of the Institute of Mathematical Statistics and of the Royal Society of Canada. Rosenthal's book for the general public, Struck by Lightning: The Curious World of Probabilities, was published in sixteen editions and ten languages, and was a bestseller in Canada, leading to numerous media and public appearances, and to his work exposing the Ontario lottery retailer scandal. It was followed by a second book for the general public, Knock On Wood: Luck, Chance, and the Meaning of Everything. He has also dabbled as a computer game programmer, musical performer, and improvisational comedy performer, and is fluent in French. His web site is www.probability.ca, and on Twitter he is @ProbabilityProf. Despite being born on Friday the thirteenth, Rosenthal has been a very fortunate person.

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The citation for the award reads:
The article entitled "Likelihood inflating sampling algorithm" by Reihaneh Entezari, Radu V. Craiu and Jeffrey S. Rosenthal is recognized for creativity and computational excellence.

2019 Award Winners

Peijun Sang

Pierre Robillard