# Radu Craiu, CRM-SSC Prize in Statistics 2016

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CRM-SSC Prize in Statistics, 2016

The CRM-SSC Prize in Statistics is awarded annually by the Centre de recherches mathématiques (CRM) and the Statistical Society of Canada (SSC). It is awarded in recognition of a statistical scientist's professional accomplishments in research during the first fifteen years after having received a doctorate.

This year's winner is Virgil Radu Craiu of the University of Toronto.

Radu grew up in Bucharest, Romania, where he received his BS and MS degrees in mathematics. After a brief stage in Paris, where he developed both statistical knowledge and conversational French under the supervision of Christian Robert, Radu enrolled in the PhD program of the Statistics Department at the University of Chicago. Five years later, in 2001, he completed his doctoral dissertation, "Multivalent Framework for Approximate and Exact Sampling and Resampling", under the direction of Xiao-Li Meng, including research about antithetic coupling schemes for Markov chain Monte Carlo (MCMC) algorithms which was later published in the Annals of Statistics.

Upon graduation, Radu received a number of job offers. He settled on the University of Toronto, where he has been a professor of statistics ever since. In that time, Radu has published several dozen research papers, in such leading journals as Annals of Statistics, Journal of the American Statistical Association, Annals of Applied Statistics, Journal of Computational and Graphical Statistics, Statistics and Computing, Biometrika and more. And at last check, he has already submitted three new research papers during the first three months of 2016 -- so he won't be slowing down any time soon!

Most striking is the breadth of Radu's research. He has published papers about such important and diverse topics as statistical computation, MCMC methodology, copula applications, and competing risk models. In addition, Radu joined forces with the biostatistician Lei Sun, not only to get married and raise two delightful children, but also to publish several important papers about statistical genetics including its relation to winner's curse and false discovery rates.

To take just one area of Radu's research profile, consider his work on MCMC algorithms. After his doctoral dissertation work on antithetic coupling, Radu developed regional adaptive algorithms to improve MCMC performance, provided new foundations for such "adaptive" MCMC algorithms, applied concepts from copula theory to improve the choice of MCMC proposal distributions, and developed new ways for "multipletry" algorithms to better learn from their previously rejected proposal states. Most recently, Radu suggested a certain novel condition for validating adaptive MCMC algorithms, which after much effort led to a deep and lengthy and influential six-author mathematical paper developing both probabilistic analysis and computational methodology in that context. And, Radu's publications on various other statistical topics have been similarly impressive.

Radu is also an excellent departmental citizen, bravely supervising lots of graduate students, enthusiastically attending and organizing research seminars, helping make difficult decisions, and taking a leadership role in departmental administrative matters. He is a colleague who truly enriches the academic environment. In assessing Radu's research, leading experts have written such praise as "Radu is doing excellent and highly original work in several areas of modern statistical science; he has a broad range of interests and significant achievements", and "I am struck especially by the fact that Radu has made substantial contributions across a number of topic areas — his combination of breadth and depth is really impressive … Radu's record of leadership is exemplary" and "Professor Craiu has produced an amazing array of high quality papers in diverse areas ranging from statistical genetics to Markov chain Monte Carlo … One thing that has always impressed me is how impeccably well-written his papers are", and that Radu "deeply contributes to shaping computational and applied Statistics with … many clever advances in Monte Carlo methods" which are "deep and at the forefront", and "Many highly distinguished researchers finish their careers without reaching anything like the diversity that Dr. Craiu has already achieved".

Radu's deep and influential research contributions, the breadth of his research topics, the impressiveness of his publication record, and his many deep research ideas, all clearly demonstrate great distinction in research in statistics. He is a powerful and gifted researcher, and will continue to produce new ideas at a very high level for many years to come.

**The citation for the award reads:**

*"To Virgil Radu Craiu for fundamental contributions to the methodology and theory of MCMC, for diverse investigations into statistical uses of copulas, for significant insights into statistical genetics and false discovery rates, for work on the editorial board of several research journals, and for mentorship of numerous research students."*