

Growing Pains and Gains in Statistics, the Toronto Way

Radu V. Craiu is Professor and Chair of the Department of Statistical Sciences at the University of Toronto. He writes:

These are interesting times for statistical science departments throughout the world. The demand for a statistician's expertise is at an all-time high across a multitude of sectors: tech, finance, health and, not least, government and academia. This gives us the power to grow and prosper as long as we can adapt quickly enough to a rapidly changing environment that may seem challenging to the more traditional aspects of our culture.

But I bring good news from Toronto! Just like our city has had to manage enormous growth over the last decade, so has our department had to navigate the tumultuous waters of growth and change that carry potential hazards but also great promises. So how did the University of Toronto's department of statistical sciences manage to accelerate from (at most) two job searches a year to over 30 in the last five years, and build a large network of joint interests with other departments, including the usual suspects e.g., Computer Science and Public Health, but also Astronomy and Astrophysics, Information sciences, Psychology and Sociology, to name just a few? Read on.

The story begins about eight years ago when the world learned from Google leader Hal Varian that statisticians will be the sexiest professionals at the vortex of tech revolutions engulfing the world. Subsequently, the world learned that Data Science is much more than a semi-pleonastic association of terms. From Tukey's wishful thinking—nicely summarized in David Donoho's 2015 ("50 Years of Data Science", *JCGS* 2017) seminal piece that went viral before it even hit the printing presses—to Silicon Valley's high demand for scientists able to swim in a sea of data,

emerged a vague, yet seductive idea about the kind of training that is suitable for the modern world. It turns out that *ideal* is a multifarious scientist capable of handling superhuman computing tasks and juggling sound statistical methods while building authoritative subject-matter knowledge that can impact scientific discovery.

Incoming students at the University of Toronto have heard the call loud and clear which is why our specialist, major and minor programs have exploded in size. Since 2012, our undergraduate programs have *yearly* increased by 25–40 percent, leading to the current cohort of over 3,500 statistics major, minor and specialist students. Yes! You have read those numbers correctly, and if it gives you pause as a neutral observer, imagine how *we* felt.

The pressure on our department has been enormous. Instead of panicking, the former chair of our department, James Stafford, has coordinated an ambitious plan to develop professional Master of Science programs, make numerous joint hires with other data-rich programs in the University and develop a strong undergraduate teaching culture with new course initiatives that have quickly turned us into a showcase for the Faculty of Arts and Sciences. A quick visit to our webpage (www.utstat.toronto.edu) will reveal the extent of these successful initiatives and the unparalleled (to my knowledge) growth of our department. We have currently over 30 research- and

teaching-stream faculty in the department, working in statistics and its intersections with computer science (machine learning, visualization, neural nets, etc.) and other disciplines, such as sociology, genetics, neuroscience, public health and more. These departments have a genuine need to make sense of their data, usually big piles of them. In turn, working with other departments opens new horizons for our faculty, introducing them to interesting problems and allowing our department to grow in directions that would have remained unexplored otherwise. The mantra "follow the data" has never been more fitting than now.

Of course, these innovations could have led to many outcomes, somewhat less scintillating. As we take a retro- and prospective look at our evolution, we realize that at the core of our story lie a penchant for data-driven vision augmentation as well as many wonderful students, faculty and staff, who have bootstrapped this department into becoming an important center for Data Science research and education.

Speaking of very good people, I would like to encourage your undergraduate trainees to apply to our graduate program, while we invite applications from your PhD students and postdocs for our eight open positions.

Tell us what's happening
in **YOUR** department!

Thriyambakam Krishnan: 1937–2018

Anirban DasGupta, Purdue University, writes: Thriyambakam Krishnan, former Dean of Academic Studies and Professor at the Indian Statistical Institute, passed away in Chennai, India on July 4; he was 81. Jointly with G.J. McLachlan he authored the masterly and popular Wiley text on the EM algorithm and its applications. Dr. Krishnan, a PhD student of C.R. Rao, specialized in experimental design, classification, and unsupervised clustering during the early years. He served as consulting statistician to Systat and to Mu-Sigma in India. At the time of his death, he was still teaching courses in probability and statistics at the Chennai Mathematical Institute.