

Obituary: Xiangrong Yin, 1966 – 2020

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Xiangrong Yin, Professor of Statistics at the University of Kentucky, passed away suddenly on the afternoon of August 11th, 2020 at the age of 54.

Xiangrong Yin was born in 1966 in the (then rural) village of Changxing, China. As the eldest of three siblings, Xiangrong was always one to take charge and meticulously plan for the future. His conscientious and hardworking traits, combined with his passion for mathematics, led him to study at Hangzhou University, where he obtained a bachelor's degree in the subject in 1986. Xiangrong dreamed of one day becoming a university professor, so he taught in the Department of Mathematics while working towards his master's degree in mathematics, which he completed in 1993. Xiangrong then spent a year pursuing graduate work in the Department of Mathematics and Statistics at McMaster University, however, due to a visa issue his wife from China, Xiaofang Shi, could not join him. Xiangrong then immigrated to the United States in 1996 and spent one year in the Department of Mathematics at Arizona State University, which is when his wife eventually joined him. He finally joined the graduate program in the School of Statistics at the University of Minnesota, where he would receive a master's and doctoral degree in 1998 and 2000, respectively. Xiangrong and his wife would also welcome their first son, Kevin, during this time.

The direction of Xiangrong's research crystallized under his advisor, Professor Dennis Cook, in the area of sufficient dimension reduction, which continues to be a topic of broad and current interest. This would prove to be a fruitful area of research for Xiangrong as he could leverage his innate understanding of deep mathematical concepts to address complex questions. Upon completion of his PhD in 2000, Xiangrong accepted an assistant professor position in the Department of Statistics at the University of Georgia. He would then welcome his second son, Stephen, one year later. Xiangrong would eventually be promoted to a tenured Associate Professor in 2006 and then Full Professor in 2011. In 2014, he moved to the University of Kentucky's Department of Statistics, where he would continue for the rest of his life.

In addition to sufficient dimension reduction, Xiangrong's research interests spanned feature selection, classification and discriminant analysis, high-dimensional regression, information theory, and computing algorithms. Some of the seminal contributions he made in these areas include the introduction of the central k^{th} -moment subspace to capture information from the mean, variance, and up to the k^{th} conditional moment of the regression, a way to perform direction estimation in single-index regression that synthesizes ideas of likelihood, correlation, inverse regression, and information theory, and more recently the usage of distance covariance to inform sufficient dimension reduction. Perhaps his most pathbreaking work focused on dimension reduction for the small- n -large- p problem by using methods developed for $n > p$. The

proposed sequential approach is a quite simple, but highly efficacious framework for addressing this problem. The caliber of his research yielded nearly 70 publications - many in top-tier statistics journals - and numerous invited talks. This level of productivity increased his visibility as a leader both at his home institutions and in the field of statistics.

Xiangrong's experience translated to him being an impactful advisor and mentor. He was an oft sought-after advisor by motivated graduate students, having co-advised or advised 16 PhD students and two master's students, as well as a mentor to three postdocs. He was able to get the best out of his students and make them better than they thought they could be. All of his students have gone on to successful careers that span industry, academia, and government. However, Xiangrong was especially proud of the fact that 10 of his 16 PhD students landed tenure-track academic positions, a remarkably large percentage of his advisees. Undoubtedly, Xiangrong's inspiration was key to their professional success. At the time of his passing, he was also advising three students. As a mentor, he helped guide junior faculty members through some of the nuances of the academic world. From his own experience, he would highlight the pitfalls and disappointments that we all inevitably face, but he always emphasized how much the successes in one's career trumps any of those negative experiences.

As a teacher, Xiangrong was always reliable for effectively delivering theory courses in probability and mathematical statistics, as well as advanced topics courses. He was well-respected by his students, who often expressed their appreciation for his command of the material. While at times he came across loud during his lectures, everyone quickly learned that it was merely an expression of his passion for the topic. His approach was never misunderstood as he always demonstrated a sense of humor that could lighten any mood. The net result is that Xiangrong infused a certain vibrancy into his department that was appreciated by the faculty and students alike.

Xiangrong also worked tirelessly to serve his department, university, profession, and community. He reenergized the Department of Statistics colloquium series at the University of Kentucky by consistently inviting leaders in the field of statistics. He would regularly be called upon to serve on important committees for the university, such as those involving tenure review. He was in high demand as a peer reviewer for all major journals spanning theoretical, applied, and computational statistics. He was a very active member of the International Chinese Statistical Association (ICSA) and the Institute of Mathematical Statistics (IMS). Through both societies, he worked tirelessly to promote the discipline of statistics. He became a member of ICSA in 2000 and served as an associate editor for *Statistica Sinica*, an ICSA-sponsored journal, from 2014-2017. He organized numerous invited paper sessions at ICSA and IMS conferences, including sessions that could help increase exposure for his students and his fellow junior colleagues. He also served on program committees for conferences organized by the respective societies. At the time of his passing, Xiangrong was also entrusted as the ICSA's Award Committee Chair in an effort to recognize "distinguished achievement in statistical research and unselfish support of the association." He also selflessly devoted numerous hours

of community service by volunteering for local and regional math and science competitions at his children's school.

Xiangrong excelled in all facets of his academic career, making him the ideal colleague and faculty member. His collegiality was unrivaled, and each person who worked with him benefited from his wisdom and kindness. Xiangrong genuinely cared to see his colleagues succeed and would always provide his unwavering support. Knowing all of the successes that Xiangrong had in his career, it was all the more humbling that he would extend such kindness and support to his colleagues. His actions truly defined the greatness of his character.

The contributions in Xiangrong's all-too-brief, but accomplished career, culminated in his proudest professional moment in 2019, when he was successfully nominated and awarded Fellowships by both the American Statistical Association (ASA) and the IMS. Such honors are a testament to the positive impact he has left on our field.

Xiangrong's commitment to both his family and work cannot be understated. Xiangrong would proudly boast that he did not own a cellphone, and insisted that if someone needed to contact him, they needed to only call his office phone or his home phone in order to reach him. In some sense, this underscored the duality of his life. Everyone who knew Xiangrong *professionally* knew how committed he was as a faculty member and statistician. In the weeks prior to his passing, he was working tirelessly to prepare for the fall semester as well as to help finalize a strong roster of speakers for the Zoom seminar series being organized for the upcoming year. Everyone who knew Xiangrong *personally* knew how much he cared for and loved his family. His tireless love to his children and devotion to his family were evident right up until his final moments.

The way Xiangrong harmonized the demands of his work with the simpler joys in life is very admirable. He always enjoyed meticulously planning his upcoming year's conference schedule and the exciting travels that accompanied those conferences. He also enjoyed frequent walks through the University of Kentucky Arboretum, on which he would invite his seminar guests to accompany him. Those of us who knew him personally and professionally will remember him as a skilled statistician, a wise mentor, a humble individual, and a great friend.

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