STATISTICS

Leaders in the field, researching some of the most interesting and relevant problems of the day

Statistics is the discipline concerned with the study of variability, uncertainty, and decision-making in the face of uncertainty. One essential role of modern statistical research is to develop new tools for use at the frontier of science. The amount and complexity of data generated to support contemporary scientific investigation continues to grow rapidly. In domains from genomics to climate science, statisticians are actively engaged in interdisciplinary research teams. In some areas, automated processes collect and process huge amounts of information; in others simulations of complex systems are designed to generate information about large scale behavior, and in still other areas, the very sources of data are products of the information age.

With its reputation as an international leader in statistical education and research, the Department of Statistics at U-M is uniquely positioned to move forward with innovative research and cutting-edge teaching that will address the current challenges to develop statistical ideas, methods and software needed for groundbreaking work in astronomy, genomics, climate science, financial market analysis, and social and sensor networks.

The department offers a variety of undergraduate and graduate programs designed to meet the needs of a wide spectrum of students. Many of our faculty members are renowned for their research projects, which address some of the most important topics of the day, including modeling and analyzing complex and high-dimensional data. Statistical methods have been an important part of advances in medicine and engineering, such as genetics, tomography, speech recognition, and computational vision.

As computer scientists and statisticians have become increasingly attracted by similar problems in big data, close alliances have been forged in areas such as data mining and statistical/machine learning. And the department's substantial cross-disciplinary research activities in several major areas—including engineering, social sciences, and life sciences—enable our students to gain the knowledge and skill sets to build successful careers in business, health, environment, engineering, government, and social sciences.

In order to remain a top-ranked program, statistics needs to continue to recruit the highest-quality faculty and students to Michigan, and dedicate resources to producing leaders of the field for the next generation. Scholarship support and funding to enable undergraduates and graduate students to conduct research and attend conferences is critical. Also, the department seeks to establish a leading research center for Big Data, which would further enhance our reputation and national ranking.

UNDERGRADUATE INITIATIVES

With several fast-growing undergraduate programs in statistics, funding for scholarships and for supporting students to conduct research and attend statistical conferences is urgently needed. An annual investment of $10,000 to $50,000 would provide this critical funding.

DEPARTMENT STRATEGIC FUND

Expendable, undesignated gifts are extraordinarily important to the continuing success and growth of the department. Contributions of $10,000 to $50,000 annually to the Strategic Fund make it possible to meet unexpected needs and challenges such as seed funding for new faculty research, curriculum development, the Michael Woodroofe Lecture series, and student activities and clubs.

"It's clear that supporting students is a key priority. In particular, I've been impressed by the way the department has increased many resources for Ph.D. students, including summer support, travel funding, and computing."

—Dan Kessler, Ph.D. student

GRADUATE INITIATIVES

Gifts of $10,000 to $50,000 annually will help support the department's weekly graduate student seminar, as well as conference attendance by graduate students. Support will also fund activities at the Michigan Student Symposium for Interdisciplinary Statistical Sciences, held on campus each year, which will help in recruiting the most talented graduate students to Michigan.

COMPUTING INFRASTRUCTURE FUND

In order to provide cutting-edge education and conduct leading research in statistics, it is essential to maintain a computing infrastructure that is state-of-the-art. This infrastructure supports the Big Data initiative as the analysis of such data is computationally intensive. Expertise in how best to use this computing infrastructure in Big Data statistical analyses enhances the job prospects of both graduate and undergraduate students. An endowed Computing Infrastructure Fund of $1 million would provide the necessary funding in perpetuity for this need.

BIG DATA INITIATIVE

Modeling and analysis of large datasets, including those with complex structure, has received considerable attention in statistics over the last 15 years. An initiative for big data research and development is being implemented by six federal departments and agencies. These efforts are mirrored by investments in the private sector in the areas of big data management and analytics. U-M and the Department of Statistics are well positioned to take a leadership role in this area. Several faculty members in statistics are renowned leaders in the areas of large datasets and high-dimensional data.

Elsewhere in the university, there is abundant research expertise in the areas of database management, visualization, information retrieval, signal processing, and machine learning, all of which involve big data. A center for Big Data at the university will create a focused intellectual environment capable of stimulating collaboration and innovations in the research of this field.

An endowed fund of $3 million would provide the catalyst for creating a world-leading research center for Big Data. Funding would provide research support for graduate and undergraduate students and visiting scholars, program staffing, a seminar series, and equipment costs.

WAYS TO FUND YOUR GIFT

Your gifts of cash, pledges, or appreciated securities change lives. Wills, estate, and planned gifts allow you to create a lasting legacy that will enable the best and brightest minds to experience a liberal arts education, solve problems in a changing world, and yield ideas and innovations that will make a difference in Michigan and around the globe.

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