Undergrads and Masters Students Elect Professors and TAs of the Year

Each spring, ORIE undergrads and Master of Engineering students vote separately for Professor of the Year and Teaching Assistant of the Year.

This year the undergraduates selected Peter Jackson as Professor of the Year. They selected both Anke van Zuylen and Chandrashekhar Nagarajan as Teaching Assistants of the Year. The current Master of Engineering students selected Shane Henderson as Professor of the Year and Yinan Huang as Teaching Assistant of the Year. Nagarajan and Van Zuylen are expected to receive their Ph.D. degrees in August. Both are working under the guidance of Professor David Williamson. Huang joined the Ph.D. program in 2005.

The awards were announced to students and faculty at a pizza lunch on May 13, by Roberto Yunen as head of the Master of Engineering Student Leadership Council and Bernardo Menezes as head of the Cornell student chapter of INFORMS, the Institute for Operations Research and the Management Sciences.

For More Information

For more information about ORIE or making a gift, please contact:
School of Operations Research and Information Engineering
Cornell University
206 Rhodes Hall
Ithaca, NY 14853-3801
James Renegar (jr43@cornell.edu)
Director
Lauren Fielding (lrf43@cornell.edu)
Alumni Affairs & Development

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Samorodintsky Recognized at Merrill Presidential Scholar Convocation

This May 20 and 21, the 2008 Merrill Presidential Scholars gathered in events on campus with their honored Cornell professors and secondary school teachers. The culminating event, a convocation luncheon hosted by President Skorton and Susan H. Murphy, Vice President for Student and Academic Services, was held in the Memorial Room of Willard Straight Hall.

Stephanie Peng (College of Engineering) honored Eric Levin of Manalapan High School and Professor Gennady Samorodintsky of the School of Operations Research and Information Engineering.

"While Mr. Levin was very important to my high school education, Professor Samorodintsky has been equally important to my college education," Peng said. "His straightforward lectures, generous use of examples, and genuine concern for his students' learning have made his teaching style stand out in my mind.

"In addition, his Engineering Probability and Statistics, and Introduction to Financial Engineering courses have been invaluable to me in finding a career path after graduation," continued Peng. "The first helped me solidify my understanding of the subject and appreciate its power to describe complex phenomena. The second introduced me to the role of probability and statistics in the financial world. I will no doubt be combining concepts and skills from both in my future job."

The Merrill Presidential Scholars Program honors the excellence of Cornell undergraduates, as well as the high school and university faculty members who have contributed to their lives. The university wishes to acknowledge the community of teaching not only for conveying knowledge to students but also for inspiring them. This program was created by Philip Merrill '55 and is made possible by generous funding from the Merrill Foundation and the Merrill Family.

Merrill Presidential Scholars are graduating Cornell seniors who have demonstrated outstanding scholastic achievement, strong leadership ability, and the potential for contributing to society. Every spring semester, the dean of Cornell's seven undergraduate colleges select scholars representing the top one percent of graduating seniors, for this honor.

Each student recognizes a secondary school teacher who most inspired his or her scholastic development and a Cornell faculty member who most significantly contributed to his or her college experience.

Also attending the convocation were three members of the Merrill family, which has generously funded the program for the past 20 years: Douglas Merrill '89 (Engineering), MBA '91, Catherine Merrill Williams '91 (Arts and Sciences), and Nancy Merrill '96 (Arts and Sciences).

Henderson Supervises Robust Intensity Modulated Radiation Therapy Treatment Planning Research

More than half of all cancer patients in the U.S. receive external-beam radiation therapy as part of their cancer treatment. This typically involves daily visits to a cancer center for 4-6 weeks to receive a daily “fraction” of radiation. A key difficulty with this system is that patients cannot be precisely positioned every time they come in. Inevitably, there are “setup” errors. These setup errors, and the fact that internal organs are not always in exactly the same position, mean that tumors and the surrounding regions are not always in the same place. The result is that radiation is not always delivered to the right place, and serious side effects often occur.

This problem was the topic of a recent Ph.D. thesis by Millie Chu, who worked under the supervision of Shane Henderson. The project team was rounded out by Yuriy Zinchenko, another Ph.D. student in ORIE who also recently completed his Ph.D., and Dr. Michael Sharpe of the primary cancer treatment hospital in Canada — Princess Margaret Hospital in Toronto. The team’s approach to this problem was to use recent developments and algorithms in “robust optimization” to design treatments to attempt to achieve the same radiation doses to the tumor as conventional planning techniques, but with significantly less total radiation delivered.

A key challenge was that even storing the entire problem was impossible! To do so would have required 10,000 dense matrices, each of size 1000 x 1000. To get around this, the team used an approximation that was justified by the results they obtained — computational testing showed that the treatment plans obtained were of high quality despite the approximation.

Millie Chu is now working for T-Mobile in Seattle. Yuriy Zinchenko has continued working on the problem. Since graduating he has held positions at McMaster University in Hamilton, Ontario, as well as at Princess Margaret Hospital in Toronto, working on the software package that was used to do the computation. He also co-organized a workshop on the topic for doctors, radiation physicists, Operations Researchers and software developers at the Fields Institute in Toronto in April 2006. Shane Henderson is now co-advising Ph.D. student Spyros Schismenos with Professor Adrian Lewis. Spyros Schismenos is undertaking a theoretical analysis of the approximation that was used in this work, to try to better understand when it can be expected to work well, and when it might fail.

Master of Engineering Student Ye (Jay) Tian Places Second in Automated Trading Competition

The third annual Interactive Brokers Collegiate Trading Olympiad was open to undergraduate and graduate students throughout the world. Jay Tian, who is concentrating in Financial Engineering in his OREI Master of Engineering program, won 2nd place by developing software that more than tripled the initial “phantom stake” of $1,000,000 through automated trades. Tian's prize of $50,000 is definitely not “phantom” money. "I was excited as the results unfolded during the eight weeks of the competition," Tian, seen here looking at the final ranking, says. "After the final ranking came out, I felt that all the hard work was more than worth it!"

The competition’s automated trading took place at the beginning of 2008, an especially difficult and unusual period in the financial markets. Tian ran his initial stake to $3,108,253, only $26,185 behind the number one finisher, Christopher Michalak, a Montreal resident and aerodynamic doctorate student at the University of British Columbia in Vancouver.

Tian’s strategy, embodied in the design of the program, is based on a mathematical understanding of the timing of price pull backs from their extreme values. He credits the Cornell Financial Engineering program for the approaches he learned in the Monte Carlo Simulation and Derivatives courses he took, since these were “the building blocks of the development process.” However, he added ingredients based on self-study and says “I think the approach is pretty valuable so I don’t plan to publish my results.”

Tian will use his Olympiad winnings to pay back his student loans and will invest most of the rest. However “I plan to keep some of the proceeds to celebrate” he says. Tian joined Cornell’s Master of Engineering program in Operations Research and Information Engineering from the University of Florida, where he completed a Ph.D. in Aerospace Engineering. He came to the United States from Szechuan, China in 2001 to study at the Gainesville campus. He received his Bachelor of Engineering degree from Beijing University of Aeronautics and Astronautics with a major in Electrical Engineering. His wife, Bei Wang, lives in New York City where she is a postdoctoral researcher in immunology.

“Coming to Cornell is the best career decision I ever made,” says Tian. “I really like the interactive nature of the program and the field.” Kathryn Caggiano, who directs the Master of Engineering program, expressed pride in Jay’s accomplishment. “We are delighted that our students take this kind of initiative and are able to compete so effectively with students from all over the world,” she said.