DRIVING UBER: CORNELL ORIE MAKES ITS MARK
MESSAGE FROM THE DIRECTOR: OVERACHIEVING ORIE

As of July 2017, I have the great honor of serving as the director of ORIE. I assumed the reins from Professor David Shmoys, who served ORIE with distinction during his four years as director. David is a very hard act to follow. His tireless efforts led to a rather astonishing list of accomplishments, including overseeing the renewal of our faculty through hiring in both Ithaca and Cornell Tech, increasing the size of our Ph.D. program, creating new educational programs, and organizing celebrations of ORIE’s many achievements—retirements and the 50th anniversary being perhaps the most prominent. Sheesh! ORIE is in superb shape after these transformative last four years, and happily that makes my job as director a lot easier than it would otherwise have been. Thanks, David!

ORIE is excited to have boosted the number of faculty named David (now standing at four), as we welcome Professor Dave Goldberg to the second floor of Rhodes Hall. Dave works in applied probability and stochastic processes on a broad sweep of topics including inventory and queuing models, combinatorial optimization, robust optimization, and multi-armed bandits. He previously served as the A. Russel Chandler III Associate Professor in the H. Milton Stewart School of Industrial and Systems Engineering at Georgia Tech. His departure makes me feel sorry for our colleagues at Georgia Tech, but Dave’s stellar qualities have ensured that I am quickly getting over my pangs of guilt!

I’m also delighted to welcome Professor of Practice Dr. Brenda Dietrich, in a position endowed through the generosity of Art and Helen Geoffrion. Brenda comes to us from IBM where she has served in many leadership roles, including multiple VP roles related to Data Science and Business Analytics. Moreover, from 2001-2008 she directed approximately 90 researchers in IBM’s Mathematical Sciences Division. Brenda is a member of the National Academy of Engineering, an IBM Fellow, and an INFORMS Fellow. Her role in ORIE will be to build closer ties between industry and our Ph.D. students and faculty. Could we have found anyone more supremely qualified for this position? Welcome, Brenda!

An impressive array of awards and honors garnered of late showcase the quality of your school, and, of course, I can’t resist the opportunity to show off just a little. Professor David Williamson has become a SIAM Fellow and I’ve become an INFORMS Fellow. Professor Éva Tardos was awarded the INFORMS Philip McCard Morse Lectureship. At the INFORMS national meeting, faculty and Ph.D. students won several best paper awards: Professor Kris Iyer and his students Anton Braverman and Jiekun Feng, Professor Itai Gurvich, and Professor Sid Banerjee, with undergraduate student Siddarth Reddy and co-authors Igor Labutov and Professor Thorsten Joachims.

Several additional ORIE-authored works were selected as finalists in paper competitions. Professor Andreea Minca received the SIAM Early Career Prize and an NSF CAREER award. Professor Madeleine Udell has been awarded a $1.4 million DARPA grant. Still reading? Quite something, eh?

Now you understand the title of this message. Please join me in thanking David Shmoys, welcoming Dave Goldberg and Brenda Dietrich, and congratulating the numerous ORIE folks who have received awards and honors. Thank you! Welcome! Congratulations!

We want to continue to hear from you, our alumni. Please keep in touch with us through the alumni section of the ORIE website. Submit an alumni note, catch up with other alumni in the notes section, or find out ways that you can help ORIE by visiting https://www.engineering.cornell.edu/alumni/. Or drop me a line or call me at the coordinates below.

Cheers!

Shane Henderson
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Cornell grads are a driving force at transportation technology company Uber. Over the past couple of years, nearly a dozen alumni (mostly from ORIE) as well as former and current ORIE faculty members have made their way to the corporation’s San Francisco headquarters to help shape the future of ridesharing.

“It is an opportunity to work with top-notch talent on the most challenging analytic problems in the world,” said Bob Phillips, until recently director of the Marketplace Optimization Data Science (MODS) group, where most of the Cornellians are clustered.

As ridesharing has caught on and the company has expanded its offerings to include food and package delivery in addition to carpooling and other projects, the company has grown rapidly. MODS now boasts 100 data scientists, of whom the Cornell members make up a disproportionate 10 percent (considering that Uber’s natural recruiting grounds are West Coast universities).

ORIE alumni have made their mark throughout the group’s teams, frequently in leadership positions, contributing to “the data science and analytics behind all the core problems powering Uber’s business,” Phillips said.

Take UberPOOL, a carpooling service in which riders trade a cheaper fare for sharing the vehicle with others and taking a little longer to reach their destination. Lior Seeman Ph.D. ’15 helms the effort to keep that time to a minimum by “improving the pool matching algorithm to try and get as many people as possible in one car travelling to the same area,” the computer scientist explained. Steve Pallone Ph.D. ’17 has recently also joined the Matching team.

A new feature in the Uber app gives customers an estimate when they will arrive in order to reduce their uncertainty, though the team learned that this is only one of several factors riders consider: “Interestingly, they care a lot about the number of stops, number of people in the vehicle, and whether it travels backwards,” said ORIE associate professor and Uber staff scientist Peter Frazier, who led the UberPOOL data science team for a year and a half and now splits his time between Ithaca and the West Coast.

Mike Freimer Ph.D. ’01 heads up the control team, which tries to understand the health of cities as Uber marketplaces, as well as the Forecasting team, “providing forward-looking projections of supply (available drivers) and demand (riders) to our pricing engines,” he said. “These forecasts are generated across multiple levels of spatial and temporal granularity.”

Finally, Dawn Woodard, a former associate professor in ORIE and the Department of Statistics, has moved to the top of data science for Uber Maps after previously leading the Dynamic Pricing team, of which James Davis Ph.D. ’15 is a member. “We set prices in an effort to keep the marketplace healthy,” Davis explained. Riders know up front how much they will pay for a trip, with fares adjusting up or down

ORIE MAKES ITS MARK IN RIDESHARING TECHNOLOGY
This pricing model is fundamental to Uber’s business, Frazier contends. “You can argue that Dawn’s work was a lynchpin for Uber’s success, and I believe we [Cornellians] have played a critical role in bringing the company to where it is today.”

Conversely, the ability to have such a tangible, real-world effect makes Uber an attractive employer. “It’s a place that’s unique in having the speed of a startup company but the scale of a global company,” Frazier said.

So when Davis designs a small algorithmic change, it can positively influence the earnings of drivers worldwide. “I sought out a job with interesting and impactful problems,” he said. “Uber fit the bill and now I feel like I have a strong voice in designing the future of ridesharing.”

Because it is a relatively new product, ridesharing continues to evolve and present complex problems with a physical component—moving people through cities in cars—that sets Uber apart from other technology companies.

It also ties into OR’s historical emphasis on addressing practical issues in military, manufacturing or transportation applications.

ORIE graduates thus feel well prepared to tackle the dynamic challenges of ridesharing. “The OR department provided me with an excellent technical toolbox,” Freimer said. “Optimization, statistics, stochastic modeling and simulation have all been directly relevant. Also hugely important was practice tackling ambiguous, ill-defined problems and creating analytical frameworks for addressing them.”

Phillips agrees: “Cornell Ph.D. grads tend to have a highly pragmatic approach,” he said. “They are interested in solving problems rather than proving theorems. They are not afraid to get their hands dirty and they seem to love working with data. This is a huge plus at Uber.”

And thus word of mouth continues to bring Cornell grads to San Francisco. “Uber is simply the most exciting OR company around,” Frazier said.
In October of 2016 Cornell Provost Michael Kotlikoff officially launched an ambitious series of initiatives to enhance faculty hiring across the university. Cornell identified seven discipline areas that benefit from the university’s culture of radical collaboration. For each of the seven areas, the provost created a task force whose mission boiled down to two overarching goals: to burnish the university’s reputation for research excellence, and to attract a new generation of teachers and researchers.

ORIE’s David Shmoys, the Laibe/Acheson Professor of Business Management and Leadership Studies, was tapped to head the Data Science Task Force. The task force comprises 20 members from 17 departments across the three Cornell campuses in New York state. The Data Science Task Force’s charge from the provost consisted of a series of questions whose answers will create a roadmap that allows the university to fully capitalize on existing strengths while showing the way forward as a worldwide leader in the broad field of data science.

“Data science is an expansive term that includes everything from the technologies that enable raw data to be captured to the decisions made based on that data,” says Shmoys. “Cornell has such a strong culture of collaborations across disciplines that we are well-positioned to assert ourselves as leaders in the field.”

While the composition of the task force reflects the near-universality of the importance of data across all academic disciplines, Shmoys’ appointment to head the committee reflects the key role ORIE plays in the methodology of how data is mined, modeled and used to drive decision-making. “The task force’s membership highlights the reality of how the science is driven by the domains (astronomy, biology, economics, law, etc.) and by the methodology, together. Both are essential if we want to take full advantage of the data we are able to collect,” says Shmoys.

As part of their work, the task force identified ways in which Cornell’s existing strengths can be made more visible; for example, there are many internationally prominent data repositories that already exist at Cornell, including the Public Opinion Research Archive at the Roper Center, the Legal Information Institute at the Cornell Law School, the ArXiv electronic repository of scientific papers, e-Bird hosted by the Lab of Ornithology, and the New York City Clinical Data Research Network.

The task force also identified the many resources available to researchers at Cornell to help them collect and make sense of data, including the Cornell Center for Advanced Computing, the Cornell Statistical Consulting Unit, and the Survey Research Institute to name just a few. “Something we realized through this process,” says Shmoys, “is that everywhere you look at Cornell, you find people who are strong data scientists. Our expertise is obvious, but it is also diffused across the university.”

The task force met every two weeks in the spring of 2017 and they are now ready to present their findings to Provost Kotlikoff. The centerpiece of the Data Science Task Force recommendations is that Cornell establish a Center for Engaged Data Science. “We imagine the center as a scholarly sandbox for researchers across a range of disciplines,” says Shmoys. “As we envision it, there would be a steady-state cadre of post-doctoral fellows who would help Cornell faculty and the center become a recognized world leader in the broad field of data science.”

Creating a Center for Engaged Data Science would gather together the expertise that already exists at Cornell, (albeit in a dispersed configuration), and give a framework for how to move the field forward. In addition to the creation of a center, the task force has made several other recommendations involving education, coordination of infrastructure, archive accessibility and outreach to non-academics.

The task force’s final report describes a near-future when the technology to gather, store and process data will improve and allow for real-time collaborations that will create a thriving community at Cornell focused on data science. “The center will also change the way students in every discipline understand the use of data,” says Shmoys. “They will start to see the pervasive connections across many fields.”

An important first step in this process

Continued on next page
Data Science For All

A new course called Data Science For All will be offered for the first time at Cornell in the spring semester of 2018. The course, which is CS/ORIE 1380, will be co-taught by ORIE Assistant Professor Madeleine Udell and CS Senior Lecturer Michael Clarkson.

As described in the syllabus, the immediate objective of this course is “to give students a basic introduction to computational thinking (i.e., programming) and inferential thinking (i.e., statistics), as well as to basic concepts in machine learning and data visualization.”

However, there is more to this class than the professors’ immediate objective. As one piece of his charge to the Data Science Task Force, Provost Michael Kotlikoff asked “How can we advance data science educational programs at the undergraduate, masters, and Ph.D. levels in the most effective way?” The Task Force and Provost Kotlikoff are viewing this class as an early and important step in providing students and faculty from all disciplines at Cornell with a common understanding of the importance of data science.

“We’re hoping that students will sign up who are curious about data science, and how it might be applied to other subject matter domains that they’re interested in,” says ORIE’s Udell. “These might be students in A&S, CALS, ILR or really anywhere at Cornell. Data science has become a fundamental skill for understanding the world and making decisions, and we’re excited to provide these skills to students who may go on to do important data-driven work in their own disciplines.”

Udell and Clarkson are offering many sections of the class in an effort to keep the enrollment in any particular section to a manageable number. “Since this will be the first time many students in the class interact with a programming language, it’s important to offer enough time for them to get help from TAs. The sections are designed to have small enrollment, so that all students, no matter their programming or mathematical background, can get the help they need to succeed in the class,” says Udell.

David Shmoys, ORIE professor and chair of the Data Science Task Force, is excited to see some of the ideas of the task force put into effect so quickly. “This class will provide a common entry point to ideas about data science,” says Shmoys, “and then all of the disciplines will have people who speak the same language” about data.

By Chris Dawson
## A LOOK AT ORIE RESEARCH GRANTS

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Big data is a hot topic in computer science. It’s also big business, as government and commercial interests mine databases for their own purposes, scouting for business trends, political preferences and, of course, new customers.

The average citizen whose data is in these systems doesn’t have much to say about how it’s used, but a team of Cornell computer scientists, statisticians and mathematicians has formed the Center for Data Science for Improved Decision-Making to research data management and find ways to make these systems handle data responsibly and use this new resource for the public benefit.

The team consists of Kilian Weinberger, associate professor of computer science; Jon Kleinberg, the Tisch University Professor of Computer Science; Steve Strogatz, the Jacob Gould Schurman Professor of Applied Mathematics; Giles Hooker, associate professor of biological statistics and computational biology; and David Shmoys, the Laibe/Acheson Professor of Business Management and Leadership Studies in the School of Operations Research and Information Engineering. As research progresses, they plan to collaborate with a large number of faculty members in related fields.

Their work will be supported by a $1.5 million grant from the National Science Foundation’s TRIPODS (Transdisciplinary Research in Principles of Data Science) program.

Their research will focus on several areas:

• How to guarantee the privacy of data and ensure that decisions are not biased by race, gender or other characterizations. The researchers propose to build into data management systems the ability to detect weaknesses in these areas and correct them.

• Learning more about their structure and the processes that take place within social networks, where connections between people can be used to inform decision making. With early detection and containment strategies, the researchers say, adversarial fake news or viral disease epidemics can potentially be identified at a much earlier stage, and their damage may be controlled.

The same applies, Weinberger noted, to phone company records of “who’s calling whom.”

• “Interventions” where systems make recommendations or suggestions, or reach decisions about participants, based on their histories. Applications range from overseeing health care interventions to avoiding polarization of user populations.

• Uncertainty quantification: Knowing how unsure a prediction might be, especially when applied to decision-making with potential consequences to human subjects. Some currently popular algorithms don’t report how much variability there might be in their output.

• Deep learning, widely used but still not well understood. There is ambiguity about what these systems actually learn.

TRIPODS projects are aimed at harnessing the data revolution to enable continued data-driven discovery and breakthroughs across all fields of science and engineering, NSF said in announcing the grant.

By Bill Steele
ORIE FACULTY RECEIVE COLLEGE TEACHING/ADVISING AWARDS

Four members of the ORIE faculty were recently recognized at the College of Engineering’s Teaching and Advising Awards luncheon. Jim Dai, the Leon C. Welch Professor of Engineering, is joined by assistant Professors Krishnamurthy Iyer and Jamol Pender as Excellence in Teaching Award recipients, while Professor Bob Bland and Pender each received the James M. and Marsha D. McCormick Award for Outstanding Advising of First-Year Engineering Students. ORIE student Samantha Nirenberg earned the Peer Advisor Outstanding Service Award.

Dai came to ORIE from Georgia Tech in the fall of 2012. In addition to teaching courses at the undergraduate, master’s, and Ph.D. levels, he has advised or co-advised several Master of Engineering projects. Dai’s teaching focuses on stochastic processes, a fundamental topic that is central to OR and necessary for modeling systems that exhibit time-varying randomness, from the spread of disease in populations, to waiting line dynamics, to movements in stock prices, to inventory availability across distribution networks.

Iyer has been an assistant professor in ORIE for four years. During that time, he has taught two popular elective courses for undergraduate and master’s students — ORIE 3800: Information Systems and Analysis, ORIE 4350: Game Theory — and a Ph.D. level course, Foundations of Game Theory and Mechanism Design (ORIE 6350). He has advised and co-advised several Master of Engineering projects as diverse as maintaining the CitiBike fleet (with Professor David Shmoys), understanding customer purchasing behavior when products are out of stock at Walmart.com, and forecasting demand for Merck animal health products. He has also advised several undergraduate research projects.

Pender has been an ORIE faculty member for only two years, but as anyone spending even a brief amount of time on the second floor of Rhodes Hall can attest, he is already making a significant positive impact as both a teacher and a mentor. Not only has Pender co-advised Master of Engineering design projects in each of his first two years, in 2016 he supervised 15 undergraduates in various research team projects.

Bland has been a member of the ORIE faculty since 1978 after a short stint at SUNY Binghamton. He received his B.S. (1969), M.S. (1972) and Ph.D. (1974) degrees from Cornell University and was a Ph.D. student of D.R. Fulkerson during his graduate days on the East Hill.

Nirenberg was chosen as this year’s recipient of the Peer Advisor Outstanding Service Award, which recognizes the work she did for the ENGRG 1050 Engineering Seminar this past fall and the invaluable impact she made on first-year students here at Cornell.

JUST IN: ORIE FINALIST FOR UPS SMITH PRIZE

Cornell ORIE M.Eng. programs selected as finalist for the 2018 UPS Smith Prize, the INFORMS award for “effective and innovative preparation of students for O.R. practice.” Finals are in April — wish us luck!
THREE ORIE FACULTY EARN PROMOTIONS

Congratulations are in order for Itai Gurvich, Andreea Minca and Pierre Patie, who were all promoted to associate professor with tenure by the Cornell University Board of Trustees.

Gurvich is an associate professor at Cornell Tech and a member of Cornell’s Operations Research and Information Engineering Department. He earned a Ph.D. from the Decision, Risk and Operations Department at Columbia University’s Graduate School of Business. He spent eight years teaching at the Kellogg School of Management at Northwestern University. His research interests include performance analysis and optimization of human-operated processing networks, the theory of stochastic-process approximation and the application of operations research and statistical tools to health care processes.

Minca is the Andrew Schultz ’36 Ph.D. ’41 Sesquicentennial Fellow. She received her Ph.D. in Applied Mathematics from the University Paris 6 Pierre et Marie Curie in 2011. Prior to that, she received a M.S. in Probability and Finance from the University Paris 6 Pierre et Marie Curie and “Diplôme de l’Ecole Polytechnique”. Her research focuses on mathematical modeling in finance, within the areas of systemic risk, liquidity risk and credit risk. She is particularly interested in structural models for systemic risk, using networks to represent various types of interrelations among financial institutions. Her work has been published in leading journals such as Mathematical Finance and Finance & Stochastics.

Patie is a Canaan Faculty Fellow. He earned his M.S. degree in Mathematical Engineering from both the Swiss Federal Institute of Technology, Lausanne and École Polytechnique, Paris and his Ph.D. in mathematics from the Swiss Federal Institute of Technology, Zurich. His research interests lie in the study of stochastic processes and their applications in financial and insurance mathematics, with an emphasis to Markov processes and their connections to functional analysis.

M.ENG. CURRICULUM UNDERGOES CHANGES

Given the professional boost that ORIE skills can bring to a wide variety of technical backgrounds, it is not surprising that most students in today’s ORIE M.Eng. class have undergraduate backgrounds in fields other than ORIE: applied math, management science, or industrial engineering. To provide greater value to an M.Eng. class with increasingly diverse backgrounds and interests, in spring 2017 the ORIE faculty meticulously overhauled the M.Eng. curriculum.

The new ORIE M.Eng. curriculum gives students greater flexibility in making core and elective course selections, while ensuring mastery of core disciplinary knowledge. For instance, instead of requiring specific, predesignated courses for the M.Eng. core, students may now choose from a variety of approved courses in each of three categories: optimization modeling; stochastic modeling; and data science and statistical modeling. To satisfy new M.Eng. core requirements, students must complete 12 or more credit hours of approved coursework, with at least three credit hours in each category. Not only does the new M.Eng. core structure provide increased scheduling flexibility and curriculum customization for the students, but the explicit new focus on data science is better aligned with industry expectations and capitalizes on our considerable faculty strength in this area.
Library dedication, symposium celebrates Les Trotter on his retirement

After 41 years as a member of the ORIE faculty, Professor Leslie Trotter retired and colleagues and friends celebrated with a reception at the Baker Portico in the Physical Sciences Building and a symposium in Rhodes Hall.

A research study in Olin Library (Room 615) was dedicated in Trotter’s honor followed by a reception Friday afternoon. A symposium and dinner Saturday capped off the festive weekend.

Professor Trotter received an A.B. (Mathematics) from Princeton University in 1965, an M.S. (Industrial and Systems Engineering) from Georgia Institute of Technology in 1971, and a Ph.D. (Operations Research) from Cornell University in 1973. He had a postdoctoral appointment at the University of Wisconsin and was then on the faculty of Yale University before joining the Cornell faculty in 1975.

Professor Trotter was recipient of a Senior U.S. Scientist Award from the Humboldt Foundation. At Cornell he has received seven awards for teaching excellence and has directed the dissertation research of over 25 Ph.D. students; his research program has sponsored 10 postdoctoral students. Trotter has also served Cornell Engineering as the associate dean for undergraduate programs.

Les Otto talks with former director of M.Eng. studies Mark Eisner at Friday’s cocktail reception.
On November 14, ORIE faculty, alumni, students and friends of CFEM gathered at Cornell Tech to celebrate the 10th anniversary of the Cornell Financial Engineering Manhattan program. The highlight of the evening was a panel moderated by CFEM director Victoria Averbukh Ph.D. ’97 and titled “Quant Finance: From Black-Scholes to Big Data.” The audience was treated to an engaging conversation about the future of quantitative finance and the role big data will be playing going forward. The panelists offered their perspectives on the emerging trends and offered their advice to aspiring financial engineers of the future.

The panelists included Antonio Baldaque da Silva, managing director and head of the Financial Modeling Group of BlackRock Solutions; Dr. Hans Buehler, head of equities at J.P. Morgan; Sebastian Ceria, chief executive officer of Axioma; Dr. Peter Carr, chair of the Finance and Risk engineering Department at New York University’s Tandon School of Engineering; and Ross Garon, managing director at Point72 Asset Management, L.L.C., and the head of Cubist Systematic Strategies, L.L.C.

Silva joined BlackRock in July 2015 and previously held the position of head of portfolio modeling at Barclays POINT. He earned his M.A. and Ph.D. in economics from Northwestern University.

Buehler has been working in quantitative finance since 2001, when he started as an intern in Deutsche Bank’s equity derivatives team. He became global head of that team in 2006, and moved to J.P. Morgan in Hong Kong in 2008. Buehler studied mathematics at Humboldt University to Berlin and holds a Ph.D. in financial mathematics from Technical University in Berlin.

Ceria founded Axioma in 1998 and was previously an associate professor at Columbia’s Business School from 1993-98. He is a recipient of the Career Award for Operations Research from the National Science Foundation. Ceria completed his Ph.D. in operations research at Carnegie Mellon University’s Tepper School of Business, and his undergraduate degree in applied math at the University of Buenos Aires, Argentina.

Carr has headed various quant groups in the financial industry for the last 20 years. In addition to his position at NYU, he also serves as a trustee for the National Museum of Mathematics and WorldQuant University. Prior to joining the financial industry, Carr was a finance professor for eight years at Cornell, after obtaining his Ph.D. from UCLA in 1989.

Before Point72, Garon was the co-founder and managing member of Tykhe Capital L.L.C. He began his career in quantitative finance at D. E. Shaw & Co. in New York, London and Tokyo. Garon graduated magna cum laude from Harvard University.
DAVID GOLDBERG JOINS ORIE FACULTY

David Goldberg has joined the faculty of the School of Operations Research and Information Engineering (ORIE) at Cornell. Goldberg comes to Cornell after six years as an associate professor in the School of Industrial and Systems Engineering at the Georgia Institute of Technology.

Goldberg’s work is in applied probability, with a focus on topics including inventory and queueing models, combinatorial optimization, robust optimization and multi-arm bandits. “Georgia Tech is a big logistics school,” says Goldberg. “While I was there I started working on problems in that space and found I could bring a new way of looking at logistical problems using mathematical probabilities.”

As a high school student in northern New Jersey Goldberg found himself drawn to math and science. He was involved in a Rutgers University program designed for high school students interested in discrete math. “But I was not only interested in math,” says Goldberg. “In fact, my interests were fairly broad. I was a bookstore rat as a kid and would read everything.”

This broad set of interests steered Goldberg to Columbia University, where he could major in computer science, minor in operations research and applied math, and still take courses outside of these areas. “I took a significant dose of non-technical classes at Columbia,” says Goldberg. “At one point I considered law school as an option.” While at Columbia Goldberg found several opportunities to do research with several different faculty members.

“I REALIZED A WHILE AGO THAT MUCH OF WHAT HUMANS THINK ABOUT IS REALLY SOME KIND OF STOCHASTIC PROCESS OR RANDOM WALK. IF YOU CAN REALLY UNDERSTAND HOW RANDOM WALKS GO, YOU CAN UNDERSTAND HOW MANY THINGS WORK.”

— David Goldberg
A day-long symposium celebrated the retirement of Professor Peter Jackson after nearly four decades on the faculty of Cornell’s School of Operations Research and Information Engineering and the Systems Engineering program.

“It’s our chance to give tribute to someone who has had enormous impact on everything related to OR and systems at Cornell,” said David Shmoys, Laibe/Acheson Professor of Business Management and Leadership Studies. “Without Peter we’d be a very different place. It’s a testament to his generosity of spirit, his warmth as a human being, and his technical contributions that such an array of people have come to speak as part of this day.”

Half a dozen distinguished symposium speakers, as well as numerous colleagues and family members at the dinner that capped off the day at the Country Club of Ithaca, praised Jackson not only as a brilliant researcher and teacher but also as a loyal, generous, and humble colleague, mentor and friend.

After this long and distinguished career at Cornell, Jackson has recently thrown himself into a new adventure on the other side of the globe. At Singapore University of Technology and Design (SUTD), he is bringing his experience to bear as the head of the Engineering Systems and Design Pillar.
ORIE faculty, students & alumni bring home awards from INFORMS meeting

ORIE faculty, students and alumni took away a remarkable haul of awards at the 2017 INFORMS annual meeting October 22-25 in Houston, Texas.

INFORMS Philip McCord Morse Lectureship
Éva Tardos

INFORMS Fellow
Shane Henderson

INFORMS Junior Faculty Forum (JFIG) Paper Competition Winner
David Lingenbrink (current Ph.D. student) and Kris Iyer
“Optimal Signaling Mechanisms in Unobservable Queues”

INFORMS Applied Probability Society Best Publication Co-Winners

INFORMS Undergraduate Operations Research Prize Winner
Siddharth Reddy (former C.S. student with minor in ORIE), Igor Labutov (former E.C.E. Ph.D. student), Siddhartha Banerjee, Thorsten Joachims
“Unbounded Human Learning: Optimal Scheduling for Spaced Repetition”

INFORMS Nicholson Student Paper Competition Finalist
Daniel Freund (current CAM student), Shane Henderson and David Shmoys
“Minimizing Multimodular Functions and Allocating Capacity in Bike-sharing Systems”

INFORMS Applied Probability Society Student Paper Competition Finalist
Sid Banerjee, Daniel Freund and Thodoris Lykouris (current C.S. Ph.D. student)

INFORMS Doing Good with Good OR Finalist
Madeleine Udell
“Optimal Design of Efficient Rooftop Photovoltaic Arrays”

INFORMS Data Mining and Decisions Analysis Workshop Student Paper Award Finalist
Angela Zhou (current ORIE Ph.D. student) and Nathan Kallus, “Off-Policy Evaluation and Optimization with Continuous Treatments”

INFORMS Revenue Management and Pricing Section Dissertation Prize Honorable Mention
Jake Feldman Ph.D. ‘15
“New Perspectives on Incorporating Customer Choice into Revenue Management”
SCENES FROM COMMENCEMENT 2017
Jim Gingrich is the chief operating officer of AllianceBernstein (AB), responsible for AB’s private wealth management, global client group, research services, finance, legal, compliance, human capital, information technology and operations, corporate communications, and investor relations. He was previously CEO and chairman of the board for AB Bernstein Research Services. Gingrich joined the firm in 1999 as a senior research analyst and served as the firm’s global director of research from 2003 to 2006. Prior to that, he was a partner with Booz, Allen & Hamilton from 1982 to 1999. Gingrich holds a B.S. in operations research and industrial engineering in 1980, an M.Eng. in operations research in 1981 and an M.B.A. in 1982 from Cornell University.

How has/have your ORIE degrees helped you?
Our normal decision-making processes have a difficult time dealing with a stochastic world. The grounding in probability and statistics, combined with learning how to analyze problems, has been invaluable in both my professional and personal life.

What aspects of your ORIE affiliation (while you were a student) or faculty interactions stand out?
I was lucky enough to build strong relationships with several professors: Bill Maxwell, Jack Muckstadt, Peter Jackson, Lee Schruben. I am not sure they fully appreciate the impact they had on me, but it was profound.

What has motivated you to stay engaged with ORIE and Cornell since graduation?
Cornell is a special place. Since I have left, that appreciation has only grown.

What do you think the future holds for the ORIE student?
Technology, data science, digital...these are the buzzwords of our time, and for good reason. They are at the center of ORIE.

Please describe one or two highlights of your career.
The most rewarding points in my career are when I took a risk. Two examples: First, we moved to Brazil in the mid-1990s. In hindsight, being pushed outside my comfort zone caused me to grow professionally and my family found the experience of living outside the U.S. to be personally enriching. Second, was when I changed careers, moving from management consulting to finance. Again, I took a risk, but the new challenges and learnings were energizing and immensely rewarding. Never be afraid to bet on yourself—we only live once.

Fun Fact(s)
I took courses from two professors that subsequently won Nobel prizes. I would have paid more attention in their class if I had known that was going to happen!
GIVING OPPORTUNITIES IN ORIE

Named Professorships in Data Science

Data science is an area of tremendous growth at Cornell and, indeed, worldwide. Research in machine learning and data mining is opening up new application domains and changing the face of our economy. Autonomous vehicles are the most prominent examples of the revolution under way, but there are many other initiatives. ORIE faculty are playing a key role in this revolution, with expertise in Bayesian machine learning and optimization being key strengths. We could bring additional experts to Cornell, helping to strengthen Cornell’s leading presence in this sphere.

$5 million endowment

Integrating Practical Research Experience in Data-Driven Decision-Making for Undergraduates

Endow a Professor of Practice focused on building, sustaining, coordinating, and advising a pool of data-driven analytic and decision-making projects suitable for undergraduate teams to dramatically expand the availability of such projects to ORIE majors.

$3 million endowment to fund professorship (of practice)
$1 million to fund renovation for computation lab for collaboration

Enhancing the Graduate Experience

• Ph.D. Fellowships/Awards
  ➢ Endowed $1.5 million minimum
  ➢ Term (5-year current use award) $300,000
  ➢ Graduate “Award” $100,000 minimum

Attracting talented graduate students to the school is key to our continued pursuit of excellence in research. Your gift will allow the school to meet its goal of providing competitive graduate fellowships to every first-year graduate student enrolled in the operations research Ph.D. program.

• M.Eng. Fellowships/Awards

Since 1964, undergraduate students matriculating in the College of Engineering do not receive an engineering degree. Upon graduation, they receive a B.S. degree. The college initiated the M.Eng. program in 1964; this program gives a student an engineering degree. At the time, the faculty felt that the four-year undergraduate program did not adequately prepare a student to be an engineer. The desire was to have a substantial portion of the graduating students enter the M.Eng. program. Why? The M.Eng. experience provides an extended hands-on project team experience that gives tremendous value beyond an undergraduate program. Over time, the fraction of graduating students entering the M.Eng. program has dropped considerably. A reason for this decline, based on many conversations with students, is the program's cost. Making the M.Eng. program affordable for our undergraduates would strengthen the education of those students, while also bolstering the quality of our M.Eng. graduates. We want to offer 10 full tuition scholarships and a like number of ½ tuition scholarships to graduating ORIE Cornell students.

Distinguished Lectureship Series

In a field moving as quickly as operations research, it is vital to bring to campus each year the leading exponents of research on the cutting edge, especially in terms of those high-impact scientists whose work has impact both for methodological advances and for settings important in practice, in this era where the range of application domains and the scale of problems faced increases dramatically with every passing year.

$500,000 minimum endowment
$25,000 to support for one year

Data-Driven Decision-Making Workshops

For the past three years, a key element of the intellectual landscape for both faculty and doctoral students has been a 1 ½-day workshop in the fall to which we invite a dozen leading young scholars (within two years +/- of finishing their Ph.D.s) to present current research in data-driven decision-making. This serves an important role in faculty recruiting, performs an invaluable function in educating our own doctorial students (who also present posters of their own research), and has become one of the high-visibility ways for a “rising star” to show that he or she is a “hot ticket” in the academic recruiting track.

$500,000 minimum endowment
$25,000 to support for one year

Community Building

The doctoral student lounge is a naming opportunity (for a $250,000 minimum) and there is a need to support the series of faculty/student lunches with Ph.D. students ($10,000 per year).

General Gifts

We are grateful for any gifts you provide to support school initiatives.

How to Give

If you are interested in learning more about any of these giving opportunities, please contact Carol A. Packard, Associate Dean, Office of Alumni Affairs and Development, Cornell Engineering, at cap342@cornell.edu or (607) 255-6094.
ALUMS RETURN TO ITHACA FOR REUNION 2017

Follow us on Facebook & LinkedIn

- See what’s happening within the department
- Connect with classmates & faculty
- Meet current students (become a mentor!)
Join us at the ORIE Reunion Breakfast
Saturday, June 9, 2018
8:30 - 10:00 a.m.
Weiss Lounge - 411 Rhodes Hall

Come reconnect with classmates, fellow alumni and faculty.

Do you prefer the amenities of a hotel? Review the list of Reunion 2018 hotels (https://goo.gl/aKBwca) and reserve your room today.

Residence hall rooms and reunion registration will be available in March.

Go to https://alumni.cornell.edu/come-back/reunion/ for more information on Reunion 2018.