Campus pledges $27 million in student funding to renovate Altgeld Hall

By Samantha Jones Toal, LAS News 1/29/2018

The renovation of Altgeld Hall is coming closer to reality after a campus committee conditionally approved allocating $27 million in student funding to modernize and upgrade the iconic building.

The Academic Facilities Maintenance Fund Assessment (AFMFA) Oversight Committee approved the amounts for fiscal years 2020 and 2021 contingent upon the university securing the remainder of funds from campus, the state, donor gifts, and other sources. The renovation of Altgeld is part of a larger project for both Altgeld and Illini Hall, immediately to the west. Modernizing both buildings will cost an estimated $90-$100 million.

The AFMFA Oversight Committee includes student representatives who play a role in deciding how the deferred maintenance funds will be spent. Students at Illinois currently pay $334 per semester into the fund.

“The funding commitment for Altgeld Hall from our students is inspiring, and I deeply appreciate their leadership to help get this important renovation in progress,” said Feng Sheng Hu, the Harry E. Preble Dean of the College of Liberal Arts & Sciences. “It’s exciting and meaningful to have student support for this critical project.”

Altgeld will be equipped with contemporary learning spaces, while also maintaining a focus on the roughly 121-year-old building’s historic significance. Mosaics, murals, and woodwork in Altgeld Hall’s Mathematics Library will be restored.

Other improvements in the mathematica library include restoring the open appearance of the colonnade to the east, and replacing missing glass floor panels in the stacks.

Heating and air conditioning will be replaced throughout the building, vastly increasing energy efficiency, improving the classroom environment, and protecting the valuable collection of the Mathematics Library. Furthermore, a second elevator will be added to make all portions of Altgeld Hall accessible.

The last time Altgeld Hall received significant renovations was in 1956, when the School of Law moved out of the building and the Department of Mathematics moved in.

While campus is still assessing capital improvements to Altgeld Hall, repair work continues on the chimes. The playing chamber room and the playing and practice stands have been repaired, and work on the bells, clappers, pulleys, cables, and supporting frame were completed this spring.

AFMFA is currently the primary source of funding for deferred maintenance projects on the Urbana campus. Since the program’s inception in 2007, student contributions have addressed more than $200 million in building projects that strive to make a significant impact on teaching and learning environments.

Learn more about the Altgeld and Illini Halls renovation at http://altgeldillini.illinois.edu.
Dear friends,

Greetings from the Department of Mathematics! I am honored to serve as Interim Chair for the Spring 2018 semester. I’d like to thank Sheldon Katz for his service as Interim Chair in Fall 2017, following the appointment of Matthew Ando as Associate Dean in the College of Liberal Arts and Sciences. Stepping into this office following these two transformational leaders was a daunting prospect. The department witnessed tremendous growth and success over the past decade under their leadership, culminating in our receipt of the 2017 AMS Award for an Exemplary Program or Achievement in a Mathematics Department.

Our world-class faculty continue to be recognized at the highest levels of the profession. At the upcoming 2018 International Congress of Mathematicians (ICM) in Rio de Janeiro, three Illinois mathematicians—József Balogh, Philippe Di Francesco and Lou van den Dries—will give invited addresses. Together with two coauthors, Lou van den Dries has also been awarded the 2018 Karp Prize by the Association for Symbolic Logic for work in model theory. The Karp Prize is widely recognized as the highest honor in the field of logic.

Our Actuarial Science program attracts a strong and ever-expanding student population. We’ve added new courses at the interface of actuarial science, statistics and data analytics, and are pursuing new opportunities in the field of risk management. The Illinois Geometry Lab (IGL) continues to provide a rich and rewarding environment for undergraduate students to participate in hands-on, novel, research experiences in close contact with graduate students and faculty. Spring 2018 witnessed an all-time record participation in IGL projects. This issue of Math Times particularly highlights our remarkable alumni. We’ve introduced new Alumni Awards, the first of which were made at this spring’s awards ceremony. We recognized three exceptional alumni, John Stevenson, Mary Lynn Reed and Daniel Zaharopol, for outstanding contributions in business and industry, in government, and in public service and education. At the Spring 2018 Convocation Ceremony, we welcomed Robert Quane, Head of Global Commercial Property at AIG and Actuarial Science alumnus, as our convocation speaker. I encourage you to take a look at Samantha Jones Toal’s article on Mathematics alumni currently working at Google (page 14). Our alumni are among the greatest ambassadors for the success of our enterprise, and we are always happy to hear about your exciting accomplishments.

The planned renovations of Altgeld and Illini Halls will transform our buildings into state-of-the-art environments for collaborative research and instruction. The recent dramatic commitment of $27 million to the Altgeld and Illini renovation project by the Academic Facilities Maintenance Fund Assessment Oversight Committee represents a substantial step towards realization of this critical project. We are extremely grateful to the students of this great university for their bold statement of support.

Jeremy Tyson
Professor and Interim Chair
Department of Mathematics
Michael Baym had many interests growing up—computer web design and martial arts, to name just two—but academics wasn’t one of them.

Baym eventually aligned his interests with his academics. Now an Assistant Professor at Harvard Medical School, the 36-year-old University of Illinois mathematics graduate conducts research into “antibiotic resistance evolution through computation, experiment and theory.”

He’s not sure what the future holds, but Baym expressed confidence that research into what is described as “one of the defining public health threats of our time” will prove fruitful.

“It’s impossible to predict what (the advances) will be. But I’m sure they will come through a mixture of careful experiments, thoughtful computation and the creativity of the amazing people who I have the privilege to have in my lab,” he said.

Baym is what UI students would describe as a “townie.” His parents both were UI faculty members—his father, Gordon Baym, a physicist, and his mother, Lillian Hoddeson, a historian of science. He and his sister, Carol, a physical therapist, grew up in Urbana’s faculty-filled Carle Park neighborhood. Baym described his parents’ work as “an early motivation to go into academia” but thought he’d study cognitive science.

That changed when Baym discovered that he “really liked the undergraduate course in differential equations.” “I’ve always enjoyed math and puzzles, but it was more curiosity that drove me,” he said. “After taking abstract algebra and having a taste of what real math was, I was hooked.” His interests gradually expanded into computational biology and evolution thanks to an assist from world-famous UI microbiology Professor Carl Woese.

“I went and talked to a local evolution professor, not realizing who Carl Woese was and how important his work was to all of modern biology, particularly microbiology. It was thanks to his mentorship that I started realizing just how interesting microbes are,” Baym said.

Microbes—microscopic single-cell organisms—play a variety of roles in human culture and health. They are vital to soil fertility and fermentation, but also are the pathogens responsible for infectious disease. Little did Baym know what a key role they would play in his professional interests after he graduated from the UI.

Baym described his UI mathematics education as an “excellent” foundation on which to pursue his doctorate at MIT. He said UI Professor Emeritus Douglas West, another of his mentors, played a crucial role in his interest in MIT. His MIT advisor, Bonnie Berger, “really taught me how much interesting math there is in (computational) biology.”

Once again, however, Baym said a collateral interest developed at MIT would lead him in a new academic direction—this time at Harvard.

Curious about the problem of “antibiotic resistance, he approached Professor Roy Kishony at Harvard Medical School to ask if Kishony had someone in his lab who could do an experiment Baym proposed.

“He responded, ‘No, but you could come do a postdoc with me, learn how to do experiments and do it yourself.’ So that’s exactly what I did,” he said. “Switching from computation and mathematics to experimental biology was quite a transition. It was like doing a second PhD.”

Baym’s postdoctoral experience lasted seven years followed by an appointment to the Medical School faculty. “By luck, I ended up with a job just one building over in the Department of Biomedical Informatics,” he said.

Baym started his research group at Harvard in July 2017. It’s a busy place that includes students, postdoctoral scientists and researchers—what he calls a “mixture of people in different roles” with one purpose. “We study the evolution of antibiotic resistance using experimental and computational approaches,” he said.

With the introduction of a new antibiotic comes inevitable resistance to that antibiotic. The goal of researchers is to study the evolution of the resistance and develop “practical interventions” or anticipate how the evolution will unfold.

Baym’s work doesn’t leave him and his wife, Abby Spinak, a faculty member at Harvard’s Graduate School of Design, much time to pursue recreational interests. “I rock climb when I can and manage to get back to the mountains to ski and hike a few times a year,” he said.

Baym, however, does make time for one hobby. It, too, is an offshoot of his work. “Since I got into microbiology, particularly large-scale microbiology, I’ve been brewing beer. It’s wonderful all the things microbes do for us,” he said.

Jim Dey is a columnist and editorial writer for The News-Gazette in Champaign-Urbana.
Gaining momentum

by Susan Tolman

Aristotle believed that an object in motion would stop moving if it wasn’t continually pushed; for example, a thrown rock is kept moving by motions of the air. Of course, this is wrong; air slows projectiles down, it doesn’t push them forward. As the Persian polymath Avicenna wrote in 1020 AD, an object will continue moving until it is acted on by an external force. This was eventually formalized by Newton as his first law of motion.

More generally, the rate of change of momentum of a body is proportional to the external force applied, and takes place in the direction of the force. Therefore, some component(s) of momentum will be conserved if the system has translation symmetries, i.e., if the potential energy doesn’t change when you move in some fixed direction(s). For example, under the gravitational force on earth, the horizontal components of the momentum of a projectile are conserved, even though the vertical component is not. Similarly, angular momentum are preserved in a system with rotational symmetry, like our solar system.

We can use momentum, and other conserved quantities, to understand these systems. More precisely, we can simplify the problem by restricting to a specific momentum and then dividing out by the symmetries. For example, consider a single planet orbiting about a sun. This system is described by 12 variables, with three coordinates describing the position and the velocity of each body. Since it also has 6 conserved quantities (three coordinates each for linear and angular momentum) and 6 degrees of symmetry (translation along and rotation around each axis), we can solve this problem completely. In contrast, if you add a moon to the system you get the famous “three body problem” which is described by 18 variables but still only has 6 conserved quantities and 6 degrees of symmetry. Unfortunately, the resulting problem has no general closed-form solution.

One of the major goals of my research is to understand when these conserved quantities exist. However, as a mathematician, I work in a more general framework. Instead of restricting to the phase space of a physical system, we work with manifolds, which look locally like $n$-dimensional Euclidean space. Moreover, we replace the traditional pairing between position and momentum with a more general pairing between vectors, called a symplectic form. Just as in the previous examples, we can associate a function, called a momentum map, to many symmetries.

One important question is determining which symmetries give rise to momentum maps. To state precise results, I will now assume that the manifold is compact, that is, it’s closed and fits inside a ball in some Euclidean space. Similarly, I will assume that the symmetry is periodic, e.g., rotation about an axis. In this case, if there are no points that are fixed by the symmetry, then there cannot be a momentum map. In contrast, if there are fixed points, then in many situations there must be a momentum map. For example, Frankel proved that this occurs when the symplectic manifold is the zero set of a polynomial in complex projective space. My most recent contribution was solving a conjecture of McDuff—by finding the first known example with isolated fixed points but no momentum map. I am now working with a former student, Donghoon Jang, to find examples with fewer fixed points. More generally, there are many interesting questions in this area left to explore.

Professor Susan Tolman received her PhD from Harvard in 1993, where her supervisor was Raoul Bott. After a postdoctoral position at MIT, she was briefly an Assistant Professor at Princeton. Since then, she has been on the faculty of the Illinois Mathematics Department, where she was the Lynn M. Martin Professorial Scholar from 2008-2017. Her discoveries have significantly advanced our understanding of the interaction between symplectic geometry and group actions.
Nima Rasekh

by Jim Dey

When Nima Rasekh was told to pick a major at Shiraz University in his home country of Iran, he chose mathematics—but not because he liked the subject.

“I was OK with math in high school, but I never got excited about it,” he said, describing it as a subject dominated by “mostly boring computations.”

“I chose math because it was the thing I disliked the least,” he recalls.

That all changed during the second semester of his freshman year when he took a “fundamentals of math” class that he described as comparable to introduction to proofs. “That’s what really got me excited,” he said.

Ten years later, the 28-year-old Rasekh is wrapping up his doctoral work at the University of Illinois. He graduated in May 2018 and will be a lecturer at Ohio State University this fall.

Rasekh said he ultimately was drawn to math because “everything is very precisely defined.” Rasekh chose the UI because one of the mathematics department’s strengths is the field in which he is most interested—algebraic topology, the study of global properties of spaces by means of algebra.

Rasekh was born in Germany to Iranian parents. His father is a sociology professor, his mother a homemaker and his younger sister “just started college” in Iran. His wife also is a mathematician.

After graduating from Shiraz University, Rasekh hoped to go directly to the UI for graduate school but his application was rejected. Instead, he enrolled in a one-year Masters program at the University of Western Ontario in Canada before reapplying to the UI. “On the second try, I made it,” he said.

Fluent in Farsi, German and English, Rasekh said things have worked during his five years at the UI exactly as he hoped they would.

He’s working with a great advisor, Professor Charles Rezk, on his thesis. “Professor Rezk is what I could call a true genius. He has one of those beautiful minds. It’s amazing,” he said.

Just as Rasekh admires his advisor, Professor Rezk admires his student. The professor noted that, unlike many students, Rasekh came to the UI knowing “exactly what he wanted to do” and has written a “really nice thesis.”

“He’s been great fun to have as a graduate student. He’s really bright,” said Rezk.

Resekh said the students in the mathematics department have contributed to his positive experience because “you meet many different grad students doing many different things.”

“You get to become friends, and you get to learn about the kinds of math people are doing,” he said.

As a graduate assistant, Rasekh taught a variety of undergraduate calculus classes. He’s always believed that mathematics has an undeserved reputation as a difficult field and that “everyone can learn it” because “it’s a natural aspect of how we think, how we relate to the world.”

Teaching undergraduates has given him the opportunity to advance that theory, and that’s one reason he “loves teaching.” His excellence in teaching was recognized this spring when he was selected as a recipient of both the Campus and LAS Awards for Excellence in Undergraduate Teaching by Graduate Teaching Assistants.

“It’s like a journey. Imagine you’re a captain of a ship and the students are your crew. It’s interesting making connections, meeting people and having them learn math,” he said.

All things considered, Rasekh said, “there is nothing about academia that I don’t like” and that his professional goal is to join a university faculty and then teach and do research.

He acknowledged one drawback of specializing in such a complex subject, describing the experience as a “little bit lonely” doing “very, very specialized work” because “few people can understand it.”

“When someone asks you about it, you get very excited to tell them,” he said.

That’s why Rasekh made it a point over the past three years to deliver lectures on his research at as many universities as he could, including Johns Hopkins, Northwestern, Indiana, Purdue, Ohio State and the University of Chicago.

“I like telling them about the research I have done,” he said. “They give me ideas about what to do next. It’s both fun and work.”

Jim Dey is a columnist and editorial writer for The News-Gazette in Champaign-Urbana.
Teppema leads SOA public health task force

Illinois alumna Sara Teppema (BS, Actuarial Science 1990) has been serving as Chair of the Society of Actuaries (SOA) Public Health Task Force since July 2016. Recently the task force provided feedback to the U.S. Department of Health and Human Services advisory committee “Healthy People 2030” where the task force cited their belief that the view actuaries can provide—an objective, data-driven view of health and health care—is sometimes missing from the clinical and public health discussions.

Teppema believes that actuaries can add a valuable perspective to the public health dialogue by bringing actuarial rigor to the allocation of resources. As health actuaries, she says “we must remember that the purpose of our work is to optimize the health of the populations we serve. Optimization of health necessarily involves allocation of finite and limited resources.”

Teppema is a DVP and Actuary with the Provider Payment Innovation and Analytics team at Blue Cross and Blue Shield of Illinois, Montana, New Mexico, Oklahoma, and Texas. She develops payment models to enable health care providers to deliver value-based care. Teppema serves on the Actuarial Science Advisory Board at the University of Illinois, and also chairs the Society of Actuaries’ Research Executive Committee.


Case studies provide hands-on learning

Do you have a languishing actuarial project idea? Our program is looking for ways to bring hands-on learning to our students. Case studies are used both in the classroom and as part of undergraduate research project.

Please share your ideas with actuarial-science-director@illinois.edu. No ideas are too big or too small!

Become a mentor; start a research project

Interested in giving back to the University of Illinois Actuarial Science Program? There are several ways you can help:

• serve as a mentor to a student
• work with faculty on a research project
• become a member of the Actuarial Science Advisory Board

Get involved today! Email us at actuarial-science-director@illinois.edu.
Bonding proposal for state’s unfunded pension liabilities under review

This past year, Professor Runhuan Feng, Director of the Actuarial Science Program in the Department of Mathematics at Illinois, worked with the State Universities Annuitants Association (SUAA) on a legislative proposal for bonding the state’s unfunded pension liabilities. The bond plan would result in a $103 billion reduction in the state’s pension costs by 2045, according to Feng.

Under the legislative proposal, the state would attempt to market $107 billion in bonds with the proceeds given to the five state-operated public employee systems. Annual state contributions to pensions would continue, but at $8.5 billion a year until 2045, at which time the pension funds would be 90 percent funded, the current goal. Feng worked as an independent consultant to develop the mathematical model to quantify and assess risks associated with such a plan. Under the current statutory plan, the annual appropriation to pension systems has already risen to more than a quarter of the state’s general revenue. If no action is taken, the required annual appropriation is expected to double by 2045 according to the state’s financial accountability office. Using an optimization algorithm, Feng showed that the bonding solution can save the state over $100 billion while capping the annual appropriation at the current level. At a public hearing in Springfield before the Illinois House Personnel and Pensions Committee, Feng laid out detailed data on how the solution can alleviate the financial burden of retirement systems, and provided thorough analysis on lessons learned from the state’s previous bond issuances.

“I am not here to comment on the rightness or wrongness of the state’s policies but rather to point out the facts about the state’s past bond issuances and the SUAA proposal as an actuary and a scientist. I am glad that this research can contribute to the public debate on such an important issue for the future of the state of Illinois,” Feng said to reporters after the hearing.

Alumnus Robert Quane gives keynote address at department convocation

Robert Quane (BS, Actuarial Science 1990) delivered the keynote address at the 2018 Illinois Departments of Mathematics and Statistics Convocation ceremony. Quane is the Head of Global Commercial Property at AIG where he develops business strategies for Large Limits, Middle Market, E&S and Terrorism. He is responsible for hitting the production and P&L targets and ensuring the proper balance between risk quality and technical benchmarks to optimize the underwriting decision. During his 22-year career at AIG, Bob has held several senior management roles including Global Head of Group Personal Insurance, covering Personal Accident, Travel, and Warranty Service Programs on a global basis, and Head of Global Personal Lines, where he oversaw Personal Auto, Personal Property, PLUS+ products, Private Client Group, and Warranty businesses.

Quane is a Fellow of the Casualty Actuarial Society and a member of the Actuarial Science Advisory Board recently formed by the Department of Mathematics at Illinois.
CAMPUS AND LAS AWARDS

Campus and LAS Awards for Excellence in Undergraduate Teaching by Graduate Teaching Assistants
Nima Rasekh
LAS Academic Professional Award
Anu Murphy
LAS Lincoln Scholar
Brittany Hall

DEPARTMENT AWARDS

ALUMNI AWARDS
Mathematics Alumni Award for Outstanding Recent Alumni
Daniel Zaharopol
Mathematics Alumni Award for Outstanding Professional Achievement
Mary Lynn Reed
John A. Stevenson, Jr.

TEACHING AWARDS
N. Tenney Peck Teaching Award in Mathematics
Anush Tserunyan
Distinguished Teaching Award in Mathematics for Tenured Faculty
Denka Kutzarova
Alex Yong
Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty
Jason Anema
Jing Wang

NON-INSTRUCTIONAL AWARDS
Exceptional Merit Award in Mathematics for Non-Instructional Staff
Paula Luesse
NetMath Award for Outstanding Service
Kerry Butson

GRADUATE AWARDS
Bateman Prize in Number Theory
Kyle Pratt
Bateman Fellowship in Number Theory
Junxian Li
Kuo-Tsai Chen Prize
Matej Penciak
Wolfgang Haken Prize in Geometry and Topology
Melinda Lanius
Philippe Tondeur Dissertation Prize
Anton Bernshteyn
Brahana TA Instructional Award
Vanessa Rivera Quiñones
Yang Song
Department TA Instructional Award
Hannah Burson
Ruth Luo
Dr. Lois M. Lackner Mathematics Fellowship
Erin Caulfield
Yun Shi
State Farm Actuarial Science Scholarship
Beihan Niu
Haocheng Wu
State Farm Mathematics Doctoral Scholarship
Longhao Jin
Susan C. Morisato Illinois Geometry Lab Scholarship
Paolina Koutsaki
Hadrian Quan

UNDERGRADUATE AWARDS
H. Roy Brahana Prize
Boyan Xu
Most Outstanding Major in Actuarial Science
Jacob Akstins
Most Outstanding Major in Mathematics
Yuan Zhang
Most Outstanding Major in Mathematics and Computer Science
Jeremy McMahan
Most Outstanding Major in Teaching of Mathematics
Patrick Hennelly
Salma Wanna Memorial Award
Ziyi Chen
Elsie Thomas Fraser Award
Auden Hinz

E. Graham Evans Jr. Scholarship
Katelyn Helmold

Dr. Lois M. Lackner Mathematics Scholarship
Anna Chlopecki

Ruth V. Shaff and Genevie I. Andrews Mathematics Scholarship
Carolyn Stanfield

Illinois Mathematics Excellence Scholarship
Philip Dohm
Ryan Johnson

Vincent O. Greene Scholarship in Mathematics
Robert Lou

Elizabeth R. Bennett Scholarship
Connor Farrell
Sonia John
Casey Tan

Merit Fellow Graduation Award
Sarah Allen
Yehuwalawork Melesse
Jose Sanchez

Bradley M. and Karen A. Smith Scholarship
Ronnie Thottaplackal

CNA Foundation Scholarship
Brendan Stonequist
Guanzhong Tao

DW Simpson Actuarial Scholarship
Mohit Monga

Northwestern Mutual Scholarship
Qiuchen Lu
Chuyi Ma
Zhe Xu

State Farm Actuarial Science Scholarship
Nimesh Avashia
Alexander Bienduga
Jiaqi Cheng
Shuyu Guo
Binqi Shen
Carrie Wang
Yuxin Wei
Clara Yam

Willis Towers Watson Award
Yijing Chen
Zaiyan Xu
Kemei Zhuo

2017 U of I Freshman Math Contest
Alan Hu, 1st Prize
Guangkuo Liu, 2nd Prize
Kieran Kaempen, 3rd Prize tie
Noame Qin, 3rd Prize tie

2017 U of I Mock Putnam Exam
Ziyi Chen, 1st Prize
Linda (Tingting) Cai, 2nd Prize
Phillip Harris, 3rd Prize

2018 U of I Undergraduate Math Contest
Jiacheng Liu, 1st Prize
Zhihan Xiong, 2nd Prize tie
Ziyi Chen, 2nd Prize tie

Illinois Geometry Lab Research Award
First Place: Virtual Reality, Visual Cliffs, and Movement Disorders
Faculty mentors: Richard Sowers and Manuel Hernandez
Graduate Students: Daan Michiels and Rachneet Kaur
Undergraduate Students:
Martin Bantchev
Yizhen Ding
Vivek Kaushik
Yiyang Kong
Alexander Layton
Xun Lin
Anirudh Manoj
Dongjun Seung
Cong Shen
Yuan Shen
Lincheng Wang
Yun Wu
Jiaying Wu

Runner-up: Statistical Quantum Mechanics for Graphs and CW-Complexes
Faculty mentor: Ivan Contreras
Graduate Student: Sarah Loeb
Undergraduate Students:
Rodrigo Araiza
Zitong Chen
Andrew Eberlein
Aish Korukanti
Mateo Muro
Michael Toriyama receives prestigious Goldwater Scholarship

Michael Toriyama, a junior from Bloomingdale, IL, with a double major in Mathematics and Material Science at the University of Illinois, has won a Barry M. Goldwater Scholarship for the 2018–2019 academic year. The Goldwater Scholarship is the premier undergraduate award in the fields of mathematics, natural sciences, and engineering, providing up to $7,500 per year to cover the costs of tuition, fees, books, and room and board.

The Goldwater Scholars are selected based on academic merit. Michael was one of 211 Goldwater Scholars selected from 1,280 nominations nationwide, and one of 29 mathematics and computer science majors to receive a Goldwater Scholarship in 2018.

Michael was a member of the Illinois Geometry Lab (IGL) research team that received the Department of Mathematics IGL Research Award for the fall 2016 project “Quantum Mechanics and CW-Complexes” under the supervision of Ivan Contreras.

Michael has high praise for Ivan Contreras, a J.L. Doob Research Assistant Professor in the Department of Mathematics. “Professor Contreras has been inspiring throughout my undergraduate endeavors, from tailoring our research in graph theory towards materials science applications, to translating advanced concepts for me to understand. Just as he has unceasingly inspired my pursuit of scientific research, I am also eager to mentor the next generation of scientists and engineers in their own pursuit of discovery.”

He is a recipient of the Wert Scholarship from the Department of Materials Science and Engineering, serves as Vice President of the Society of Asian Scientists and Engineers, and is a member of the Tau Beta Pi Engineering Honor Society. Michael’s future plans are to pursue a PhD in Materials Science and Engineering.

The Barry Goldwater Scholarship and Excellence in Education Foundation was established by Congress in 1986 to serve as a living memorial to honor the lifetime work of Senator Barry Goldwater, who served his country for 56 years as a soldier and statesman, including 30 years in the U.S. Senate. Since its first award in 1989, the Foundation has as of 2018 bestowed 8,132 scholarships worth approximately 65 million dollars.

By providing scholarships to college sophomores and juniors who intend to pursue research careers in the natural sciences, mathematics and engineering, the Goldwater Foundation is helping ensure that the U.S. is producing the number of highly-qualified professionals the nation needs in these critical fields. Many Goldwater Scholars have gone on to win other prestigious awards like the National Science Foundation’s Graduate Fellowship, Rhodes Scholarship, Churchill Scholarship and the National Defense Science and Engineering Graduate Fellowship that support scholars’ graduate school work. Today, Goldwater alumni can be found conducting research that is helping defend the nation, finding cures for catastrophic diseases and teaching future generations of scientists, mathematicians and engineers.
John A. Stevenson, Jr.

Mathematics Alumni Award for Outstanding Professional Achievement

John A. Stevenson, Jr. received two degrees from the University of Illinois: a BS in the Teaching of Mathematics in 1960, and an MBA in Industrial Marketing in 1978 from the joint University of Illinois and Bell Advanced Management Executive Program.

His career began in June 1960 when he joined AT&T and Illinois Bell in an advanced officer training program. At AT&T he rose to Vice President of Marketing of the Consumer Products Division and managed a labor force of 15,000 employees with an annual revenue budget objective exceeding $2 billion. He was responsible for product development and management of over 600 telecommunications products, and he designed a new revenue long-term strategy for retail and global markets resulting in the first phone center store in Woodfield, IL, and the addition of 800 retail stores throughout the U.S. In 1984, he was selected as one of eight executives to be considered and trained to be President of AT&T. In 1985 he was selected as one of the officers to testify at the federal government’s AT&T divestiture hearings.

In 1985 Stevenson was asked by University President Stanley Ikenberry to become the Corporate Officer of the newly formed National Center for Supercomputing Applications (NCSA) at the University of Illinois. The center was designed by the federal government to be the leading center in the world for high performance computing. NCSA’s key mission was to “strengthen the competitiveness of American industry” and the university needed someone with high level corporate experience to accomplish this demanding mission. Stevenson saw this as an opportunity to make major world changing accomplishments so he took early retirement from AT&T and returned to the University of Illinois campus.

Stevenson’s vision was to design and create the Industrial Partnership Program at NCSA that would teach all industrial sectors the value of supercomputing and the related high performance computing technologies. Stevenson marketed the program to the top corporations in the U.S., with him signing 20 major corporations in 13 of the industrial sectors to be partners. He managed the program for over 25 years with companies such as Eastman Kodak, Motorola, Amoco, Boeing, J.P. Morgan Chase, and Caterpillar. Each corporation accomplished a major competitive breakthrough and the total breakthroughs exceeded 40.

In the late 1980s John met Senator Al Gore when Gore came to NCSA for a national press conference. After a meeting with NCSA Director Larry Smarr to discuss the future of supercomputing in the U.S., Gore asked Stevenson to help draft two bills that were needed to strengthen the governmental foundation that would enhance supercomputing’s future—the 1988 National High Performance Computer Act (which established a national computer plan), and the 1992 Information Infrastructure and Technology Act (which opened the internet to commercial traffic). This was followed by the planned NCSA release of the MOSAIC software, the first web browser that opened the internet to the world.

Stevenson has also excelled in community relations. He served on several boards and as Chairman of the 1980 Chicago United Way/Crusade of Mercy campaign where he exceeded the fundraising objective.

He has received several honors including being honored by his hometown of Danville, Illinois when he was inducted into the town’s Wall of Fame in 2014 for his accomplishments. In 2015 he was honored by the University of Illinois when he was awarded the Honorary “I” for his loyalty and many service contributions to Fighting Illini Athletics and for his contributions to the University.

Stevenson retired as NCSA’s Corporate Officer in 2008, remaining as Senior Consultant until he retired from that position in April 2017. John considers his family as the most important aspect of his life.

“I learned from my mathematics education to be very thorough in getting all the facts before making a decision. There is a big difference between minus ten and plus ten. I repeatedly made better decisions and had more complete programs because I did thorough research into finding all the facts. I owe a great deal to the Mathematics Department because the teachers and professors taught me the knowledge and skills that proved to be the reasons behind my accomplishments. I am very proud to have received this high honor and I will always deeply cherish it.”
Mary Lynn Reed
Mathematics Alumni Award for Outstanding Professional Achievement

Dr. Mary Lynn Reed (MS 1990; PhD 1995 Mathematics) is currently Chief of Mathematics Research at the National Security Agency (NSA). Through her diverse and productive career, she has distinguished herself as a national figure in the mathematics profession, making direct research contributions to the classified and unclassified bodies of mathematics literature, demonstrating clear impact to the security of the United States and of the world. She has made visionary efforts to ensure a strong future for applied research for national security, by serving as a leader for diversity and inclusion, and by her dedication to increasing the participation of women in the mathematical sciences.

In addition to her 18-year career at NSA, Dr. Reed has held a variety of other positions, including assistant professor at the Philadelphia College of Pharmacy and Science, staff scientist at HNC Software, research staff member at the Institute for Defense Analyses, and actuarial analyst at Milliman USA.

As Chief of Mathematics Research at NSA, Dr. Reed manages the Mathematics Research Group, which is the mathematical heart of NSA. She also oversees three Institute for Defense Analyses (IDA) centers: the Centers for Communications Research in Princeton, NJ, and La Jolla, CA, and the Center for Computing Sciences in Bowie, MD. In 2017, she led a team to restructure NSA’s research organizations and programs not only in mathematics, but also in computer science, cybersecurity, physical sciences, and telecommunications. She has set directions for internal research in both mathematics and computer science, including the application of recent developments in artificial intelligence to cryptanalysis.

Dr. Reed has been a strong and effective supporter of NSA’s engagements with academic partners. She has supported and determined research topics of summer programs for professors, graduate students, and undergraduate students including the Director’s Summer Program, an elite program for the most capable undergraduate math majors in the country, and by ensuring NSA support of Research Experiences for Undergraduates (REU) summer programs across the U.S.

She has supported long-running research contracts with universities; she has recruited talented academic mathematicians to serve on the NSA Advisory Board’s Mathematics Panel; and she has supported dissemination of NSA-developed mathematics to the broader community through publication in journals, books, conference talks, and patents. She has also supported academic conferences both financially with funding for travel and conference fees and by enabling NSA participation. Dr. Reed has served as President of the Crypto-Mathematics Institute, NSA’s professional society for mathematicians, which helps bond NSA’s diverse internal mathematics community into a smoothly functioning whole.

Dr. Reed expressed her “deep gratitude to the U of I Department of Mathematics and to her colleagues who nominated her for this honor. I’m thrilled to be able to accept the amazing honor of receiving the University of Illinois Department of Mathematics Alumni Outstanding Professional Achievement Award.”

“Receiving my doctorate in mathematics from the University of Illinois is one of my proudest achievements; receiving this award is truly an honor and another such moment of extreme pride. The foundation of my mathematical life was built in Champaign-Urbana. At NSA, I’ve made strong use of that foundation, both in applying advanced mathematics to mission-critical problems and in setting the strategic direction of our mathematics research efforts. I’ve also had the privilege of working closely with many of my alumni colleagues who are also applying their Illinois education to the service of our nation.”
Daniel Zaharopol
Mathematics Alumni Award for Outstanding Recent Alumni

Since graduating from Illinois with two masters degrees (MS Teaching of Mathematics 2008, MS Mathematics 2009), Daniel Zaharopol has founded two education non-profit programs: Learning Unlimited and Bridge to Enter Advanced Mathematics (BEAM).

Dan decided that the best use of his love of and training in mathematics was to open the mathematics community to underserved students. For the past few years, Dan’s focus has been on BEAM, which provides a comprehensive 6th-12th grade pathway for underserved students to become scientists and mathematicians.

In 2009, Zaharopol helped found Learning Unlimited, a non-profit organization designed to replicate MIT’s Splash program at campuses across the country. The Splash concept gives middle and high school students the opportunity to take one-day classes taught by college students in a variety of areas not traditionally seen in school. He served as CEO of Learning Unlimited (which now coordinates 33 Splash-style programs in 13 states and the UK) from 2009 to 2015.

It is well known that women and minorities are not well represented in mathematics and other STEM disciplines. Those that come from low-income families or who attend struggling schools are particularly disadvantaged. Determined to do something about this problem, Zaharopol founded the BEAM program in 2011. He partnered with middle schools in New York City to identify talented students from underserved populations. BEAM’s students come from households in which the median annual income is $25,000. Students are selected based on teacher recommendations, a screening test, and performance on math problems sent home. Those chosen are invited to a five-week intensive summer program after 6th grade, and can apply to continue to a three-week residential summer program after 7th grade where they take seven hours of math per day. Students choose courses in advanced topics often only taught in college, such as number theory, combinatorics, astrophysics, and programming. Students are on a first-name basis with their instructors, who are top educators from across the country, including university professors and middle school and high school teachers. BEAM is the main project of the Art of Problem Solving Initiative, where Zaharopol serves as the executive director, and has led through tremendous expansion.

A profile article in Forbes magazine featured Zaharopol as one of only four 2017 winners of the Richard C. Cornuelle Award for Social Entrepreneurship. This award, administered by the Manhattan Institute, recognizes some of the most promising social entrepreneurs and the new non-profits they’ve founded based on their own original ideas. In December 2017, he was also named one of “15 More People Changing the Nonprofit World” by The Chronicle of Philanthropy. BEAM itself has been featured in both the New York Times and Atlantic Monthly. In addition to media attention in the last few years, BEAM has joined the Edwin Gould Foundation’s Accelerator program, which also helped launch Teach for America.

Through his energy, vision, entrepreneurship and dedication, Zaharopol has created several educational programs that now reach thousands of students across the country, and has helped numerous students successfully enter college in STEM fields.

“Joining the math department at Illinois was an incredible experience,” Zaharopol says. “I still have many friends among my former professors and graduate student colleagues. In short, Illinois was an exceptional incubator for the kind of work I ended up doing, and I couldn’t be more grateful for the experience. This award only goes to further that goal: I’ll be able to use it to further grow BEAM and our work with students.”
By Samantha Jones Tool, LAS News 12/5/2017

What can you do with a PhD in mathematics? Count a career at one of the world’s most successful tech companies among the possibilities, as at least six Illinois mathematics alumni are currently employed in everything from modeling advertising to building website tools at Google.

For Tim Kilbourn (PhD 2007), software engineer at Google, it wasn’t originally in his plans to work in computer science. Kilbourn always imagined himself as a professor and recalled joking with a colleague, “Hey, if this math thing doesn’t work out, we’ll just go work for Google.”

Little did he know that Google is exactly where he’d be a few years later. “Companies like Google aren’t just using computers, they’re pushing what a computer can do” Kilbourn said.

For Shiya Liu (PhD 2017), a software engineer at Google, there are many joys that come with working with the company—some quite unexpected.

“The company offers growth opportunities, not only for work skills, but also for areas such as piano, dancing, even aviation. We have team events and holiday events. People here are ‘Googley,’ which is a generic term to (describe) qualities we’d like to see in ourselves and other Googlers, including bringing creativity, sincerity, and passion to work,” said Liu.

When Liu isn’t utilizing Google’s fun perks, she spends her workdays creating modeling software for advertisers, a surprisingly important part of Google’s business model. “It’s how Google makes money,” Liu said.

Liu said sometimes simple advertising models might not work well, so more complex mathematics come to play in order to make the model more accurate. “Advertisers have some goals, view these models, and try to achieve their goals through these models,” she said.

“My adviser [Richard Laugesen] was supportive of not only my research, but my life. While mathematics alumni don’t always go into a career involving computer science, Liu is thankful for Laugesen because of their discussions that led her to make the decision to work in the industry.

Radoslav Kirov (PhD 2010), a software engineer at Google, said that working for Google has a lot of upsides aside from the work itself.

“There’s a lot of fun perks including free food, onsite massages, onsite haircuts,” Kirov said. “The Mountain View campus has slides, a skateboard ramp, arcade rooms, and a bowling alley. We work in open offices (no cubicles) and have flexible work hours.”

While Kirov was at Illinois, he considered computer science to be a hobby and mathematics would be his career. Now, after taking a job at Google, mathematics still remains a crucial part of his everyday life.

At Google, Kirov works on front-ending infrastructure. In other words, he builds the tools others use to build websites. “A modern web application like Gmail is an incredibly complicated piece of software,” Kirov said, “which requires a deep understanding of numbers.”

Some of the skills from graduate school other than mathematics also transferred to his career. While on campus, Kirov served as a teaching assistant for six years. He now spends about 20 percent of his time at the company teaching internal courses. And while he no longer grades homework and exams, he enjoys it all the same.

Kirov said that sometimes he has coffee with Patrick Reynolds (PhD 2011), another software engineer at Google whom Kirov knew while at Illinois. Illinois alumnus Jesse Beder (PhD 2012), is also a software engineer at Google.

“If I had to do it again, I would pursue my mathematics PhD again,” Kirov said. “Having this degree gave me personal growth and opportunities to learn and go really deep into mathematics. Even if I didn’t choose it as a career path, it’s a personal knowledge path that I very much enjoy. It will stay with me the rest of my life.”
2018 Karp Prize awarded by ASL

The ninth Carol Karp Prize has been jointly awarded to Matthias Aschenbrenner, Lou van den Dries, and Joris van der Hoeven for their work in model theory, especially on asymptotic differential algebra and the model theory of transseries. The prize—recognized as the highest award logicians can receive—was awarded at the Association for Symbolic Logic (ASL) North American Annual Meeting held in May 2018 in Macomb, IL.

Lou van den Dries is a professor in the University of Illinois Department of Mathematics. Aschenbrenner, an Illinois alumnus, received his PhD under the direction of van den Dries. Aschenbrenner is currently an associate professor at UCLA.

The Karp Prize, established in 1973 in memory of Professor Carol Karp, is awarded every five years for a “connected body of research, most of which has been completed in the time since the previous prize was awarded.”

Cole named Avner Professor

Timothy W. Cole, Mathematics Librarian, has been appointed by the University Library for a five-year Elaine and Allen Avner Professorship in Interdisciplinary Research. Cole will carry out research in fields connected to the application of information technologies in interdisciplinary or multidisciplinary fields of research.

The professorship was established with a gift from longtime Library Friend Allen Avner in November 2017. “Elaine and Allen Avner were pioneers in the application of computer technologies to learning systems,” said William Mischo, head of the Grainger Engineering Library Information Center. “Tim’s work exemplifies the role of the library as a major player in emergent and interdisciplinary research.”


News from NetMath

New NetMath Courses

the NetMath Program is excited to announce online versions of three new courses offered this spring: Math 481, Math 448 and Math 416. Students may enroll in Summer Term 2 sections of the courses or take the academic year sections at any time during the year.

In recognition of excellence

Anu Murphy wins the 2017-18 LAS Academic Professional Award: Anu Murphy is one of three academic professionals being recognized for their noteworthy efforts in advancing the mission of the College of LAS in 2017-18. Anu joined NetMath in July 2008 as Program Coordinator and was promoted to Associate Director in 2012. She has helped to create, staff, and run several development efforts, including the important student and public-facing areas such as marketing, student services, the mentoring program, new course offerings, and the Uhl Scholarship fund. NetMath’s website, which serves as the most important way students find our program, recently underwent a complete makeover and Anu led the web redesign project. Over the years Anu has worked hard to advance the reach of NetMath, which seeks to provide high quality mathematics courses to matriculating students at Illinois as well as non-traditional learners all over the world.

NetMath Award for Outstanding Service: This new award is given in recognition of exceptional service performed by a NetMath Academic Professional or Staff employee. This year’s recipient was chosen by the Math Awards Committee from nominations submitted by NetMath employees. The 2018 recipient is Kerry Butson. Kerry joined NetMath in October 2016 as an Assistant E-Learning Specialist. She works with mathematics faculty and NetMath instructional, media, tech, and administrative personnel to deliver, maintain and update online math courses. Thanks to Kerry’s efforts over the past year and a half, NetMath offered two new 400-level online courses last year and currently has eleven 400- and 500-level courses in development. Developing an online course from a face-to-face, on-campus lecture-based course is a lengthy and challenging process with many potential pitfalls. Kerry takes great care to ensure that every aspect of our course delivery runs smoothly, and that students succeed in achieving their learning objectives in every NetMath course.

Student Awards

Roger Burt received the Spring 2018 Excellence in Instructional Support Award. Mentor Awards were given to Yirou Li (Excellent Punctuality in Grading), Do Hoon Kim (Outstanding Student Reviews), Jaclyn Nickerson (Outstanding Grading Pool Performance), Brent Rodhouse (Excellent Communication with Students), and Peter Clark (Outstanding Mentor Thoughts). Calli Sebok and George Cavalenes received awards for Excellence in Production of Course Materials.
GEOMETRIC PROGRESS

Demand high for undergraduate student research at IGL

The mission of the Illinois Geometry Lab (IGL) is to enhance and support undergraduate research within the Department of Mathematics and to support departmental efforts to engage local, state and national communities through outreach. During the Spring 2018 semester more than 80 undergraduate students participated in 19 different projects mentored by 18 faculty members and 23 graduate students. This is an increase of 100% within the last two years.

Thanks to a substantial commitment by the Department of Mathematics and its faculty, graduate students and alumni, the IGL is able to accommodate more undergraduate students than ever as the demand by undergraduate students for such research experience is very strong. Each semester the IGL receives applications from around 150 undergraduates, almost all from suitable candidates. To satisfy this demand, the IGL will continue to be dependent on the generosity of faculty, graduate students and alumni alike.

The benefits of undergraduate research are numerous. It is a great opportunity for students to find out what doing mathematics is like—rather than just learning mathematics. In addition to meaningful time with faculty in a small group setting, it gives participating students a better idea what it might mean to pursue advanced degrees in mathematics.

Furthermore, research shows that early research experiences help encourage underrepresented minority students to become interested in mathematics, and therefore broadens the participation in mathematics. In addition to this, participating faculty find that they can write more meaningful letters of recommendation for students whom they have worked with in IGL projects than for students they have known only through their classes. Indeed, graduate programs in mathematics look for previous research experiences when evaluating prospective students. Finally and maybe most importantly, it is just fun and inspiring for everyone to interact with students who are motivated to get involved in research.

IGL projects in the Spring 2018 semester covered all areas of mathematics. For example, in the project Graph Associahedra a group of undergraduates supervised by J.L. Doob Research Assistant Professor Laura Escobar investigated a conjecture by D’León-Wachs about the relation between the graph associahedra constructed from trees (a certain family of polytopes) and weighted partition posets. The conjecture has only been verified for trees with up to 9 vertices and the team used open-source software to further investigate this problem. On the other hand, in the more applied project Virtual Reality, Visual Cliffs, and Movement Disorders, mentored by Professor Manuel Hernandez and Professor Richard Sowers, a team of undergraduates created a virtual world containing thin pathways passing over deep cliffs. This is an attempt to better understand some of the neural aspects of fear of falling through a realistic and virtual environment, and, ultimately, to develop strategies to address fear of falling. For a full list of all projects, please visit math.illinois.edu/igl/.

The IGL was founded by Professor Jayadev Athreya and graduate student Anton Lukyanenko in Fall 2011. Their vision, inspired by the Experimental Geometry Lab at the University of Maryland, was to provide a home for in-semester undergraduate research projects in geometry and visualization.

Susan C. Morisato IGL Scholarship established

Thanks to a generous donation from University of Illinois alumna Susan C. Morisato, the IGL is now able to award the Susan C. Morisato IGL Scholarship to recognize graduate students who have participated as IGL research mentors in at least two semesters. The purpose of this scholarship is to provide financial support for PhD students to make progress on their thesis research.

The first two recipients of the Morisato IGL Scholarship are Paolina Koutsaki and Hadrian Quan. Koutsaki, a PhD student in number theory supervised by Professor Alexandru Zaharescu, will continue her work in number theory, with a particular focus on the asymptotic behavior of the sequence of fractional parts of square roots of positive integers. Quan, a PhD student working with Professor Pierre Albin, will use this scholarship to work on an exciting project in the spectral geometry of sub-Riemannian spaces.
WOMEN IN MATHEMATICS
Local chapter provides opportunities in academics, mentoring and outreach

The local University of Illinois graduate chapter of the Association for Women in Mathematics (AWM) puts its efforts into three committees: academic, social, and outreach. Over the course of this past year, their three committees introduced new, exciting opportunities for AWM members in addition to continuing to host some of the most popular annual events.

Under the guidance of Vanessa Rivera Quiñones, the Academic Committee offered a great variety of mathematical lectures and professional development opportunities this year. They hosted the popular Graduate Student Colloquium where speakers introduced topics ranging from random 3-manifolds presented by Malik Obeidin to the Schubert Problem presented by Anna Weigandt.

The committee also introduced a new Teaching and Diversity Seminar which addressed topics like writing effective discussion worksheets, supporting international students in the classroom, and rehumanizing mathematics.

Hadrian Quan’s Social Committee organized many opportunities for AWM members to relax, have a good time, and support one another through the challenges of graduate school. In addition to organizing annual events like the welcome dinner, co-hosted with the local American Mathematical Society (AMS) chapter, and the Women in Math Luncheon, the Social Committee also enlisted the help of many older graduate students to reach out to new students throughout the year. Returning students volunteered in a joint AWM/AMS mentoring program for new students and hosted casual coffees which allow younger students to get advice and support from their more experienced peers. A series of informal dinners in March also offered graduate students the chance to take a much-needed break from the stress of the Graduate Employees’ Organization (GEO) strike.

On the outreach side, a flock of new graduate student volunteers worked together with Outreach Committee chair Emily Heath to resurrect the Girls Engaged in Math and Science (GEMS) Workshops during spring semester. This series of workshops on four consecutive Saturday afternoons brought together eighteen middle school girls to explore the mathematics of origami, tessellations, pottery, and string art.

Graduate student volunteers also introduced twenty-five high school girls to the exciting, discovery-driven side of mathematics through the biannual Sonia Math Day events, which focused on Mathematics and Magic in the fall and Knot Theory in the spring.

Visit the AWM website to learn more: https://math.illinois.edu/awm/.
Richard Sowers, professor of mathematics and industrial and enterprise systems engineering at Illinois, and students Nitin Srivastava and Peter Maneykowski, have developed an algorithm which will help streamline the workforce of highly perishable hand-picked crops. Although there has been other research on precision agriculture in recent years, this study specifically addresses crops currently picked by hand.

Their paper “Algorithmic Geolocation of Harvest in Hand-Picked Agriculture” published in Natural Resource Modeling, presents the results of a study conducted at the harvest of strawberry patches at Crisalida Farms in Oxnard, Calif.

“The strawberries that you put on your ice cream or cereal are for the moment picked by a crew of 10 or so workers, who mostly earn a wage per box collected,” Sowers noted. “For the consumer, it is important that the strawberries are of good quality and look nice.”

According to Sowers, the strawberries that appear in clam shells that you find at your local grocery store are largely in the same condition as they were when they were picked from the field. They are loaded in a box, then a bigger box, then on a pallet and finally onto a truck. The process is then reversed at the market.

“One of the aspects that I’m interested in is the fact that there are humans involved in picking,” Sowers said. “Just like Internet browsing history differs from person to person, along similar lines, a workers’ ability to harvest strawberries is different. This brings up the question: how do you think about data in that industry? Because the human variability has a huge effect.

Rather than requiring a worker to enter data during harvest, which would slow down the process, Sowers’ team was able to pinpoint exact movements of each worker through GPS tracking on a smart phone each carried with them. Based on that data, the team developed an algorithm to predict the amount of completed boxes.

The data promises to ultimately lead to more precision techniques for harvesting. For instance, one set of quality control typically occurs at the edge of field and oftentimes there is a backlog of workers waiting in the que. More data will better help plan for the best times to provide this control as well as schedule forklifts to pick up pallets and put them in a cooler. Time is of the essence as hot weather can have a dramatic effect to the quality of the produce.

“At the moment, we’re just trying to track,” Sowers noted. “You can’t manage what you can’t measure. We’re trying to measure what is going on in the field actually in the field, not at the edge of the field where data is currently being collected. Sowers further iterates the importance of this measurement to the industry because miscalculation of the workforce could completely eliminate profit.

“If that happens, all the nutrients that went into it (water, fertilizers, nitrogen, etc.) is just wasted,” he said. “If you can better allocate resources and prevent or lessen the time that some of those stacks of berries are sitting in the field, that’s a win.”

See their video “The Smart Strawberry Field” at http://go.math.illinois.edu/smart-strawberry-field/.
We count on the generosity of alumni and friends to support students as they embark on earning a world-class education and to fund faculty members as they conduct world changing research and train students. Your investment makes a difference.

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Alumni of the Actuarial Science Program in the Department of Mathematics at the University of Illinois gathered for a reunion on May 17, 2018, at the Deloitte office building in downtown Chicago to show their Illinois spirit and reconnect. Attendees learned about the new IRisk Lab and a new alumni-sponsored scholarship fund that will support students as they experience the innovative actuarial education at Illinois. The organizing committee members were Jonathan Ankney, Mehb Khoja, Shawn Maloney, Corrie Proksa, and Sara Teppema. The Illinois Actuarial Science Program is one of the largest in the country, and is a Center of Actuarial Excellence. Nearly 6 percent of all U.S. actuarial graduates received their degree from the University of Illinois according to 2015 data.