ILLINOIS
ISE | Industrial & Enterprise Systems Engineering
COLLEGE OF ENGINEERING

ISE VIEWBOOK 2018

ON THE COVER
Standing out from the crowd: Alexandra Kaste, Systems Engineering and Design, with the ISE Class of 2021. Photo by Joanna Strauss.

CONTENTS

The Department of Industrial and Enterprise Systems Engineering (ISE) at the University of Illinois, Urbana-Champaign, *innovates* the engineering discipline with forward-thinking research and scientific discoveries; *serves* education, industry, and society; *educates* a new generation of leaders in general, systems, industrial, and financial engineering.

ISE Student Viewbook is edited by William Gillespie, with assistance from Charlotte Collins, Zack Fishman, Madeleine Hubbard, Jessy Ruddell, Riya Sanjay, and Shawna Graddy.

Photography by Charlotte Collins, Heidi Craddock, William Gillespie, Madeleine Hubbard, Anna Longworth, Joanna Strauss, and L. Brian Stauffer. Illustration and design by Miriam Martincic.

Readers, alumni, students: contact us at: communications@ise.illinois.edu

The ISE Viewbook is dedicated to the class of 2018 and all ISE students—past, present, and future—**and their gift to us:**

JUICE*

1. Electrical energy (informal).
2. A person's vitality or creative faculties.
3. Overwhelmingly good (slang).

LUDING
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arlotte Collins
st Journalism)
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leine Hubbard
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Riya Sanjay
(ISE)
social media

Zack Fishman
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g and editing

Class of 2018 on their first day.

Class of 2022 on their first day.

Incoming students to the College of Engineering, August 2017.

Graduating class of 2018.

FUTURE

of Industrial and Systems Engineering

s ISE students.

With the breadth and focus of our discipline, industrial and systems engineers are advancing the state of the art in emerging, game-changing technologies.

Mind-Reading Robots

ISE professors leap into the world of brain-computer interfaces

BY DOUG PETERSON

Researchers in the University of Illinois Department of Industrial and Systems Engineering are laying the groundwork for cooperative robots—or "cobots"—that might be able to read our minds.

"We're trying to see what ways robots can be more friendly, and the first idea we had is a robot that senses if the human needs help," says ISE Professor Thenkurussi "Kesh" Kesavadas.

The focus so far has been on industrial applications, but Kesavadas sees their work as having medical uses as well. For instance, a mind-reading robot in the operating room could detect when a doctor needs a scalpel and then hand it to the surgeon.

Richard Sowers, an Illinois professor with a joint appointment in ISE and Mathematics, is making use of electrodes attached to a "brain cap"—a cap with 60 sensors that attach to the scalp and detect brain waves through electroencephalography, or EEG.

Sowers has been probing the connection between our perception and the fear of falling—a common problem for the elderly.

The project, which began at the end of 2016, places subjects in a virtual world. Subjects walk on a treadmill while wearing the brain cap and a virtual reality headset that shows them hiking through a world with many sudden drop-offs. The EEG brain cap can detect their anxiety.

The goal, Sowers says, is to understand the connection between what people see and their acrophobic anxiety—the fear of heights.

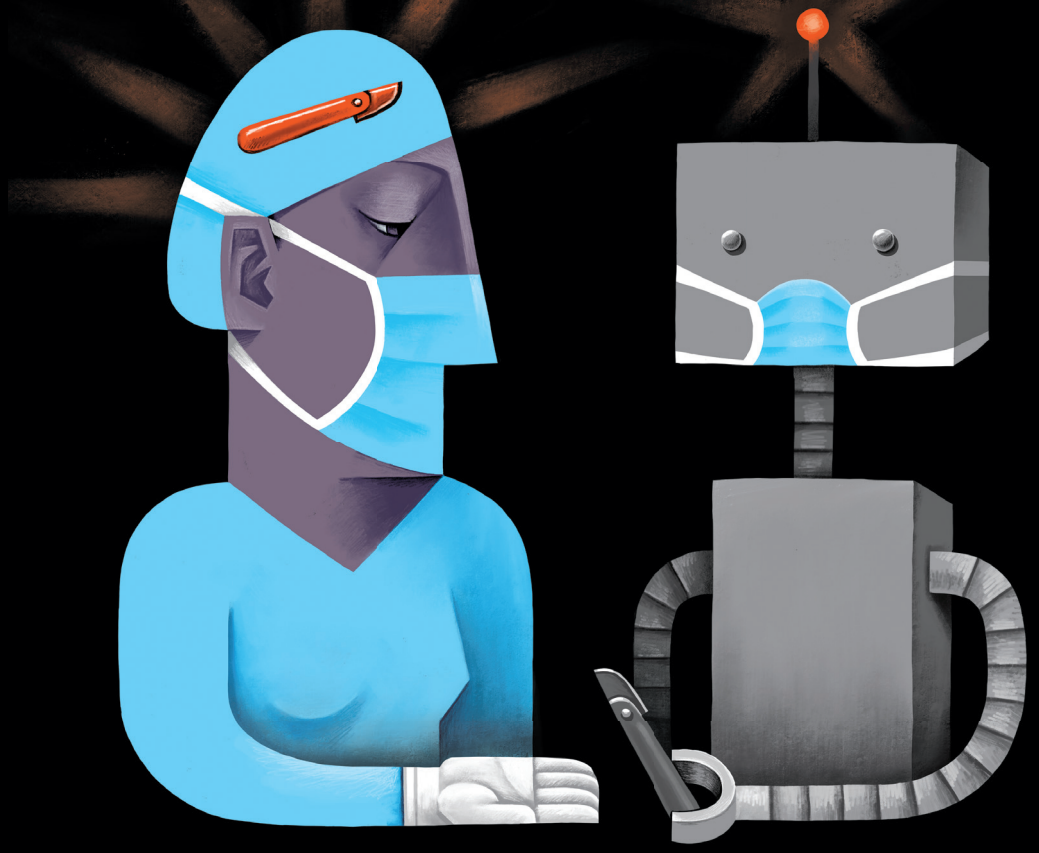
In a medical setting, a surgeon could tell a mind-reading robot to adjust a camera being used to take images inside the body, says graduate student Yao Li. And in manufacturing, an operator who needs an extra hand while welding could tell the robot to rotate the part being welded—all using brain activity.

"It's interactive and it's powerful," Kesavadas says. "Nobody else is doing this."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/mind-reading-robots

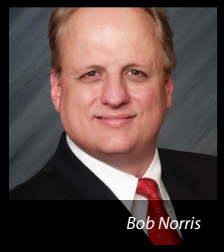
T. Kesh Kesavadas

Richard Sowers



Ramakrishnan Narayanan

Dušan Stipanović



Bob Norris

Girish Krishnan

Take your hands off:
Autonomous Technology

BY MADELEINE HUBBARD

The average American can expect to be in three or four car accidents in their lifetime. Surgeons in the US often work long shifts and see many different patients with different problems in one day; because they are human, there is a chance of error. With autonomous technology, these problems may be circumvented entirely.

ISE's Systems Engineering and Design major now offers an undergraduate track in Autonomous Systems and Robotics.

Ramakrishnan Narayanan, graduate student in industrial engineering, wrote a thesis focused on using existing car sensors, simple computers, cameras, and a new algorithm that would allow a car to recognize bicyclists.

Professor Dušan Stipanović works on "collision avoidance and tracking control for robotic arms." This work was done with his PhD student Shankar Deka. Stipanović says, "We hope this will have an application in minimally invasive surgery training."

Professor Bob Norris previously worked for John Deere where he was the lead engineer, program manager, and business manager for the R-Gator project. Norris says his group was "creating a vehicle that could travel with [soldiers] autonomously and carry their equipment." Soldiers often have to carry well over 100 pounds of equipment during long missions.

Professor Girish Krishnan is the faculty mentor for students studying autonomous systems and robotics. The curriculum, Krishnan says, has "real, practical courses. There are several robotics courses taught by the ECE Department, some taught by our department, and some taught by the mechanical department."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/autonomous-technology

ISE students under Associate Professor Bob Norris have collaborated with autonomous systems manufacturer AutonomouStuff, performing research using their products. AutonomouStuff has donated the cart pictured to the University for future tests.

ISE offers new undergraduate track in the Internet of Things

BY MADELEINE HUBBARD

The Internet of Things (IoT) is arriving, and ISE is poised to greet it.

IoT, at the level of the consumer, will mean that devices—from your phone to your thermostat to your garage door to your pacemaker—may someday be digitally connected. From a central location—say, an Amazon Echo or even a watch—you would be able to monitor sensors on these devices and control their behavior. Your home, your car, and your office could one day become a seamless extension of your mobile devices.

Business Insider expects that there will be more than 24 billion IoT devices on the Earth by 2020. That's approximately four devices for every human being on the planet. And as we approach that point, $6 billion will flow into IoT solutions, including application development, device hardware, system integration, data storage, security, and connectivity. But that will be money well spent, as those investments will generate $13 trillion by 2025.

An oft-quoted description of IoT is "anything that can be connected, will be connected."

ISE students, alumni, and faculty are using their systems engineering and business knowledge to help make IoT a reality. This year, ISE introduced a specialized focus in the Internet of Things for undergraduate students.

Professor Richard Sowers is the faculty mentor for all new students choosing the new IoT Secondary Field Option.

Professor Ramavarapu "R. S." Sreenivas, head of graduate studies at ISE, works closely with Professor Sowers. Over the summer, they both mentored undergraduate students conducting research on the IoT.

Describing the IoT secondary field option, Sowers says, "It's a lot of hard work, but it's a billion-dollar opportunity. It's a serious challenge because it requires a mixture of many things."

He says, "The future that students [anticipate] living in is different from the future that I was living in when I was young.… the Internet of Things will be a game-changer, and it will be part of the future."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/internet-of-things

Richard Sowers

Ramavarapu S. Sreenivas

Illinois researchers incorporating "Internet of Personalized Things" into world of healthcare

BY MIKE KOON,
SUMMARY BY ZACK FISHMAN

A team of researchers at Illinois' Health Care Engineering Systems Center (HCESC) are working to bring medical assistance into the home using the Amazon Echo. HCESC director and ISE professor Kesh Kesavadas, coordinating with ISE professor R.S. Sreenivas and research engineer Pavithra Rajeswaran, wants patients to be able to use the Echo to call a doctor through voice commands or be monitored with medical sensors while recovering from major operations. In this way, patients can save money by returning home sooner for recovery, senior citizens vulnerable to heart attacks or falls can be closely monitored through AI for early signs of risk, and even basic tests like blood pressure can be taken from the comfort of home and sent to the doctor. "We want to make healthcare friendlier," says Kesavadas.

FOR THE FULL STORY, VISIT
engineering.illinois.edu/news/article/24365

Financial Engineering:
A tale of two colleges

BY MADELEINE HUBBARD

Markets have existed as long as humans have. It began with trading basic goods. As society progressed, major financial empires have risen and fallen, physical money has largely became digital, and markets have became significantly more complicated. The field of financial engineering has stepped in to navigate and simplify the modern market.

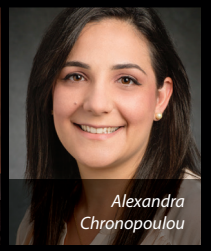
In 2010, the Industrial and Enterprise Systems Engineering department and the College of Business collaborated to create MSFE. This program is the first to be shared between two U of I colleges.

Professor Morton Lane is head of the Financial Engineering program at Illinois. He defines financial engineering as "the application of quantitative techniques to financial markets and financial products. Quantitative techniques include mathematics, science, statistics, analytics and other engineering techniques." Before becoming head of the Financial Engineering Program, Lane briefly taught at the London Graduate School of Business before spending over thirty years working in the financial sector. He worked at the World Bank, Discount Corporation of New York Futures, and Bear Stearns, before going on to create his consulting firm, Lane Financial LLC. Describing his transition back into academic life at Illinois, Lane says, "It was a new thing and I love new things, so they (the University administration) got me at the right time."

Professor Liming Feng has been part of the Financial Engineering program since the beginning. Over his time at Illinois, Feng says, "I've been involved in many aspects of the MSFE program, from helping design the curriculum, to recruiting the best qualified students, to helping students with job hunting, to teaching several required MSFE courses."


Morton Lane


Liming Feng


Alexandra Chronopoulou

Professor Ramavarapu S. Sreenivas, is the head of graduate studies at ISE and has taught in the Financial Engineering department since its inception. Although there are prominent financial engineering programs at other schools, Sreenivas says, "The world's epicenter of the futures market is up in Chicago." This gives Illinois students an advantage due to their close proximity to Chicago.

ISE Professor Alexandra Chronopoulou teaches IE 525: Numerical Methods in Finance. Chronopoulou tells students not to be intimidated by the courses. "All of our students are successful in the end, but they just have to be patient and work hard… We have very good placement rates so the reward is at the end," she says.

In the financial market, Lane says, "The universe is changing all the time. That's what makes it exciting."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/msfe

A financial engineer, in predicting wheat markets, will use equations that factor in supply, weather, market trends, demand, among other variables.

CAPSat:
Undergrad students prepare to launch a satellite


Still from NASA animation

BY MADELEINE HUBBARD

University of Illinois students are designing a small satellite, or CubeSat, after winning an award for funding from NASA.

Three experiments will occur on the CubeSat. The satellite's experiments involve cooling, annealing and pointing, abbreviated as CAPSat.

The project stretches across different departments at Illinois. ISE's Professor James Allison guides the pointing payload experiment, while Aerospace Engineering Senior Yukti Kathuria is the pointing payload lead.

Allison says that the pointing technology is "focused on a new strategy for controlling the orientation of spacecraft, and that's something people are interested in right now because a lot of the current technology has reliability issues."

Daniel Herber is a PhD candidate in Systems and Entrepreneurial Engineering in ISE. He describes the pointing technology as "an enabling technology [if] you want to see farther into space, you want to hold pictures for longer periods of time to get better exposure, things like that."

Herber was involved in the very early stages of CAPSat when the design was in its most basic form; it has since progressed significantly. He says, "That's kind of how engineering should work. You start simple and you kind of build up to this real, complicated physical system."

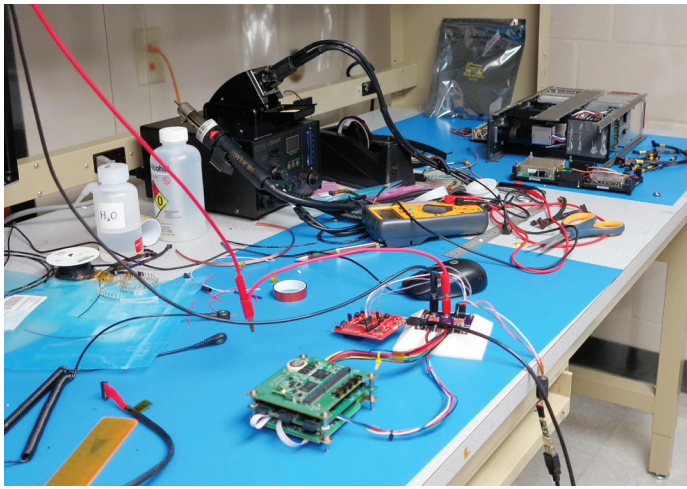
Explaining how the experimental pointing technology works, Allison says, "We're looking at a new technique where we're trying to use an existing part of this system to provide attitude control. Most spacecraft have some type of solar array, and we're using actuators that are bonded to the array… When you apply an electric field to those actuators, they can contract or expand depending on the polarity of the voltage and when you do that, when you bond something like that to the structure of the solar panel, if you expand it or contract it, it makes the panel bend and if we bend these panels… the main body of the spacecraft, the bust, is then going to move in the opposite direction."

Herber says, "It's hard when everything's moving, just vibrating slightly, because in space, [when] something starts moving it's not going to stop unless you stop it… That's the one limitation in space. This technology, it's proven, it can reduce those vibrations a lot. It can also hold onto a far location for a long period of time."

The satellite will be launched by NASA in 2019.

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/capsat

Top left: Professor James Allison.
Top right: Leading members of CAPSat meet to discuss their progress. From left to right, Oguzhan Altun, Joe Stahl, Dawn Haken, Tiago Silva, Yukti Kathuria, Patrick Haddox, and, present by phone, McKale Berg.
Middle: Yukti Kathuria and Vedant.



A satellite is born.

ISE UNDER-GRADUATE ENTRE-PRENEURS

ISE student juice, fortified with a systems approach to innovation across engineering disciplines and market constraints, causes many students to launch their own businesses—often before completing their degree!

Kathleen Hu (BSIE 2018)
calls DIBBS on reducing food waste

BY CHARLOTTE COLLINS

The United States, one of the largest producers of food in the world, paradoxically exports 20 percent of all harvests and wastes close to 50 percent of food at home while 12.6 percent of American households are left food insecure.

Kathleen Hu wants to close those gaps.

Hu spent a semester in Paris, where she saw firsthand a platform for combating the issue of food waste.

"Both hunger and food waste are huge problems in the United States," says Hu. "I thought it would be such a good idea to implement it in my hometown of Champaign-Urbana, so that's how it came to be."

Hu built a team in December of 2016 and named the platform DIBBS. She aims to reduce food waste and "produce nutritious meals for people in the community, so it's a win-win for all." The platform is set up for local grocery stores, like Common Ground Food Co-op, to make donations of culled food that must be pulled due to cosmetic reasons or near shelf life but is still fit for consumption. DIBBS provides a conduit to arrange pickups with food agencies like soup kitchens, food pantries, and religious organizations that serve community dinners.

"The grocery store can post what they're willing to donate and then on the other side agencies can view this dashboard, call DIBBS on what they need and then go and pick it up at a specified time and location," says Hu.

Though the web app is still in the piloting and development stage, DIBBS is already pulling its weight in the community. Hu and her team of five have partnered with several local grocery stores to link them up with food agencies, including the Jubilee Cafe, Wesley Food Pantry and Uni Place.

Johnell Bentz of the Jubilee Cafe uses DIBBS to facilitate food pickups. The Jubilee Cafe offers a free weekly meal to members of the community in need, and with DIBBS, she has been able to get organic, locally-grown produce free for the community meal.

"We have a small budget of about a hundred dollars a meal, and we're averaging around forty people that come in every week, so when we can come in and pick up food at the co-op that DIBBS has connected with us, it's helped us stretch our food budget," says Bentz.

Common Ground's Outreach Coordinator Sarah Buckman says the partnership with DIBBS has been able to save the Jubilee Cafe 100-200 pounds of food per week. She says DIBBS has exposed the co-op to more food pantries in Champaign-Urbana they had formerly missed out on, like Jubilee Cafe.

"DIBBS was able to let us know that there were

other food pantries that were just emerging, like Jubilee Cafe, that just started last year," says Buckman.

Hu credits her entrepreneurial know-how in part to her Industrial Engineering major and the problem-solving techniques she has learned as an ISE student.

"The department is so supportive, there's so many resources, and I think the biggest takeaway from engineering at Illinois is all the classes I've taken that just teach problem solving," says Hu. "When you're running a startup, there are so many challenges and ambiguous problems. The department has really taught me about working hard and being creative and solving problems."

Despite still being in its developmental stages, DIBBS has facilitated "over thousands of pounds of food donated," according to Hu. It was also named the winner of ISE's 2017 Mottier Innovation Challenge. In order to get more good food on the table instead of in the trash, Hu's ultimate goal for DIBBS is a nationwide expansion of the platform.

"The company's mission is 'save food, do good' and just to make an impact in this world when these problems are so big and they're only growing," says Hu. "Whatever we can do to make a national impact is the goal."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/kathleen-hu-dibbs

MOTTIER INNOVATION CHALLENGE in Systems Engineering

Top: Kathleen Hu (second from left) earned the $20,000 Illinois Innovation Prize. She is joined by (l-r) Andrew Singer, director of the Technology Entrepreneur Center, 2017 winner Lucas Frye, and College of Engineering Interim Dean Tamer Basar. Bottom right: Kathleen Hu wins the McKinley Foundation Social Justice Award. Pictured (l-r): Jay Ramshaw, Kathleen Hu, University President Timothy Killeen.

DIBBS

DIBBS fresh international market 7/18 donations.


Jason Yue: No Summit Out of Reach

ISE Senior and documentary filmmaker Jason Yue is making a film of his trek to climb to the highest point of altitude in each of the 50 states, starting with the smaller heights and working his way up to Alaska's Mount Denali. At his request, Jason has been issued an ISE flag to fly at the top of every mountain he summits.

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/jason-yue-50-states-50-summits

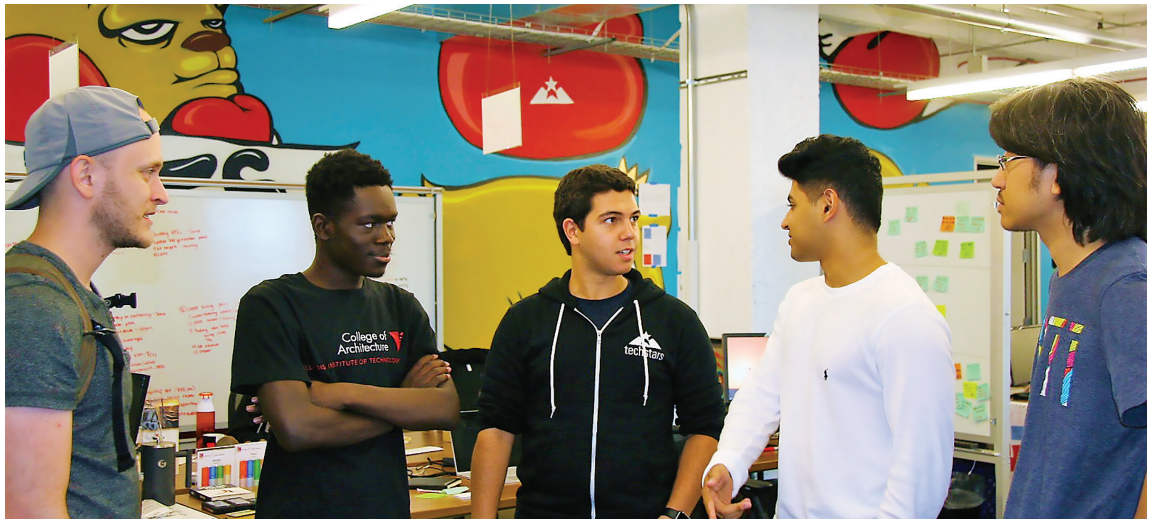
STATES COMPLETED IN ORDER

Mississippi	Woodall Mountain	806'
Alabama	Cheaha Mountain	2407'
Florida	Britton Hill	345'
Louisiana	Driskill Mountain	535'
Arkansas	Magazine Mountain (signal hill)	2753'
Missouri	Taum Sauk Mountain	1772'
Illinois	Charles Mound	1235'
Texas	Guadalupe Peak	8749'
Michigan	Mount Arvon	1979'
Wisconsin	Timms Hill	1951'
Minnesota	Eagle Mountain	2301'
New York	Mount Marcy	5344'
Vermont	Mount Mansfield	4393'
Maine	Mount Katahdin (Baxter Peak)	5268'
New Hampshire	Mount Washington	6288'
Rhode Island	Jerimoth Hill	812'
Massachusetts	Mount Greylock	3487'
Connecticut	Mt. Frissell (South Slope)	2380'
New Jersey	High Point	1803'
Delaware	Ebright Azimuth	448'
Pennsylvania	Mt. Davis	3213'
Maryland	Hoye Crest (Backbone Mountain)	3360'
West Virginia	Spruce Knob	4861'
Ohio	Campbell Hill	1549'
Indiana	Hoosier Hill Point	1257'

MOUNT DENALI

Denali is the highest mountain in North America, with some of the most ferocious weather in the world. No peak in the world has greater relief: Denali rises 18,000 feet above its surroundings as compared to Kilimanjaro at 14,000 feet and Everest at 13,000 feet. At Denali's Arctic latitude, the air is thinner than climbers would encounter on an equatorial peak.

Paul Couston and Optivolt Labs



The Optivolt Labs team, from left to right: Daniel Kofman, Jayson Dombele, Paul Couston, Rohit Kalyanpur, Plengrapin Buason.

BY ZACK FISHMAN

Last year, we covered the story of two Illinois students who created their own startup to produce efficient solar-powered phone cases. After a turbulent year of roadblocks and opportunities, they are now improving the battery life of drones.

In the summer of 2017, Paul Couston and Rohit Kalyanpur founded Optivolt Labs, where they created a case that converted both light into a longer battery life for cell phones.

But Couston, who has been pursuing a bachelor's degree in Industrial Engineering, notes some issues with operating in a saturated market and facing financial and legal troubles.

Striving to keep their business alive, the pair applied for and received seed funding from accelerator program Techstars Chicago. They applied their effective solar-to-battery conversion technology to drones, significantly improving their effective flight time and adding the capability to recharge after landing on a sunny day.

Today, Optivolt Labs employs three other engineers full-time and is actively working to find their place in the drone industry. For Couston and Kalyanpur, the youngest-ever founders at Techstars Chicago, that means coordinating the engineering efforts, determining a market strategy, and raising the next round of capital.

Both founders will be putting classes on hold to further develop Optivolt Labs. Couston, who would have been an incoming senior this fall, credits the ISE curriculum for its applicability and breadth.

"I'm still a student; I'm just no longer learning in a classroom," he says. "I'm learning in a company, and it happens to be a company that Rohit and I started."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/optivolt-labs

Startup Roundup

This is a partial list of startups launched by ISE students and their colleagues while still students, or shortly after graduation.

CUBITUS | Chandra Jayaraman
Haptik gloves for wheelchair users to monitor how the users propel the chairs and offer ergonomic assistance
ise.illinois.edu/newsroom/article/chandrasekaran-jayaraman

DIBBS | Kathleen Hu (p. 12)
A platform to connect shelters and service agencies with free, leftover food slated for elimination by grocery stores

HAPTIK | Aakrit Vaish (p. 25)
Conversational AI Chatbots for myriad consumer purposes

OVERGRAD | Ryan Hoch and Kevin Hoffman
Technology to help students and their families navigate educational options that can be used to unlock economic opportunities
ise.illinois.edu/newsroom/article/overgrad

OPTIVOLT LABS | Paul Couston (p. 15)
Solar-powered consumer devices with superior battery technology

SHIFT LABS | Koji Intlekofer
A cheap and portable device that measures IV infusions and saves lives
shiftlabs.com

SOLAR BUCKETS | Keilin Jahnke (p. 26)
A cooking utensil that stores solar power for cooking food at night

THERAPALZ | Fiona Kalensky
Smart robotic pets optimized to soothe patients with diseases such as Alzheimers
ise.illinois.edu/newsroom/article/fiona-kalensky

IISE at Stratton

BY CHARLOTTE COLLINS

Every other week, a group of ISE students drive to Stratton Elementary School in Champaign to help the students create a mural as a part of the student group Institute of Industrial and Systems Engineers (IISE). While there, they work with the schoolchildren to sort ceramic shard by colors, shapes and materials, surrounded by vibrant colors and fun animals at the art-focused school. The activity gives the college students and children a chance to interact and learn from each other, with the children being educated about engineering while the engineers figure out how to work with children. The hard-working group was also able to take breaks and play with the classroom pets, which included two bunnies, a snake and a gecko.

The experience proved rewarding for the college students. "Working with the children is such an eye-opening experience," says Riya Sanjay, a member of IISE. "When I was younger, I was so curious and enthusiastic about things, and I love seeing that spark in the children we work with. They remind me that there's happiness in everything, including playing with baby bunnies and sorting mural pieces."

IISE wins Dads Association Scholarship

IISE won one of the six available Dads Association scholarships. The Dads Association at the University of Illinois at Urbana-Champaign, established in 1922, is the nation's oldest university-level parent organization. The grant will primarily be used to increase the number of scholarships IISE can give to the Lean Green Belt Certification, which educates students in enterprise principles, that the organization is hosting in Spring 2019.

INSTITUTE OF INDUSTRIAL & SYSTEMS ENGINEERS

About IISE at Illinois

The Institute of Industrial and Systems Engineers is a student organization for ISE students that aims to provide professional, philanthropic, and social development to all of its members. Its mission is to create an environment where members can bond over matters beyond academics and create a community that feels like family.

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iise.uiuc@gmail.com

ISE Chief Advisor builds LEGOs and dreams

BY ZACK FISHMAN

The office of Heidi Craddock tells many stories, filled with hints into the life and personality of the ISE Chief Advisor, who works with every undergraduate to help them along the path to graduation.

The first clue is her collection of stunning photographs on the wall. Depicting trees and owls and dragonflies, nearly all of the pictures were taken by Craddock herself, who has practiced photography for years.

"I found that photography was not only a way to capture memories and feelings, but it also helps to share my life through the lens," Craddock says.

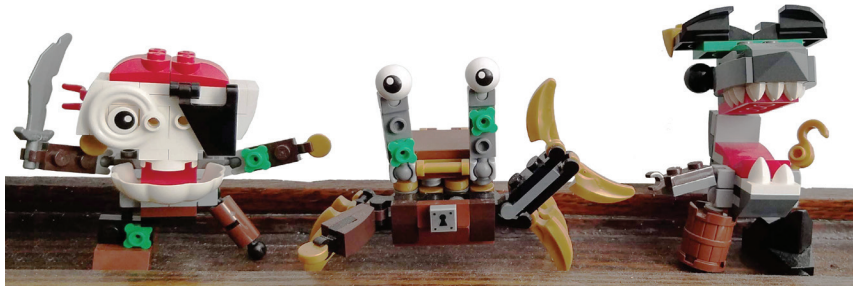
A bookshelf in her office is home to another pastime of hers: an army of LEGO minifigures that entirely fills the shelves. Other LEGO constructions appear around the room, like the constructed calendar on her desk.

Having grown up in the C-U area, Craddock joined administrative staff at the University of Illinois before advising undergraduates at ISE.

When doing her advising, her role beyond "checking all the boxes" includes opening their eyes to new opportunities and inspiring confidence in them.

"I love working with students. I love my colleagues. I love what I do, and I've met some of the most amazing people you could ever dream to meet," Craddock says.

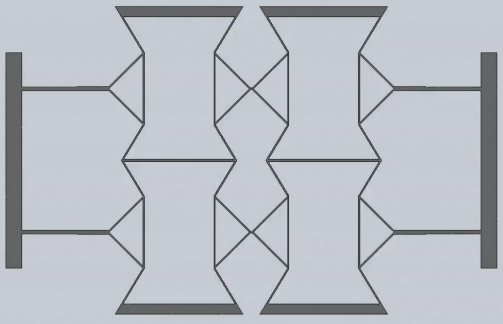
FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/heidi-craddock



No matter how busy she gets in the ISE Undergraduate Advising Office, a giant Lego army always has Heidi's back.
Left column and bottom row: photography by Heidi Craddock.

GRADUATE STUDENT NEWS

Krishnan and Patiballa as they receive their award. From left to right: Andrew P. Murray, conference session organizer, Sreekalyan Patiballa, Girish Krishnan, and Andreas Mueller, chair of 41th Mechanisms and Robotics Conference.
Bottom: Still from an animated schematic of auxetic materials.



Sreekalyan Patiballa and Girish Krishnan win Freudenstein Young Investigator Award

BY MADELEINE HUBBARD

Imagine holding soft putty in your hands. When you pull the putty apart, it stretches, but gets thinner in the middle. This idea is known as Poisson's ratio. It applies to everything from metals to marble, from glass to ice.

Now imagine a material that expands in the middle when stretched on the sides. The counterintuitive material exhibits negative Possion's ratio. Although seemingly futuristic, these materials, known as auxetics, exist. Auxetics can be used in high-impact objects, including body armor, athletic shoes, and biomedical instruments.

Research on auxetics is being led by ISE's Professor Girish Krishnan and PhD student Sreekalyan Patiballa.

In early August 2017, Krishnan and Patiballa were awarded the Freudenstein Young Investigator Award at the International Design Engineering Technical conferences held by the American Society of Mechanical Engineers. Their paper is titled "Qualitative Analysis and Design of Mechanical Metamaterials."

Patiballa says that until now, "Research in the design of auxetic metamaterials was mostly by using computationally intensive methods like topology optimization methods, which actually takes out the designer from the process of design. This design technique gives the designer, freedom and insight."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/young-investigator-award

Mavis Award

Sreekalyan Patiballa (advisor Girish Krishnan) received the Mavis Future Faculty Fellows Award. This program is designed to facilitate the training for the next generation of great engineering professors. There are three main components to the MF3 Academy—teaching, research, and service.

THE FLOAT'N ILLINI:

To boldly go where few students have gone before

BY DOUG PETERSON

Officially, people call it the "Weightless Wonder," but unofficially it's known as the "vomit comet."

These are the nicknames for an airplane used by NASA's Reduced Gravity Research Program to simulate weightlessness. When the plane follows a parabolic flight path, it goes into a brief free-fall, giving passengers the sensation of being in a low-gravity environment.

Select University of Illinois students had a chance to ride on the Weightless Wonder back in the late 1990s and early 2000s, when the Float'n Illini group on campus learned firsthand what it was like to experience low gravity. ISE Professor Henrique Reis served as the group's first advisor. He says, "I never had [as] much fun working with students than this."

Reis recalls that in the late 1990s, Kennda Lynch, a student in his component senior design course asked if he would serve as the Float'n Illini's academic advisor.

The Float'n Illini were part of a NASA program, in which students wrote proposals to run experiments in microgravity environments. Once they obtained funding from private companies, they spent one week conducting the experiments on the ground in Houston, and a second week running the experiments in the microgravity environment.

"These students were absolutely passionate about space," he says, and it showed in the amount of time they devoted to the program.

In addition to running experiments, the students criss-crossed Illinois, speaking at high schools and conducting educational demonstrations to illustrate the effects of a gravity-free environment. For this work, the Float'n Illini received the 2000 Space Pioneer Award from the National Space Society.

"These students were single-minded, extremely focused individuals," Reis says.

But did he ever join his students aboard the vomit comet? He did not. As he says with a smile, "You grow wiser with age."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/floatn-illini

FLOAT'N ALUMNI

Adam Ragheb
Ahmed Scales
Alyssa Rzeszutko
Arjun Venkataswamy
Carlisle Wallace
Christopher Kabureck
David Fike
Elizabeth Bozek
Eric Biederman
Heidi Meicenheimer
Jeff Kowtko
Jessica Hellwig
Joannah Metz
Jonathan Haughton
Jonathan Navarro
Justin Pochynok
Kamil Bartlomiej Stelmach
Kelly McAllister
Kennda Lian Lynch
Kevin Lewis
Kevin Zhou
Lisa Mueller
Liu Johnson
Mark Riley
Mark Wallace
Melonee Wise
Mike Voightmann
Ngan Chung
Palash Basu
Patrick Jakubowski
Rachel Williams
Robert Kuang
Robert Maldonado
Rohan Rana
Sandun Gunawardana
Scott Kathrein
Stephanie Milczarek
Steven Eberle
Steven Nash
Wayne Lytle
Wayne Neumaier

FLOAT'N FACULTY

Eric Loth
Henrique Reis
Joanna Austin
Scott MacLaren
Stef Milczarek
Steve Errede

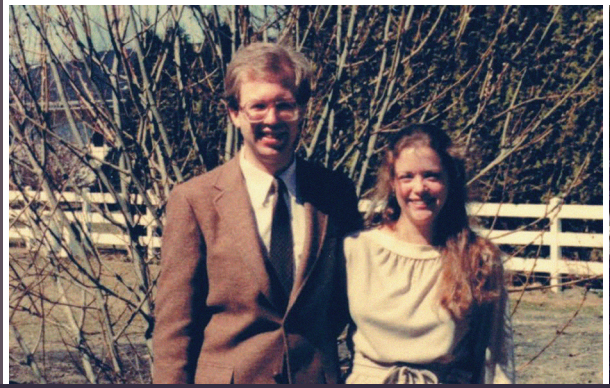
Float'n Alumni: feel free to contact William at gillespi@illinois.edu to share your memories of this experience.

ISE SWEETHEARTS

BY MADELEINE HUBBARD

Almost 30 percent of married couples attended the same college. While marrying your college sweetheart might be a fairy tale for some, it's a beautiful reality for others.

Here are three couples who met in ISE and are still married today.



Top: Fred and Julie Jewell.
Middle: Tim and Lynda McGrath.
Bottom: Richard Henneman and Janet Fath.

Fred and Julie Jewell

Fred Jewell started at the U of I in 1983 as a freshman studying Computer Engineering. Julie Furmanek began at Illinois the same time, studying Bioengineering. Both of them ended up transferring into General Engineering by their sophomore year, and they met each other in class.

After 28 years of marriage, two children, and numerous cities, Fred and Julie Jewell are still enjoying life together.

After Professor Jerry Dobrovolny's senior seminar class, Fred and Julie would walk to their apartments together. It wasn't until graduation week that they started dating. Both had broken up with their long-term significant others the second half of senior year. Fred says, "We had gone out with a bunch of friends who were graduating, kind of just as a celebration outing to Bombay Bicycle Club.... Julie and I ended up standing next to each other for most of the night talking… The timing was right."

Once they graduated, Julie and Fred went on for their Master of Science in General Engineering at ISE. After earning their masters, Fred and Julie began working for Anderson Consulting, now known as Accenture.

They have enjoyed living in Atlanta for the past 20 years. They have two children, Maddie, 23 and Max, 20. Maddie graduated from University of Georgia, Athens, and is working as a KPMG strategy consultant. Max is a sophomore at Ole Miss.

Tim and Lynda McGrath

Lynda Wort and Tim McGrath didn't meet each other until their junior year at Illinois, after Lynda transferred to Illinois from Lincoln Land Community College. They both graduated with their bachelor's degrees in Industrial Engineering in 1983, and they got married a year later.

Tim says, "I think the first time we actually met was when we were in a computer lab working in a computer programing class or a data class, and I think we helped each other out with some homework assignment we were working on."

During their junior and senior years, Tim says, "We were in a lot of the same classes together, so it was nice that we were able to hang out together and that's kind of when we started to date."

After graduating from Illinois, the McGraths worked in industry for several years before going on to earn their MBAs. Lynda went on to work at McMaster-Carr in 1986 and has been working there ever since. Tim's career, however, has been more unpredictable. He says, "it's a little bit non-traditional for an industrial engineer." After earning his MBA, Tim worked as a market research analyst before teaching math to middle and high school students. For the past 11 years, Tim has worked as a high school counselor.

Today, the McGraths are celebrating 33 years of marriage, two children, and successful careers.

Richard Henneman and Janet Fath

In college, they say the best place to find the perfect spouse isn't in the bars, but in the library. That is exactly what happened to Richard "Dick" Henneman and Janet Fath in the fall of 1979.

Dick and Janet began working at the Engineering Library in what is now Engineering Hall in August of 1979, and they shared a shift together. They began dating after seeing "A Christmas Carol" at Krannert Center for the Performing Arts.

Both Janet and Richard got their bachelor's in Industrial Engineering, and Richard got his master's in the field as well.

Dick says, "Janet was involved in everything… I was less so," noting when Janet got involved in something, "Then I usually got involved in it too."

After graduating from Illinois, Dick and Janet moved to Georgia. Dick says, "Our advisor at Illinois, Bill Rouse, took a job at Georgia Tech and we followed him down here. Janet went on to earn her master's degree and PhD in Industrial and Systems Engineering at Georgia Tech. I completed my PhD in the same program." They went on to get married in December 1983.

Today, Janet is a manager at the Centers for Disease Control in Atlanta in their immunization program. Dick has worked in various user experience management and is a past president and current member of the U of I ISE Alumni Board.

FOR THE FULL STORY, VISIT ise.illinois.edu/newsroom/article/ise-sweethearts

Irene Au MSIE 1996:

Pioneer in Internet-based design

BY ZACK FISHMAN

Irene Au is an innovative designer who has worked with many prominent internet companies to make their services more accessible and useful for their users. She began her work with user experience (UX) design while attending the University of Illinois for her master's degree in Industrial Engineering with a specialization in Human-Computer Interaction.

After graduating in 1996, Au began work at internet browser developer Netscape, where she helped design their client products such as the browser and email.

She was then brought on by Yahoo! in 1998, which was rising in popularity but was little more than unformatted text on a screen at the time. Hired for her pioneering expertise in user-centered design, Au joined the company and constructed their UX design practice from the ground up.

"We were really the first to bring user-centered design to an Internet company and figure out what that would look like," she says. "When I entered the workforce, that didn't exist, so I created that."

After eight years at Yahoo!, Au joined Google in 2006 as their Global Head of User Experience Design. At engineering-driven Google, there was a hardly a thought given to UX design before her arrival.

"It was pretty much hacked together, almost like with duct tape," Au says. She spent the next six years coordinating design for the internet giant.

Au left Google in 2012 to join budding startup Udacity before becoming an Operating Partner at Khosla Ventures, a prominent venture capitalist firm. Au now assists entrepreneurs with maintaining a coherent and user-centered design philosophy in their companies.

While Au had to practically invent her own career in the 1990s, user-centered design now sees wide demand across industries.

"I think more people understand that it's more than skin deep; it's not just how it looks but how you move through the site, what the structure is, and what the company strategy is," she says. "All of that is design."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/irene-au

Au has practiced yoga since high school and is now an instructor at Avalon Yoga International in Palo Alto, CA.

Edward Hightower BSGE 1988:

Lead Automotive Engineer, Entrepreneur, Author

BY ZACK FISHMAN

Edward Hightower always loved cars, as a kid in Chicago helping out neighborhood mechanics and a high school student deciding to pursue engineering. Three decades later, Hightower has built a multifaceted career in the automotive industry where he has built, marketed, and even written about the vehicle that has long inspired him.

His career as a lead engineer and business executive began in Urbana-Champaign, where he was accepted into the General Engineering program in 1984.

"The University of Illinois was one of the top engineering schools in the country, so I felt blessed to have the opportunity to go there," he says.

Following graduation, Hightower became a chassis engineer for General Motors, the first of many positions he would hold in the automotive industry. He also received his MBA from the University of Michigan in 1995 and used his fresh understanding of business concepts to take on greater responsibility at work.

"My time on the engineering side and my time on the business side allowed me to hold roles like Chief Engineer at Ford, and Executive Chief Engineer at General Motors," Hightower says. As Executive Chief Engineer in particular, he was responsible for seven crossover car models—such as the Cadillac SRX and Buick Enclave.

In 2011, Hightower further embraced the business side of automobiles by founding Motoring Ventures, a firm that both invests in and advises midsize manufacturing companies. He uses his expertise from the highly competitive auto industry to assist clients in their operations.

Hightower also became an author this year with the release of Motoring Africa: Sustainable Automotive Industrialization in April 2018. Aimed at business leaders, investors, and entrepreneurs "looking for growth that also has a positive impact on the world," Motoring Africa also emphasizes the importance of sustainability in industrial growth.

Motoring Africa, written by Hightower and published in 2018, provides guidance for automotive manufacturers who want to expand business on the continent.

Immersed in an active period of change in a longstanding industry, with electric vehicles and self-driving cars in quick development, Hightower shows enthusiasm for what the future may hold.

"It's an exciting time to be in the automotive industry," he says.

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/edward-hightower

Chris Landreth BSGE 1984:

Oscar-winning animator, artist, and engineer

Video stills from Venus and Milo (left), The Spine (middle), and Ryan (right).

"I consider myself very lucky to have found the kind of career that I've been able to use both scientific skills and artistic skills."

BY CHARLOTTE COLLINS

Chris Landreth found himself moonlighting in Professor Donna Cox's Renaissance Experimental Laboratory in the latter years of his time as a student at Illinois. What started as an extracurricular passion project took over his career. Now, he's an Oscar-winning animator and tenured artist in residence at the University of Toronto.

Landreth says he's always been "a little bit on the artistic side of things." The ISE alumnus studied General Engineering (now renamed Systems Engineering and Design) and Theoretical and Applied Mechanics at the University of Illinois, but he became increasingly drawn to computer animation as he finished his degrees.

"I would say that there are people who are like myself—both left-brained and right-brained—and that can be a problem actually. Believe me. And, if you are wishing to combine that stuff together, there are many ways that you can," says Landreth. "There's an aspect to kinds of engineering design which do involve great creativity, great inventiveness, and sometimes great artistic skills."

From Illinois, Landreth eventually went on to test and develop computer animation software and make his own films.

His short *Ryan*, which won Landreth an Academy Award, is an animated documentary. The film covers an incredible amount of ground in its 14 minutes: it is a portrayal of a real conversation between the late Canadian animator and filmmaker Ryan Larkin and Landreth, physically depicting Larkin's struggles with homelessness and substance abuse. Set in a dilapidated cafeteria, many of the secondary characters in the film are slinking and beat-down, missing body parts and leaning at impossible postures to reflect their anguish. Characters surface in conversation and then materialize beside the pair physically, disappearing as the conversation evolves. Landreth says working with animation allows him a different kind of freedom as a storyteller than live-action would.

"I consider myself very lucky to have found the kind of career that I've been able to use both scientific skills and artistic skills," says Landreth. "Whether it's in engineering or in filmmaking, it's discarding, clearing your head of those kind of second-guessing things, and just doing things without fear."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/landreth-animator

Five years later:

Alumni startup Haptik continues to thrive

BY ZACK FISHMAN

Two University of Illinois engineering alumni will soon be celebrating five years of growth, diversification, and investment in their successful chatbot startup.

Aakrit Vaish and Swapan Rajdev founded Haptik in August 2013 and launched a mobile application of the same name to the Indian market in early 2014. Initially, Haptik served as a virtual assistant that connected users with experts over chat to provide services like booking flights, ordering food, and answering a variety of questions.

But since changing focus in 2016 to the development of chatbots—artificial intelligence programs that converse with users through text—the India-based startup has grown beyond its direct-to-consumer app and additionally creates chatbots for other businesses. Haptik now has about 140 employees and is a top five largest "conversational AI" companies in the world.

Vaish, who graduated with a degree in Industrial Engineering and describes Rajdev and himself as "really proud Illini," explains that early involvement in the personal assistant field helped them find success later on.

"Because we started much earlier than most other competitors in this market, we ended up building up a lot of technology and a fairly large feature set," Vaish says.

Employing chatbots in several ways, Haptik's current "feature set" includes a revamped mobile app (with the experts now replaced with bots) and options for outside companies like customer service, advertising, and website implementation.

Some of Haptik's most notable work includes Coca-Cola India's chatbot on Facebook Messenger, along with Samsung's "My Assistant" app pre-installed on every Galaxy S7 in India. Other recognizable clients include HDFC Life, Amazon Pay, and KFC.

But Haptik's biggest news comes from a major investment from one of India's largest digital product companies. Times Internet is the digital division of The Times of India, the most widely circulated English-language newspaper in the world, and in 2016 they invested $11.2 million into Vaish and Rajdev's startup. Vaish describes Times Internet's role as a "majority strategic investor" that still allows Haptik to function at its own pace.

"There's no rush to receive the next investment or return capital," Vaish says. "We are given as long as it takes but eventually we will return good value back to them."

Five years after its founding, Vaish and Rajdev's business is thriving with significant funding and growing markets, in contrast to half of all startups that fail by this stage. Vaish credits "a great deal of perseverance and a little bit of luck" for his company's success.

So what lies in store for Haptik's future? "We joke that global domination is what we're going after," Vaish says, referring to expansion into international markets. Haptik is currently providing chatbot services to some companies in the United States, and they have plans to expand their business further into both the U.S. and East Asia.

"We'll be going after whatever the market has to give us," he says.

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/haptik-5-years-later

Co-founders of Haptik—and former roommates at Illinois—Swapan Rajdev (left) and Aakrit Vaish (right).

Keilin Jahnke BSGE 2012:

Engineering to help humanity

BY CHARLOTTE COLLINS
AND MADELEINE HUBBARD

Having received a bachelor's at ISE in General Engineering (now called Systems Engineering and Design), now a PhD student in Agricultural and Biological Engineering, Jahnke says her favorite part of her work as an engineer has always been "the people aspect."

Her ISE senior design project helped her realize engineering solutions would likely take her out of the lab. She focused on issues tied into collecting leaf samples. The project forced her outdoors for some context on the problem she couldn't wholly grasp from behind a screen. In theory, she might have been able to engineer a solution in the lab to make the process of collecting samples more ergonomic; in practice, it wasn't the case.

Current well in Keur Balla Marie, Senegal, where Akelos is working with community members and two other organizations to improve local access to water.

"We realized it was the perfect example of how (with) engineering, you can't necessarily just sit in the lab and engineer something, and expect it to work everywhere," Jahnke says. "It was really fun to get to work with people and get feedback, surveys."

She felt the breadth of ISE's program allowed her to find her own way; Jahnke crafted her undergraduate focus herself and labeled it "sustainable development."

She finished her undergraduate degree in General Engineering in 2012 and currently teaches classes in technology and engineering geared toward creativity, innovation, and international engineering efficacy, but another focus of hers is Akelos, a non-profit consulting group that troubleshoots water projects in developing countries.

Akelos was started by Jahnke and six colleagues who were all involved with the Honduras Water Project course, which is offered to undergraduates and graduates at the University. The class spans two semesters and takes students to Honduras to collect data first-hand on a rural water project.

"The goal [of Akelos] is to help water projects become a success and stay successful. Many projects fail to meet the needs of the client, and so it's thousands of dollars and hundreds of hours of people's time not living up to its full potential," Jahnke says. "Essentially, we're consultants to other organizations who are working on water projects and we help with the technical, social, political and cultural aspects of water projects."

Jahnke's work has taken her to Honduras, Nigeria, Ecuador, and Mali. Jahnke also works on a startup based out of Champaign developing solar stoves called Sun Buckets. The stoves are able to store energy at a high temperature to allow the user to cook at night.

Jahnke's work as both a student, instructor and volunteer have all been intensive in engineering solutions to complex issues, but the projects she works on have the same key element that initially drew her to engineering: the human element.

"That's the goal, just to help people who want to help people."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/keilin-jahnke

Phil Blizzard BSGE 1989:

Entrepreneur, Innovator, and Pet Lover

BY MADELEINE HUBBARD

Since Phil Blizzard graduated from Illinois' General Engineering program in 1989, he has worked in corporate America, real estate development, Internet startups, and for the past ten years, a pet products startup he founded called ThunderWorks.
Blizzard says, "My career has taken a lot of twists and turns but my intention had always been to go into small business. I inherited that from my dad, who is an entrepreneur and small businessman."

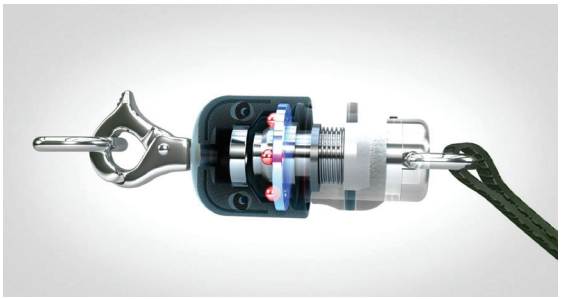
Originally from Elgin, Illinois, Blizzard entered the startup space after graduation, joining NextAudio.com. But when the Pandora-like service collapsed during the dot-com bust, he later entered real estate until the Great Recession hit in 2008. Blizzard says it was at that time "my wife and I had this idea for what became ThunderShirt."

ThunderShirt launched in May 2009. Today, it is estimated over half of all pet owners are aware of ThunderShirt and think highly of the product. Blizzard says, "People feel strongly about it… When they see something like this help their dog through an anxiety or fear issue, which can be quite severe for some animals, they often build a pretty strong emotional connection to the product."

Still using his engineering background, Blizzard has recently launched new leash products. One leash is called Dial-a-Distance, which allows pet owners to set the maximum length for a retractable leash.

ThunderWorks products are now available in thousands of stores across the country, but it still operates as a small business with 20 employees. ThunderShirt is also finding a place in pop culture with recent mentions in places like Dilbert, Full Frontal with Samantha Bee, Difficult People, The Daily Show with Trevor Noah, Kevin (Probably) Saves the World and by Aubrey Plaza on Conan.

Top: picture of the Dial-A-Distance leash.
Bottom: drawing of the ThunderSnap magnetic leash mechanism.



"Our primary thing is just focusing on bringing real innovation to the pet space. We haven't seen a lot of it from other participants in the pet industry." Blizzard says, "We get wonderful customer testimonials all the time."

FOR THE FULL STORY, VISIT
ise.illinois.edu/newsroom/article/blizzard-thundershirts

SENIOR ENGINEERING PROJECTS

FALL 2016

Acme Finishing
Robotic Application for High-Volume Liquid Coating Line
Dušan M. Stipanović, Advisor
Kyle Paige Kovitz
Cody McClintock
Melvin Octavian Santoso

Bridgeway
Design Optimization for Dadant Product Work Cells
Sewoong Oh, Advisor
Arielle Loran Anderson-Venerable
Jordan Daniel Palmer
Kelsey Lynn Schreiber

Bunn-O-Matic Corporation
BERNT O. LARSON AWARD, SECOND PLACE
JAMES F. LINCOLN ARC WELDING FOUNDATION AWARD: SILVER
Experimental Study for Propane Refrigerant with Design Considerations
Scott A. Burns, Advisor
Brendan James Kelleher
Nicholas G Lindsey
Michael Christian Morrow

Bunn-O-Matic Corporation
JAMES F. LINCOLN ARC WELDING FOUNDATION AWARD: BRONZE
Experimental Study of Espresso Foam Production and Quality Enhancement
James V. Carnahan, Advisor
Martin Ignacio Giannetti Latuf
Carleasia Sarah Kengott
Patrick David Moynihan
Jason Eric Payne

Chem-Plate Industries, Inc.
Plating Process Analysis for Improved Efficiency and Cost Savings
Lavanya Marla, Advisor
Henry Blake Dominicis
Trevor Herbert Price
Naishadh Sambrani

Chief Enterprises, Inc.
Warehouse/Inventory Management and Optimization
Linwei Xin, Advisor
Lara Beth Flasch
Deniz Karaca
Patrick William Stubbs

Harger Lightning & Grounding
BERNT O. LARSON AWARD, FIRST PLACE
Refractory Mold Design Efficiency Improvement
Harrison Kim, Advisor
Abhishek Bada
Gerald Terrance Eilers
Matthew Aloysius Tenhagen

Imperial Zinc Corp.
Zinc Ingot Stacking Palletizing System Design
Wayne J. Davis, Advisor
Abhas Bhargava
Jack Gordon Bossong
Jonathan Michael Brattin

Julian Electric Co. Inc.
Development of a Scanning Utility for Receiving Data into ERP System
Doug King, Advisor
Connie Hong
Alexander Michael Moses
Benjamin Marshall Scott
Andrew Demetrius Sydor

Monahan Partners, Inc.
Lean Analysis for Monahan Partners
Liming Feng, Advisor
Annie McKenna Goetz
Ningjian Huang
Lucas W Sharkey

Morton Buildings, Inc.
Logistics Optimization for Lumber Purchase and Transport
Xin Chen, Advisor
James Michael Gilbert
Jigar Patel
Wenwei Yu

Morton Buildings, Inc.
JAMES F. LINCOLN ARC WELDING FOUNDATION AWARD: BRONZE
Logistics Optimization of Regionally Located Construction Equipment
Karthik Chandrasekaran, Advisor
Sean Patrick Kelley
Thomas Joseph Kukec
Jin Hwan Lee
Scott Patrick Shiro

Nokia-US
Data Analytics and Lean Analysis for Improvement of Virtual Innovation Session Efficiency and Results
Deborah L. Thurston, Advisor
Ece Kalayci
Sona Alison Kaul
Hae Wook Lee

Jump Trading Simulation and Education Center
Development of a Bluetooth Wireless Vital Sign Monitor for Post-OR Patient Transport (MedBit) -Phase 2
Carolyn Beck, Advisor
Dana Marie Keck
Tarik Koric
Anthony Lin
Michael Ray Muehlhauser

Prince Castle, LLC
Saber King™ Cutting Blade Cartridge Redesign
Henrique L. M. dos Reis, Advisor
Kevin Michael Burke
Joshua Eric Love
Stephen Alexander Mysko

Van Voorst Lumber
Reel Component Manufacture Scheduling for Multiple Remote Assembly Plants
Qiong Wang, Advisor
Jason Derek Goldstein
Timothy Ryan Kosanda
Ryan Joseph Willenborg

SPRING 2017

Bunn-O-Matic Corporation
JAMES F. LINCOLN ARC WELDING FOUNDATION AWARD: BRONZE
BERNT O. LARSON AWARD, SECOND PLACE
Coffee Maker Redesign for Lime Tolerance and Reduced Lime Buildup
Dan Thompson, Advisor
Perla Paola Morales
Timothy Szaflarski
Tianqi Wu
Jing Yu

Bunn-O-Matic Corporation

JAMES F. LINCOLN ARC WELDING FOUNDATION AWARD: BRONZE

Energy Efficiency Design Improvements for Bunn Coffee Makers

Scott A. Burns, Advisor
James Joseph Africh
Jazmyn Jimenez
Michael Kim
Yining Wang

Caterpillar Lafayette Engine Plant

BERNT O. LARSON AWARD, FIRST PLACE

Assembly Process Design and Simulation for Caterpillar Engines

Niao He, Advisor
Shenghan Chen
Kyle L DeAtley
Nuttanon Siratanapun
Joshua Ian Weisberg

Dreadnought Technologies, LLC

Experimental Study of Shot Pattern Scatter Improvement

James V. Carnahan, Advisor
Hannah Victoria DeYoung
Zhonghao Liu
Cole Connor Murray
Samuel Joseph Rubin

DW Fine Pack

Intelligent Production Scheduler for Lean Press Operations

Qiong Wang, Advisor
Mitchell Forrest Babendir
Andrew Louis Doyon
Brian S Maxwell
Erkin Deniz Ontas

Harger Lightning & Grounding

Thermite Igniter Redesign for Cost Reduction

Harry S. Wildblood, Advisor
Tianshi Fu
Kevin Lewis
Lihui Sun
Yunus Emre Yener

Julian Electric Co. Inc.

Lean Material Flow for Production Support

Xin Chen, Advisor
Cynthia Kartika Hidayat
Yue Huang
Andrew Perutz
Alex Tazic

Julian Electric Co. Inc.

Work Instruction Generation Process Improvement

Wayne J. Davis, Advisor
Patrick Joseph Daleiden
Rohan Roy
Michael Vincent Speranza

Jump Trading Simulation and Education Center

Development of a Wireless Vital Sign Monitor for Post-OR Patient Transport (MedBit) Phase 3

Carolyn Beck, Advisor
Alexander L Kmiec
Ryan Patrick Somerfield
Michal Adam Witek
Jason Yue

MacLean-Fogg Component Solutions

Mundelein Development of a Scanning Utility for Receiving Data into ERP System

Sewoong Oh, Advisor
Yasemin Burcu Demirok
Thomas Joseph Jozefowicz
Kovas Kulbis
Charles R. M. Zine

MacLean-Fogg Component Systems Metform Group

JAMES F. LINCOLN ARC WELDING FOUNDATION AWARD: SILVER

Hot Forging Tool Life Analysis and Improvement

Henrique L. M. dos Reis, Advisor
Sawyer Grant Hoffman
Lynsey Alexandra Howse
Nachiketa Pai
Erik Salinas

Morton Buildings, Inc.

Shipping Logistics and Efficiency for Fabricated Parts Distribution

Lavanya Marla, Advisor
Brian Paul Boucher
Bora Refik Cukurova
Mehmet Kaan Serdar
Jordan Alexander Trajkovski

Morton Buildings, Inc.

Trailer Loading Analysis for Shipping Efficiency and Cost Reduction

Linwei Xin, Advisor
Brandon Louis Dunn
Kurt Charles Fester
Matthew Michael Moukheiber
Patrick Nelson

North American Lighting

Material Handling Process Labor Improvements

Liming Feng, Advisor
Haruka Aoki
John Robert Keen
Kento Jann Tee
Jinhao Zhang

OSF Healthcare System

Centralized Pharmacy Layout and Operations Design for Implementation

Harrison Kim, Advisor
Brendan Conlon
Tyler Kim
Yang Lei
Elizabeth Templeton
Razvan Iulian Zaporojanu

OSF-Rockford Cardiovascular Associates

Work Flow and Efficiency Improvement

Dušan M. Stipanović, Advisor
Hyunseung Chung
Rachel Nicole Gonzalez
Gaurav Deepak Jagiasibava
Zixian Song
Fei Xue

Plochman, Inc.

Bottle Paneling Reduction/ Elimination

James V. Carnahan, Advisor
Dawei Li
Jocelyn Dawn Liang
John Anthony Mancinelli
Samuel Robert Trapp

Team CleatGuard

CleatGuard Engineering Design and ProductionAnalysis

Girish Krishnan, Advisor
Erik Khamphouy
Aksel Meric
Arjun Subramaninian

NEW ISE ALUMNI

BACHELOR'S DEGREES

AUGUST 2017 GRADUATES

Industrial Engineering

Deniz Karaca
Nuttanon Siratanapun

Systems Engineering and Design or General Engineering (GE)

Patrick David Moynihan
Fei Xue

DECEMBER 2017 GRADUATES

Industrial Engineering

Virupaksh Agrawal
Ariana R. Bello
Antonia Aisha Benidettino
Pallavi Gowravajhala
Cynthia Kartika Hidayat
Hern Sung Kim
Tyler Sungjin Kim
Aksel Meric
Patrick G. Nelson
Rajan Sardana
Timothy Michael Szaflarski
Nitin Babu Tangellamudi
Kento Jann Tee
Zhangming Zhu

Systems Engineering and Design or General Engineering (GE)

Wan Hee Cho
Thomas Girard DeVaux
Henry Grattan Doyle IV
Marcos Escobedo
Austin LeeRoy Freeberg
Alishan N. Gaglani
Adam J. Goldsher
Sung Ho Jun
Hansaem Kim (GE)
Justin Bontai Koo
Joseph Dean Lund
Yuvraj Chetan Mehra
Derrick Anthony Pemberton, Jr. (GE)
Kevin J. Pommier
Peter C. Wen

MAY 2018 GRADUATES

Industrial Engineering

Martin Grigorov Bantchev
Chandler Douglas Bollman
Simon F. Chen
Joshua Cheng
Gregory Michael Chew
Christina Helene Chillon
Lana Do
Qiyi Dong
Colin Philip Flaherty
Anthony Michael Fontana
Christopher William Forte, Jr.
Natalie An-Na Gaigalas
Sydney Janelle Guillory
Lucas S. Gutzwiller
Michael James Heiser
Thomson Ho
Zachary John Ingram
Madison Lisa Jadzak
Yujie Ji
Sarah Rebecca Kaplan
Yiyang Kong
Daniel Patrick Krueger, Jr.
Joseph Anthony Labriola
Amy Kathleen Lakowski
Micah John Lange
Sophie Elizabeth Lanser
Shangting Li
Yirou Li
Yue Liu
Harshvardhan Rajesh Malpani
Jack Neil Marcoski
David Oberlin Mason
Sahil Mathur
Zhen Mu
Alexander Folsom Murray
Catherine T. Nguyen
Demilade H. Olatunbosun
Taylor Christine Olson
Chan Hyuk Park
Jacob Robert Petersen
Shyam D. Ramaiya
Arusha Reghu
Olivia Helene Reynen
Rachel Rong
Liza S. Ross
Lisa Christine Schmidt
Madeline Ann Schulze
Rorey Drew Seligmann
Ayush Singh
Callahan Morgan Skiles
Demetrios Sofronis
Danielle Nicole Stasik
Kyle Joseph Styve
Siyu Tao
Kylie Nicole Vickery
Anirudh Viswanath
Shuyu Wang
Shilin Xia
Ying Zhou Xia
Shutian Xu
Jason Yin
Yang Yuan
Razvan Iulian Zaporojanu
Ruojie Zeng
Zenith Zhou

Systems Engineering and Design or General Engineering (GE)

Grant R. Anderson
Ilyas Mowonoula Bankole-Hameed

Conor J. Coyle
Adelaide M. Curry
Matt J. Drone
Matthew Richmond Duncan
Jeremy G. French
Jesse Anthony Galioto
Nolberto Garcia
Andrew Gentis
Grace M. Henderson
Louis Chase Holm
Joseph Degnan Jacobs
Thomas Joseph Jozefowicz
Kevin Kenny
Max Kim
Daniel L. Lathrop
Jeong Hu Lee
Bingxu Li
Boyu Li
Michael Liao
Frank Long
Jack Michael McClellan
Edward William Miller IV
Adam Michael Motzel
Akshay Nambiar
Sergio Navar
Mitchell Lewis Quigley
Clara Gillian Schaye
Gabriel Garcia Silva
Jamie Stadnik
Paul William Swedberg
Tat Shing Thum
Edward Vizcaino
Yining Wang
Benjamin Paul Wegloski
Jordan G. Yavari
Rachel Elizabeth Zilz

MASTER'S DEGREES

AUGUST 2017 GRADUATES

Master of Science in Industrial Engineering
Sagnik Das
Kaushik Krishnan
Siyao Luan
Ramakrishnan Narayanan

DECEMBER 2017 GRADUATES

Master of Science in Industrial Engineering
Madhav Arora
Jaydeep Kumar Chanduka
Sharathram Ganesan
Tarun Giri
Shu He
Akshay Hemant Ketkar
Angadvir Singh Paintal
Aditya Shivashankar
Ren Wu

Master of Science in Systems and Entrepreneurial Engineering
John Francis Conway
Xinlu Liu

MAY 2018 GRADUATES

Master of Science in Industrial Engineering
Aishwarya Anandan
Haridut Athi Shyam Sundar
Marigold Bays-Muchmore
Dilin Chen
Yuanling Gan
Adithya Jaikumar
John LaVanne
Haokun Li
Anirudh Madhusdan
Shardul Natu
Chujie Qin
Harshad Rai
Kailash Sridhar
Abhinav Girish Surana
Michael Van Meurer
Bozun Wang
Xu Yang

Master of Science in Systems and Entrepreneurial Engineering
James Dillinger
Sudhams Komanduri Ranganath

DOCTORAL DEGREES

AUGUST 2017 GRADUATES

Doctor of Philosophy in Industrial Engineering
Seyedjalal Etesami
Xiangyu Gao

DECEMBER 2017 GRADUATES

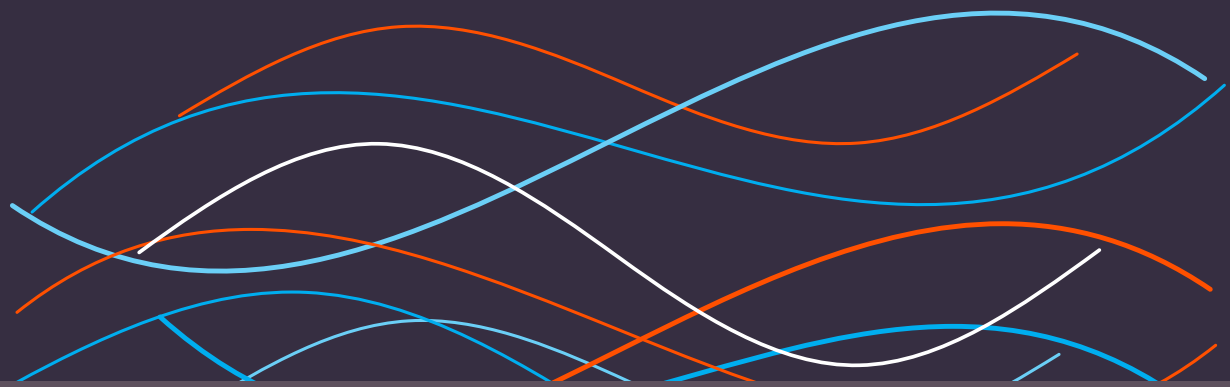
Doctor of Philosophy in Systems and Entrepreneurial Engineering
Daniel Ronald Herber

MAY 2017 GRADUATES

Doctor of Philosophy in Industrial Engineering
Ashish Kumar Khetan
Anh Truong

Doctor of Philosophy in Systems and Entrepreneurial Engineering
Hee Youn Kwon

Note: due to publication deadlines, this list may contain inaccuracies



CONNECT WITH ISE

CORPORATE PARTNERS

The ISE Corporate Partners Program provides corporate partners with unique access to connect, attract, and engage with some of the finest industrial and systems engineering students in the world. For a list of program benefits go to: **go.ise.illinois.edu/ISE-CorporatePartners**.

Please contact me to discuss how your company can work with ISE.

Julie Gustafson
jdg5@illinois.edu
(217) 244-0095

CURRENT PARTNERS

Our heartfelt thanks to our current partners, John Deere, Molex, and Prince Castle.

JOHN DEERE

molex

PRINCECASTLE

ENGINEER IN RESIDENCE

Participate in the ISE Engineer in Residence Program—a program designed to mentor and inspire current ISE students. Meet our students, the engineers of tomorrow, and experience their JUICE.

An Engineer in Residence will

- Spend a day on campus
- Speak to our SE290 class
- Have lunch with good company
- Stay "in residence" for an afternoon of one-on-one meetings with students

Contact Julie Gustafson to schedule!

EIR 2017–18

FALL 2017
David Johnson, BSGE 2003, MSGE2005
Don Field, BSGE 1971
Kelly Moore, BSGE 1983
Tom Willingham, IEBS 1987
Fred Jewell, BSGE 1987, MSGE 1989
Marikay Scott, BSGE 1984
Dave Calvert, BSIE 1971
Glen Betourne, BSGE 1978
Bruce Huber, BSGE 1971, MBA Harvard

SPRING 2018
Jeremy Ward, BSIE 2014
Michael Labowicz, BSGE 2004
Jay Saltzman, BSGE 1990
Don Field, BSGE 1971
Brian Truesdale, BSGE 1994
Mike Harrison, BSGE 1984
Tom Ziegenfuss, BSGE 1979
Mike Murphy, BSGE 1987
Andy Wang, BSGE 1994
Marc Spoor, BSGE 1983

SENIOR ENGINEERING PROGRAM

We invite your company to participate as an Industry Partner in the Senior Engineering Program.

Within this unique class, we routinely accomplish the goals of educating our students with real world problems, solving special problems of our partnering companies and organizations, and introducing your company to potential recruits.

If you have engineering projects that you think may be suitable for this program, please apply online at: **ise.illinois.edu/undergraduate/senior-engineering-program.html** or contact me.

Harry Wildblood
ise@illinois.edu

STAY IN TOUCH

Please drop me a line. I'd like to hear how you're doing.

ISE graduates take myriad life paths. Industrial and Systems Engineers can go anywhere and do anything. Every year I discover new (to me) alumni whose careers I could never have predicted, like Irene Au, Edward Hightower, and others.

I am doubly fortunate: as marketing guy, I have been tasked with selling a high-quality product. As communicator, I am fat with material for great engineering stories.

If you have a story you'd like to tell, drop me a line. Your colleagues, former mentors, and current and future students will all be excited to hear from you.

To send an update, receive ISE materials, order ISE gifts, or offer your story, please contact me.

William Gillespie
gillespi@illinois.edu
(217) 265-6594

Also please consider letting us know about changes in your physical or email address so we can update our records. To find out how ISE is doing, visit ise.ilinois.edu—you'll find new news stories as well as lots of media channels to follow them.

SUPPORT ISE

ISE ENGINEERING VISIONARY SCHOLARSHIPS

A wonderful opportunity to double (or quadruple) your money exists with the ISE ENGINEERING VISIONARY SCHOLARSHIPS: through the end of 2019, The Grainger Foundation will match all donations up to $25 million to ISE ENGINEERING VISIONARY SCHOLARSHIP funds.

This money helps undergraduates with need and merit-based financial assistance.

GIVING BACK X4

Alumna Kelly Moore, and others, discovered she was able to quadruple her gift with a match from her employer, Verizon, which was also doubled by the Grainger Foundation. Many employers match charitable gifts made by their employees, sometimes they even triple or quadruple the gift. Your employer-doubled gift will be doubled again by the Grainger Foundation. This is a great time to leverage these matches. Consider checking with your employer to see whether they match gifts.

Kelly also graced us with an entertaining visit as an Engineer in Residence. For more on Kelly, see Madeleine Hubbard's article at **ise.illinois.edu/newsroom/article/kelly-moore**

Alumna Kelly Moore as a student (left), and giving back x4 (right).

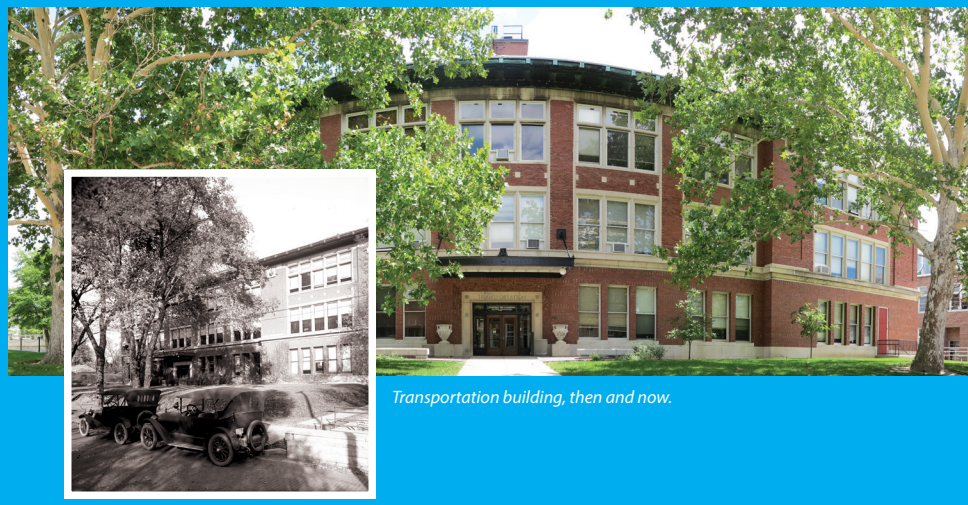
ISE SMART BUILDING FUND

The Transportation Building will soon be a proud century old. With its solid brick exterior, soaring ceilings, and some wonderful architectural touches (from when it held the Department of Railroad Engineering), it's safe to say: they don't make 'em like that anymore.

Our Smart Building Initiative has already provided significant improvements, with more underway. Our goal is a complete renovation of the building. With your assistance, we will do a thorough remodeling; upgrade any legacy HVAC or wiring; expand classroom, office, and lab space, and make the Transportation Building a model smart building, incorporating technology from the Internet of Things (see p.9).

If you're interested in seeing the building that so many of you lived in for so many years while earning degrees retain its historic charm while being renovated into a high-tech and contemporary space, please contact me directly.

John Southwood
jfswood@illinois.edu
(217) 300-5480



Transportation building, then and now.


I S E