

forward

IOWA STATE UNIVERSITY FOUNDATION

➔ *Business in the*

BIG

DATA

SCALE

SUMMER 2016 | VOL. 5 NO. 2

Business in the **BIG DATA AGE**

Iowa State's people have a *long record* of helping companies and organizations thrive. Now they're employing data-driven research so businesses can think even *bigger*.

By Erin Peterson

PERHAPS YOU'VE DONE IT: You click on a link that sends you to a mostly legitimate-looking website for a bank or an online retailer. You hover over the text box that asks for a credit card or a Social Security number, wondering if cyber-villains are waiting to scoop up the information, your identity and the contents of your bank account.

You're not alone. Nearly 30 million people provide personal information to fraudulent "spoof" websites every year, costing them – and the companies those sites pretend to be – billions of dollars. But Drew Zhang, associate professor of supply chain and information systems at Iowa State University, is helping fight these crafty criminals.

Based on statistical learning theory, a framework for machine learning, Zhang and his collaborators developed a powerful algorithm that identified some of the most common "fraud cues" on these spoof websites.

It works. The algorithm identified more than 92 percent of fake websites in a pre-selected pool of 900, about double the rate of most similar programs. For scammers, it's a devastating blow.

"The results [of our work] can be integrated into public resources, like government agencies and nonprofit organizations that maintain 'blacklists' of fraudulent sites," Zhang says.

The algorithm holds promise not just for consumers, who will be able to sidestep some of the internet's shadiest corners, but also companies that are frequently spoofed, enabling them to develop their own methods to attack the work of these fast-moving con artists.

In a business world awash in data, getting and staying ahead often requires finding the proverbial drop of insight in an ocean of information. And at

Data lode



90%
of the world's data has been generated in the past two years.

(IBM)

Data mine



18%
of companies believe they have the skills necessary to gather and use insights from data effectively.

("Marketing in Three Dimensions," 2014)

Data state



By 2018, the U.S. could face a shortage of **1.5 million** managers and analysts capable of using data analysis to make effective decisions.

(McKinsey)

Iowa State, researchers are diving deep into this sea of numbers to help companies understand and benefit from the data around them in ways that will make them more efficient, more secure and more profitable – and, most of all, better able to serve their customers.

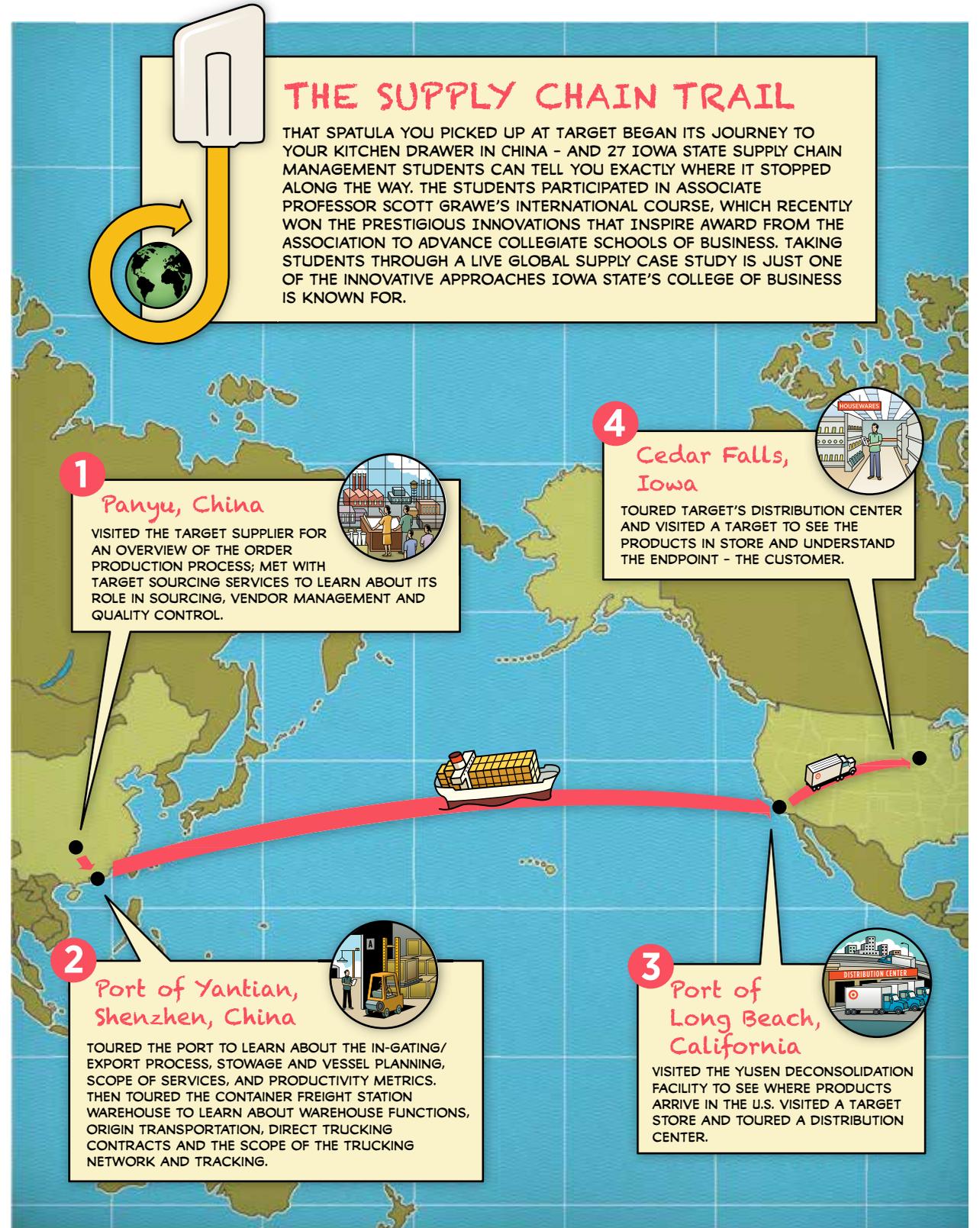
As the demand for data-savvy workers has skyrocketed – a McKinsey study found that the shortage of analytics workers nationwide could reach 190,000 by 2018 – Iowa State has moved in sync with the need, says David Spalding, Raisbeck Endowed Dean of the College of Business. "We've made a series of hires in the area of data analytics," he says. "Combined with our historic strength in areas such as supply chain and technology, we believe we're more able than ever to help businesses with the variety of challenges they have."

Data to decisions

With business success more and more dependent upon carving out the thinnest of competitive edges, College of Business researchers across multiple disciplines are teaming up to find the best approaches to help organizations leverage data to their best advantage. For example, David Cantor, associate professor and Walker Professor in Logistics and Supply Chain Management, is studying how employers can recruit candidates who will work well within organizational systems, monitor employee productivity, and help workers stay motivated once they've been hired. While his own research strengths are in decision-making, Cantor also relies heavily on the expertise of Paula Morrow, Max S. Wortman Jr. Professor in Management, who helps him bring in nuanced social

(continued on p.6.)

PROGRAMS THAT MATTER



THE SUPPLY CHAIN TRAIL

THAT SPATULA YOU PICKED UP AT TARGET BEGAN ITS JOURNEY TO YOUR KITCHEN DRAWER IN CHINA – AND 27 IOWA STATE SUPPLY CHAIN MANAGEMENT STUDENTS CAN TELL YOU EXACTLY WHERE IT STOPPED ALONG THE WAY. THE STUDENTS PARTICIPATED IN ASSOCIATE PROFESSOR SCOTT GRAWE'S INTERNATIONAL COURSE, WHICH RECENTLY WON THE PRESTIGIOUS INNOVATIONS THAT INSPIRE AWARD FROM THE ASSOCIATION TO ADVANCE COLLEGIATE SCHOOLS OF BUSINESS. TAKING STUDENTS THROUGH A LIVE GLOBAL SUPPLY CASE STUDY IS JUST ONE OF THE INNOVATIVE APPROACHES IOWA STATE'S COLLEGE OF BUSINESS IS KNOWN FOR.

1 Panyu, China
VISITED THE TARGET SUPPLIER FOR AN OVERVIEW OF THE ORDER PRODUCTION PROCESS; MET WITH TARGET SOURCING SERVICES TO LEARN ABOUT ITS ROLE IN SOURCING, VENDOR MANAGEMENT AND QUALITY CONTROL.

2 Port of Yantian, Shenzhen, China
TOURED THE PORT TO LEARN ABOUT THE IN-GATING/EXPORT PROCESS, STOWAGE AND VESSEL PLANNING, SCOPE OF SERVICES, AND PRODUCTIVITY METRICS. THEN TOURED THE CONTAINER FREIGHT STATION WAREHOUSE TO LEARN ABOUT WAREHOUSE FUNCTIONS, ORIGIN TRANSPORTATION, DIRECT TRUCKING CONTRACTS AND THE SCOPE OF THE TRUCKING NETWORK AND TRACKING.

3 Port of Long Beach, California
VISITED THE YUSEN DECONSOLIDATION FACILITY TO SEE WHERE PRODUCTS ARRIVE IN THE U.S. VISITED A TARGET STORE AND TOURED A DISTRIBUTION CENTER.

4 Cedar Falls, Iowa
TOURED TARGET'S DISTRIBUTION CENTER AND VISITED A TARGET TO SEE THE PRODUCTS IN STORE AND UNDERSTAND THE ENDPOINT – THE CUSTOMER.

Illustration: Peter and Maria Hoey

psychology concepts that can lend insight to employers seeking to create productive teams with less turnover.

These are problems businesses are eager to solve, Cantor says. “Employers can easily spend \$20,000 to hire a new employee,” he explains. “If we can help them assess workers accurately before they’re hired, it can prevent many problems later.”

Precision data research can also help organizations make the most of their equipment. Sree Nilakanta, associate professor of information systems and director of Iowa State’s new interdisciplinary Master of Business Analytics program, along with his colleague Kevin Scheibe, associate professor of information systems, are studying more than a decade’s worth of maintenance data on hundreds of snowplows owned by the Iowa Department of Transportation.

Because the DOT pays about \$200,000 per plow-equipped dump truck, the agency is eager to squeeze every last ounce of snowflake-scooping productivity from the vehicles – without investing another fortune in repair-related costs. “Can we use the data to predict when certain parts are likely to have a breakdown, for example, so we can take preventive action?” Nilakanta asks.

The snowplow project is the tip of the iceberg for the DOT. For example, faculty and students in supply chain and information systems are examining ways that the DOT can use data from its statewide highway and road video camera feeds to monitor, categorize and quickly disseminate information about road conditions. Such information, shared widely, can help truckers get their freight across the state more quickly, or help motorists make better decisions during rush hour and during



Data hierarchy

The Master of Business Analytics ranked **16th in the nation** among online Big Data programs in the nation.

(ValueColleges)



Chain of command

The Supply Chain Management program ranked **7th in the world in publication productivity**, 2011-2013 *(Transportation Journal)*, and **11th best program in the world for supply chain talent**.

(SCM World)

bad weather, perhaps even saving lives. (See p. 7.)

While Iowa State has a long history of partnering with Iowa-based businesses and governmental agencies such as the DOT, the university is doubling down on these efforts to help them strengthen their data-based work. For instance, Iowa State recently established an Analytics Leadership Council that includes companies such as Wells Fargo, Kingland Systems, and Kum & Go. Such connections are designed to help Iowa-based industries use data to thrive in an increasingly competitive landscape.

Safety in numbers

Iowa has long been home to major players in the insurance industry – and Iowa State researchers are bringing similar customization in data analytics to help these businesses lower their prices, improve their service, and even increase customer safety.

One of those is Rahul Parsa, a faculty fellow in the department of supply chain and information systems who works in the area of rate-making – the process by which insurance companies determine premiums. He says that large amounts of available data allow researchers to develop sophisticated, customized pricing. For example, insurers have learned that the higher your credit score, the less likely you are to get into car accidents – and have set premiums accordingly. Agree to plug a device in your car that tracks your driving behavior and you’ll likely save even more.

While some of us might balk at the idea of letting an insurance company peer into our private lives, Parsa says the upside of all this data could save both the insurer and insured money, headaches and lives. As an insurance company gets to know more about us, our whereabouts,

(continued on p.8.)

SCIENCE THAT MATTERS

Where the data meets the road

An on-the-job project convinced Matt Haubrich of the value of a new master’s program.

As transportation asset management administrator for the Iowa Department of Transportation, **Matt Haubrich** spends a portion of his days looking at how to optimize

investment in all the cars, trucks and other vehicles that maintain Iowa’s highways. When he approached Iowa State associate professor Sree Nilakanta, he wanted to find out if the state was keeping its snowplows on the road too long – or not long enough.

As he helped Nilakanta get up to speed, Haubrich found himself fascinated by more than just the potential solutions. “Sree and his team were approaching problems

in really interesting ways,” he says.

He realized he wanted to absorb the professor’s entire way of problem-solving. An Iowa State graduate with a bachelor’s in statistics and an MBA, Haubrich enrolled in the university’s Master of Business Analytics program.

He’s already implementing what he’s learned, such as using vehicle-based cameras to improve driver safety. “It seemed like something that only a company like Google could do,” he says. “Now I know that a lot of pie-in-the-sky ideas we’ve had are more feasible than I ever thought.”



Photo: Paul Gates

and even the weather in our neighborhoods, it can act the way a helpful neighbor might. “Perhaps your car insurance company could text you to say, ‘there’s a storm near you that will bring hail to your neighborhood, make sure you and your car are somewhere safe,’ he says. “Your home insurer could say ‘there’s a tornado on the way, here are the steps you need to take.’”

Although much of Parsa’s work to date has been insurance-focused, he sees great opportunities to apply such data analytics to non-business uses, for instance partnering with the College of Agriculture and Life Sciences to help farmers protect their livestock before extreme weather events.

Likewise, Drew Zhang, who held positions at Google, Microsoft and IBM before arriving at Iowa State, is using his expertise to devise algorithms that mine data from sources such as Twitter feeds and Amazon reviews to understand how consumers feel about specific products, and turn those sentiments into product sales predictions.

While it’s not new that marketers are using such information to sell us, well, everything, Zhang looks deeper into the data to understand which features people do or don’t like about specific products. In some cases, the discoveries might help zero in on a safety flaw early, launch a recall, and inspire new product designs. “There are so many connections we can’t make with just the naked eye,” says Zhang. “Data mining helps us see important patterns and take actions on them.”

The industry experience of business faculty like Zhang combined with their ongoing research in data analytics is especially valuable in preparing students to help the organizations they’ll work for make the best use of data to develop the

innovative products and services that will make all our lives better.

Unlocking the future

As the world moves forward, the organizations poised to succeed are the ones that can take advantage of the data being generated in ever-growing volumes. And Iowa State’s interdisciplinary, collaborative culture uniquely positions the university to help everyone – from organizations to individual consumers – benefit from the insights being unlocked in these data.

Spalding says that gifts to support specific initiatives can strengthen the university’s hand even further. “The market for faculty and researchers is a global market, so having funds to support endowed positions will allow us to hire the best possible faculty,” he says. “And while there are great opportunities in the future for students who want to enter these fields, scholarships can be the encouragement they need today.”

And great opportunities for the businesses and organizations these graduates will serve. “At Iowa State, we’re able to bring in all of our strengths across campus, like computer science and computer engineering, and management information systems,” says Spalding. “We can build on relationships we already have with industry. We’ve already done a great deal, but there’s also much more that we can do.”

What you can do

As businesses increasingly rely on data and analytics as a vital resource in increasing the bottom line, philanthropy allows Iowa State to move in sync with their needs, through:

- Support for scholarships and opportunities to engage in live-case competitions and experiential learning that enable business majors to integrate data analysis skills into their chosen majors.
- Support to allow Iowa State to compete in the global market for top faculty in emerging areas.
- Support that increases Iowa State’s ability to be responsive and agile in engaging in real-time opportunities that move programs forward.

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GIFTS *at* WORK

EXTENDING IOWA STATE’S IMPACT THROUGH PHILANTHROPIC GIVING



➤ Dedicated trendsetters

In the spotlight is Kate Bruce, left, whose “Beauty Found in Office Supplies” collection won the Lora and Russ Talbot ISU Fashion Show ‘Best in Show’ Scholarship at the 2016 Iowa State Fashion Show.

Photo: Amy Vinchattle

GETTING THE WHEELS SPINNING

Conceived and carried out almost entirely by students, the CyBike project combines multidisciplinary know-how with maker can-do.

By Veronica Lorson Fowler | Photo: Paul Gates



» Wheel appeal

"Spokes"-persons Kelly Jo McConoughey and Jared Morford get ready to take CyBike out for a spin.

THE CYBIKE STUDIO SPACE in the armory on Iowa State's campus practically vibrates with energy and ideas. The soaring metal rafters shelter a network of cubicle walls that can barely contain the accumulated bike parts, tools, sketches and presentation boards. Then there are the sticky notes – hundreds of them in color-coded groupings that detail everything from handlebar design to rider preferences.

An early CyBike prototype leans against one wall. Just past it are a handful more in various states of disassembly. A colorful architectural sketch of a proposed bike shelter catches the eye, as does the white electronic docking station that looks nothing like the bike racks on campus most of us remember.

This is what invention, innovation and teamwork look like at Iowa State today. And it's just one example of the kind of collaborative, hands-on projects students expect to engage in here to prepare them to be creative, contributing team members in their careers.

Spearheaded by then-industrial design graduate student Mark Kargol, now a lecturer in the College of Design, the CyBike project has involved about 150 students in 11 academic majors who built the system from the ground up over the past three academic years.

One student team researched and created a detailed 300-page streets policy and campus infrastructure improvement plan. After building a few prototypes, another group engineered and designed a fully operational bicycle and docking station with an electronic checkout system that uses students' ID cards to track bikes.

Other students developed cloud-based software and phone applications



» Building the place for science with practice

The CyBike collaboration underscores what students working together as teams can accomplish given the room and resources. Right now, however, workspace to accommodate student maker projects and groups are at a premium on Iowa State's campus.

The planned Student Innovation Center will accelerate the university's student-driven culture of innovation, empowering the collaborations that put beyond-the-box thinking into practice.

Says College of Design Dean Luis Rico-Gutierrez, "We already collaborate and innovate, but this doesn't happen in the most conducive environment or best conditions. We could be so much more effective with a new facility devoted to making."

for bike users, while the bike shelter team's design was constructed from recycled materials.

Kelly Jo McConoughey, an industrial design senior from Livonia, Michigan, helped design parts for the metal docking station digitally, in collaboration with mechanical engineering students, then worked directly with a fabrication company to bring the design to life. "This project is so real world," she says. "It's easy to design a bike, but then to build it and determine how it will work in real-time was an eye-opener!"

Jared Morford, a community and regional planning graduate student from Watertown, South Dakota, agreed that it's the actual step-by-step practice of taking a project from concept to reality that was of most benefit to him. For example, "I spent two weeks researching just to figure out all the legalities of the Americans With Disabilities Act and how it applied to our bikes."

CyBikes are likely to be available on campus starting in fall 2017. Plans call for 350 bikes that can be checked out or returned at one of 700 electronic self-serve docking stations. And not only will Iowa State gain a bike share system tailored to the needs of its students, but students are getting the chance to invest their ingenuity and energy into shaping their campus for the future.

EXPANDING POTENTIAL EXPONENTIALLY

Building on its historical strength in plant breeding, Iowa State is again breaking new ground.

By Steve Sullivan | Photo: Paul Gates



➔ **Culling for novel traits**
Patrick Schnable, center, supervises students screening thousands of corn plants for natural variants in the Carver Co-Laboratory.

FOR MORE THAN A CENTURY, Iowa State University's plant breeding programs have improved the productivity and quality of crops for farmers, enabling the Midwest to lay claim to feeding the world.

Today, however, this aim has become a multidisciplinary endeavor, bringing together people from across campus and in dozens of fields.

One of the people at the center of this work is Patrick Schnable, director of Iowa State's Plant Sciences Institute and holder of the Iowa Corn Promotion Board Endowed Chair in Genetics.

Schnable was a lead researcher on the four-year, \$31-million project that successfully mapped the corn genome in 2009. That effort may have been easier than the problem he and his colleagues are now in a come-from-behind race to solve: meeting increasing demands for food, feed, fiber and fuel produced on shrinking arable land and with diminishing water supplies. A changing climate only compounds the complexity of this undertaking.

"Our agricultural system developed over 10,000 years during a period of exceedingly stable weather patterns," Schnable explains. "Our challenge now is to develop varieties that produce acceptable levels of yield even if our weather is going haywire."

A multidisciplinary approach is vital if we are to meet this challenge, Schnable says. For example, groups of plant biologists, engineers and computational scientists in the Plant Sciences Institute are performing research focused in predictive phenomics, looking at massive amounts of data to create systems and models to predict yield.

Some data will be generated by Genomes to Fields, an initiative involving researchers in 18 states



➔ Predictive phenomics 101

Scientists in the field use a formula to explain predictive phenomics:
P = G + E + G x E.

Here's what it means:

P = Phenotype, which refers to a plant's traits.
G = Genotype, the plant's genetic makeup.
E = Environment, the external conditions.

Predictive phenomics attempts to understand in detail the effects of a plant's genotype and the environment, and the interaction between the two, on the plant's traits. Understanding these factors will lead to developing better predictive models for plant breeding.

planting the same hybrid varieties that is funded in part by the Iowa Corn.

"Nothing like this has ever been done," Schnable says. "Because of this level of coordination, we'll have a public database of the genotypes and phenotypes from multiple hybrids grown in multiple environments. This project will provide information that will help breeders create new hybrids that can perform well under variable weather conditions."

Another group is using modern computing power to collect and analyze data from yield trials conducted since the 1930s by agricultural experiment stations throughout the country.

"We're taking decades of information about varieties and genotypes and building a database that has relevance today," Schnable says.

Dan Nettleton, Distinguished Professor and Lawrence H. Baker Endowed Chair in Biological Statistics, provided graduate students with historical yield data for certain varieties and asked them to predict the yield for a subsequent year. "They had a 93 percent accuracy rate," Schnable says.

None of this would be possible without the right people and the right physical and cultural environment that fosters the cross-disciplinary work that is needed to solve these looming problems. Iowa State engineers are designing robots, sensors and other advanced equipment that monitor plants in the field and lab. Computer scientists crunch and analyze the data they collect.

"We've created a great place for students to learn, and for people from disparate disciplines to connect," says Schnable. "The collaborative spirit we have here is truly exceptional."

NEWS

Contributed photo



A SERENDIPITOUS MODEL

As renovations took place in Marston Hall, construction began on the reproduction of the Marston Water Tower at a kitchen table in Springfield, Virginia. Nicholas Barney, the great-great-grandson of Anson Marston, for whom the landmark hall and water tower are named, created a model of the Marston Water Tower during a year-long project for his third-grade class. Marston's innovative legacy lives on in Nicholas, who used cardboard, pipe cleaners, masking tape, clay and fishing line to construct the model tower.

Retiring honors

Two retirements this spring bring to a close almost 100 cumulative years of serving Iowa State.

Senior vice president for business and finance **Warren Madden** retired after 50 years of service to Iowa State. Madden, a 1961 industrial engineering graduate, began working at Iowa State in 1966 as the first contracts and grants officer and was named vice president for business and finance in 1984. He and his wife, Bev, former food science and human nutrition professor and career services director, plan to remain in Ames and continue volunteering in the university and community.



Warren Madden

Pamela White, Endowed Dean of Human Sciences and University Professor in food science and human nutrition, served Iowa State for more than 40 years. She was interim dean of the College of Family and Consumer Sciences from 2003 to 2005, and served as interim dean of the newly formed College of Human Sciences on two occasions before becoming its permanent dean in 2009. She guided the college through record growth, and enhanced the reputation of its academic programs.



Pamela White

Funds have been established in Madden's and White's honor: the Warren Madden Honorary Fund (www.foundation.iastate.edu/madden) and the Pamela J. White Leadership Award (www.foundation.iastate.edu/white).



Lighting up the page

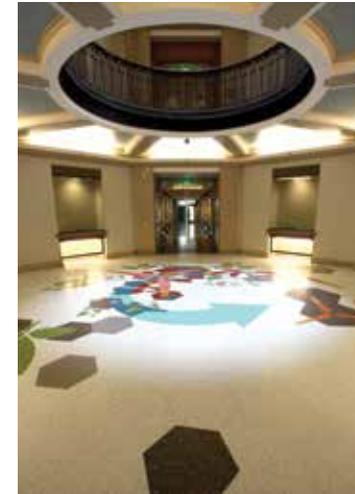
Predicting massive power grid failures, such as those that have shut down entire regions like the Northeast blackout of 2003, used to be impossible. That is, until **Ian Dobson**, Iowa State professor of power engineering and a blackouts expert, and a pair of physicist colleagues created a simulator that imitates large-scale blackouts. The breakthrough research, along with Dobson, the Arend J. and Verna V. Sandbulte Professor in engineering, was featured in Discover magazine's March 2016 issue, shedding a bright light on blackout research and Dobson's work at Iowa State.



Photo: Discover Magazine/Photographer Russ Juskalian

IMPACT

Photo: Cameron Campbell



Good as gold

Students can (figuratively) bask in the golden glow of the College of Agriculture and Life Sciences' student services mall and Harl Commons in Curtiss Hall. Each interior space earned Iowa State a Leadership in Energy and Environmental Design Gold Award for incorporating sustainable and environmentally sensitive design, construction, operations and maintenance into their renovation. Elements such as using materials and products manufactured within 500 miles of campus that also contain recycled material earned credits on the LEED scale. Installing Energy Star appliances and using paints, varnishes and flooring which emit low levels of volatile organic compounds in the spaces were also recognized. The awards are the 10th and 11th bestowed by LEED to Iowa State facilities and spaces.

STEPPING UP STEM

Three decades ago, Iowa State began concentrated efforts to empower and enable women and students of color to study science, technology, engineering and mathematics. Now, the Program for Women in Science and Engineering celebrates its 30th year on campus, while Science Bound, a program to bring young people of color to Iowa State to study science and math, commemorates its 25th anniversary. Both programs are key to encouraging and retaining diverse STEM majors at Iowa State through learning communities, outreach and scholarship programs, and creating routes for students to achieve a college education in these majors. Together, WiSE and Science Bound have spent more than half a century advancing women, people of color, STEM and Iowa State!



Photo: Science Bound

NOTABLE QUOTES

"Iowa State's programs take you around the world and around the block, and they do so with pride, integrity and innovation. I have had massive success my first year as a teacher, and I know it's because of the quality education I received at Iowa State."

— Gabrielle Sherman, 2014-15 recipient of the Terry Peterson Denny Scholarship and 2015 Iowa State graduate in elementary education.



"The work the Iowa State University Foundation does provides much of the ability of this university to take advantage of new situations, and to support the best of our best in research, graduate teaching and undergraduate programs."

— Catherine Kling, professor of environmental and ecological economics, remarking on the value of philanthropic support at the medallion ceremony naming her as the President's Chair in Environmental Economics.



"Dale Grosvenor earned degrees in multiple subjects and held academic positions in multiple departments. He's an individual that was interdisciplinary before it was cool to be interdisciplinary. So it seems most fitting that the first occupant of the chair that bears his name also made her mark in the frontier of multiple disciplines."

— Max Morris, professor and chair of the department of statistics, awarding the inaugural Dale D. Grosvenor Chair to Karin Dorman, professor of statistics and genetics, development and cell biology.



IMPACT



Photo: Kathryn Gamble

Moving students forward – far forward

Since 2012, *Moving Students Forward*, Iowa State University President Steven Leath's initiative to raise private support for students, has given more than 32,000 awards to 14,495 students through spring 2016. That's \$50,260,073 awarded to bright, ambitious Cyclones!

ACCOLADES



ENGINEERING DISTINCTION

Sarah Rajala, dean of the College of Engineering and James L. and Katherine S. Melsa Professor of Engineering, has been named national engineer of the year by the American Association of Engineering Societies, which represents 17 multidisciplinary engineering societies from industry, government and academia. The AAES national engineer of the year award recognizes Rajala's outstanding service in three key areas: inspirational leadership at the institutional, national and international levels; innovations in engineering education and assessment; and her tireless efforts to promote diversity in the engineering field.



Photo: Christopher Gannon

VINCENT GOES VIRAL

Last December, a video telling the story of a 3-year-old domestic short-haired cat named Vincent, who received prosthetic titanium-alloy hind legs at Iowa State's Hixson-Lied Small Animal Hospital, went viral around the globe, garnering millions of views. Even more significant is the worldwide attention the video brought to the innovative advances in orthopedic endoprosthesis taking place in Iowa State's College of Veterinary Medicine. Only a few dozen animals in the world have received the sort of prosthetics Vincent has. His case in this "emerging field" may help answer questions and make implants a more practical solution one day.



Photo: Jim Heemstra

Distinguished by deed and dedication

Each spring the Distinguished Awards Celebration recognizes alumni and friends of Iowa State who honor the university through their contributions and successes. The 2016 honorees (in bold) are:

(l. to r.) Row 1:

Ruth M. Harpole and Janice Marie Harpole Jessen, Honorary Alumni Award; Long Vo Nguyen, Distinguished Alumni Award; Jay-Lin Jane-Topel and David G. Topel, Order of the Knoll Faculty and Staff Award; Delbert A. "Hank" Harris, Distinguished Alumni Award.

Row 2:

Charles Lettow, Distinguished Alumni Award; Jeffery Johnson, Talbot Alumni Association Endowed President and CEO; Larissa Holtmyer Jones, President and CEO, Iowa State University Foundation; Craig K. Denny (and the late Terry M. Denny), Order of the Knoll Cardinal and Gold Award; Sharon A. and Donald F. Greenwood, Order of the Knoll Campanile Award; Diane Duren, Union Pacific Corporation, Order of the Knoll Corporation and Foundation Award; Steven Leath, President, Iowa State University.

MATTERS OF THE HEART

Creating compassionate care as a legacy.

By Debra Solberg Gibson | Photo: Paul Gates

IN 2003, PHYLLIS CLARK, brought her pet, Tache, a 6-year-old domestic shorthair cat, to Iowa State University's small animal hospital, now the Hixson-Lied Small Animal Hospital. Clark's local veterinarian had tentatively diagnosed Tache's shortness of breath and sluggishness as congestive heart failure, but needed Iowa State veterinary cardiologist Dr. Wendy Ware to confirm.



"I was amazed, and felt humbled," Ware says about learning of the gift. "It's especially hard when we work with clients for a period of time. You know their circumstances, you know how deeply they care for their animals. There have been tears shed all around in some cases."

For nearly 30 years, Ware served as the college's sole – and first woman – veterinary cardiologist. Ware's training included a residency program at Ohio State University, which

has led her to consider helping enable a similar training ground for future veterinary cardiologists with funds from the Clark Professorship. Ware also hopes to use professorship funds to hire more students to assist with research projects, and conduct surveys to investigate and improve the client experience and home management for pets with congestive heart failure.

And at the top of her wish list? The purchase of a heart sound simulator system that will help students learn to recognize and distinguish different normal and abnormal heart sounds. "It's a challenging skill to learn," Ware explains, but one of great importance when determining matters of the heart.

Phyllis Clark would have liked the sound of that.

Thirteen years later, Ware still remembers the "very quiet, very pleasant woman" she met at that first appointment, who was clearly concerned for her ailing pet. For the retired legal secretary, her cats were her family. She accepted that Tache's enlarged heart meant she'd soon be gone, though Ware was able to ease her discomfort a few more times in the coming weeks. Four months after the initial appointment, Tache died.

Though Ware never saw Clark again, the veterinarian's ability to assuage Tache's discomfort and extend Clark's time with her cherished pet resonated with the Des Moines woman, who passed away in 2014: Last year, the College of Veterinary Medicine received a substantial gift from Clark's estate establishing the Phyllis M. Clark Professorship in Veterinary Cardiology – with Ware named the position's first holder.

You know [clients'] circumstances, you know how deeply they care for their animals.

WENDY WARE
Phyllis M. Clark Professor
in Veterinary Cardiology

Illustration: Evanny Henningsen

WAYS TO GIVE

➔ The Iowa State University Foundation can help you give a gift that moves lives forward.

Dean Ruby



I chose to give back to Iowa State because the balanced education I received here – general liberal arts studies infused with a good, solid education in physics – prepared me to problem-solve, an invaluable skill that enabled me to come up to speed quickly whenever I started a new project. I encourage others who benefited from their Iowa State education to step up and do the same for the departments they graduated from. When you do, you're not only helping individuals, but also our society.



– **DEAN RUBY**, class of 1953, whose career in aerospace spanned NASA's Apollo, Space Shuttle and Space Station programs. Ruby has established scholarships to support undergraduate and graduate students in physics through current and planned gifts, as well as the Zaffarano Physics Lectureship, named for his mentor at Iowa State, Daniel Zaffarano.

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