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GEEK STYLE
The Summer 2018 WPI Journal carries a mixed marketing message for me. I do not know Allan Sword (“Planetary Vision”), and I’m sure he is a wonderful, intelligent engineer—but the geek factor in the front cover and the inside front cover is quite overwhelming.

We all know, even we old 1963 guys, that “geekiness” was part of being an engineer. We obviously had conversational skills (or the lack thereof), that branded us as engineers. The numerical response to “What’s new?” was pretty scary. But Mr. Sword seems to be making a statement that the school lauds its geeky grads. Red shoelaces, blue socks, orange sunglasses topped off with a bow tie? Yikes!

If this issue was designed to put WPI over the top with strangeness, good. Mission accomplished. If some very bright candidate comes through the Admissions Office door wearing two different socks, rainbow hair and piercings everywhere make sure, if you want him, to send him home with the latest Journal.

— Ted Zoli ’63

CHORALE CORRECTION
I just received my WPI Journal and read, with interest, the “Ask the Archives” item on women at WPI. Unfortunately you got the establishment date for the Women’s Chorale wrong. It was founded in the fall of 194. Asta Dabrila ’77, Jayne Franciose ’8, and I were the original members. We sang together under the direction of Louis Curran for three years. We had concerts by ourselves as well as with the Glee Club. We were given the opportunity to join the Regis Chorus so that we could travel to Germany and Austria with them, and with the Glee Club in 1977. One other woman and I took advantage of this. In the fall of 1977, Louis gave up the directorship. We were then bussed to Anna Maria to sing with them. That was when we were introduced to Malama Robbins, and the rest, as they say, is history.

— Zita Babickas Lounsbury ’78

BEDTIME STORIES
I was shocked to read that in order to create a safe space, a WPI assistant professor will visit the gender inclusive dorm floor to read bedtime stories (“Faculty Snapshot,” Spring 2018 WPI Journal). Give me a break! If young adults must be sent off to sleep by someone reading them a story, what are they doing living away from home? And, what is a faculty member doing in a dorm with first-year students in such a fragile state? Does not sound safe to me. I am really sorry to see that WPI has succumbed to the culture wars. This is not how to build strong leaders and innovators. Please cancel my subscription to the Journal.

— Doug Hawks ’80 ’84 (MS PH)

EARLY WOMEN
I enjoy the articles in the WPI Journal. The “Ask the Archivist” column in the most recent issue, however, opened with the statement, “Although female students were not seen on the WPI campus until the fall of 1968...” That cannot be correct. I was a WPI student from 1963 through 1967 (BS Physics). In at least two of my classes, there were female students. One class was a math class with the late Professor van Alstyne, I remember that clearly. I never had any contact with either of these females, but noted their presence in the classrooms. I have no idea if they were taking the classes for credit through another local university or were there for some other reason, but they were certainly on campus.

— Robert “Mike” Malbon ’63

EDITOR’S NOTE: Mike is correct. Although women were not officially admitted to undergraduate degree programs until 1968, there is anecdotal evidence of women who took WPI classes. And, of course, there is Audrey Carlan ’57, who earned a master’s degree in physics at WPI. She holds the distinction of being the university’s first female graduate. Readers with memories of that pre-coed era are invited to share their memories with a note to wpijournal@wpi.edu.

CORRECTIONS: Photo of WPI’s first female instructor, Harriet Goodrich, and our first librarian, Elizabeth Francis, were reversed in the “Ask the Archives” column in the Summer 2018 issue. Francis is at top, left, on page 11; Goodrich is to the right.

Apologies to Natalie Bloniare ’20, a co-creator of the game Gotta Go, whose name was omitted from the article “Game Changers” in the Summer issue, and to Mike Stephens ’57, whose name we misspelled in Class Notes.
LL Dana, it’s so exciting to be with you to talk about our athletic programs, which engage so many students across our campus. Tell us a little bit about how our students are engaged in athletics.

DH I don’t think people realize the extent to which our students want to be healthy and active. We not only have 18 varsity sports, but also over 1,500 students involved in intramurals and over 1,000 involved in club sports. It’s a large, active group of students who want, on a daily basis, to engage in sport, or they want to come in and just work out in the rec center.

LL Since PE is still a requirement to graduate, all students are engaged in physical education as part of their degree program.

DH Exactly. We try to embrace all of their passions, whether it’s being involved in club or varsity athletics, or trying new things in a class. We’re broadening our offerings—from Zumba to rowing for fitness—and our students are enjoying them tremendously.

LL Our varsity athletes are not only incredibly talented, on the field or on the court, but they’re amazing students in the classroom, right? They really kill it on the studies.

DH Yes, they do. We’re very intentional about the term student-athletes. They’re here to get their education, and we feel that we are supporting their academic program by helping them to be resilient, to work hard, work in teams, and learn about accountability and expectations. It’s a great synergy and we’re finding that those students who excel academically also want to excel athletically. All our teams boast a 3.2+ GPA.

LL It feels to me like athletics is a natural part of the WPI Plan-based education, where our students learn lessons by doing things in the real world, whether that’s in athletics or with community service.

DH We really want them to be the well-rounded individuals they’re trying to be in the classroom. We feel that athletics embodies the WPI Plan. You know, there is nothing like a scoreboard to tell you if you’re doing well or not, but it’s also behind-the-scenes helping them learn more about themselves as individuals, learn how to work well with others—that resilience and grit they’re going to need moving on, not only in their professional lives, but also in their personal lives.

LL Right. In a fast-changing world, a lot of grit is good. Now let’s talk about this amazing building we’re sitting in. The “new” Sports and Rec Center just celebrated its fifth anniversary. I really believe that new buildings can inspire new thinking and new ways of doing things. Tell us how this building has changed athletics at WPI.

DH When we moved over here from the wonderful Alumni Gym, we basically had a new way of thinking, because what we did before did not translate to this new building. It opened up new opportunities, ideas—and it’s not just athletics, but also about what the university has been able to accomplish. We have used this building for admissions, open houses, career fairs, and your...

LL My inauguration ceremony was in this building!

DH Right! Lots of other special events too—we’re holding ballroom dance competitions, we’re bringing robotics competitions here. So, it’s really changed who we are, what we are, and what we want to be. The sky’s the limit for us in the future with this building.

LL And it has especially helped us attract great student-athletes and coaches.

DH Exactly! When we know of student-athletes or coaches who are considering WPI, they can’t believe what we have—not just inside with the Rec Center, but also the outside...it really blows people away. It’s not only new, it’s also well done. It embodies what WPI is all about. It’s excellence personified. And that’s what we love about this space—it really has made our work so much better for the university.

LL Well, keep striving. Keep winning. Go, Engineers!

DH Go, Engineers!
The WPI community is proud to support the institution, its students, and its faculty. You helped WPI raise over $300,000 during the last Giving Day. Join thousands of alumni and friends who will support WPI on Giving Day 2018.

4,337 undergraduate students
2,091 graduate students
200+ student clubs and organizations
20 NCAA Division III varsity sports
516 full- and part-time faculty
40+ project centers on six continents

ONE challenge to support

Start following November 1
wpi.edu/+givingday
When Rachel Wambach ’18 walked into a farm-to-table restaurant in Cerrito, Paraguay, she had to seat herself, pour her own water, and guess at what the buffet dishes were. With that service, you’d think she wouldn’t go back.

But Wambach returned multiple times over the course of D-Term 2017. She and her two IQP teammates at WPI’s Paraguay Project Center were tasked with improving hospitality at the restaurant, which is based at an agricultural high school and staffed by students who had never eaten out themselves.

“The difficulty came from the fact that many of the students working in the restaurant as servers and hosts had never even been to a restaurant. They didn’t know what they were supposed to do,” says Wambach, a biology major who graduated last May.

By the end of the seven weeks, the IQP team had evaluated every aspect of the customer experience, modeled proper technique by serving the students, and developed training videos and curriculum to help teachers implement their suggestions. The team presented its report in Spanish to their advisors and the project center’s host, Fundación Paraguaya.

The Paraguay Project Center began as a pilot program in 2014 after Martin Burt, director of Fundación Paraguaya, told a WPI audience about his nongovernmental organization’s mission to end poverty in his country by equipping people with the skills and resources to support themselves.

After the talk, Professor Robert Traver asked Burt how he could help: “I told him, ‘I’m not a Latin American specialist, I’m not a development specialist, I don’t even speak Spanish, but I can get you student teams.’” The two worked together with Burt’s wife, Dorothy Wolfe, now co-advisor with Traver of the project center. Traver enrolled in Spanish language classes, and by 2016, the project center was running at full force. It’s the only one at WPI that requires students to be proficient in the host country’s language. Very few people in Paraguay speak English, where the official languages are Spanish and Guarani.

Wambach was drawn by the opportunity to use her Spanish minor and to spend time in a country she likely wouldn’t visit as a tourist. The following year, civil engineering major Zachary Abbott ’19 traveled to the Paraguay Project Center for the same reasons. His IQP team looked at how technology could improve education in 10 rural schools.

None of the schools had Internet-connected computers, but most students had access to smartphones. The group worked with the schools’ faculties, showing them ways to use apps, e-learning sites, and social media to teach, plan, and communicate with students and families.

Extending learning to individual smartphones could also help the indigenous students keep up when they miss school, where absenteeism is high. The students are often called away to help hunt and harvest food. Heavy rains often make the trek to school difficult as well, says Nicole Franco ’19, a robotics engineering major. She and her teammates walked up to two miles to reach some of the schools.

“It was like walking in the shoes of the students and it helped us understand that when it rains, you’d rather stay home than walk through the mud,” she says.

A highlight for many IQP students at the project center was getting to know the people of Cerrito, a rural township of 5,000. Franco said she and her teammates would often stay behind an hour or more at the schools they visited, teaching the students English and learning Guarani and indigenous dialects from them.

Abbott spent a weekend helping build a small house for an indigenous family with five young children. “Even though they had so little, they were so generous and kind,” he says. “I didn’t want to leave.”

—Sharron Kahn Luttrell
Once a common sound on summer nights in the Northeast, the eponymous call of the whip-poor-will is heard by few these days, as the bird’s breeding grounds have shrunk, largely due to habitat loss. WPI biologist MARJA BAKERMANS, whose research in conservation biology has focused on the ecology of migratory songbirds, wants to help reverse that trend. But to attack the root causes of the whip-poor-will’s decline, she must first shed light on the habits of this mysterious nocturnal creature—for example, where it goes on its winter migration.

Bakermans, her husband (Massachusetts state ornithologist Andrew Vitz), and a team of WPI undergraduates are working to track the whip-poor-will’s annual southward journey. Working at the bird’s few well-used breeding sites, they capture adults with mist nets and then outfit them with tracking devices that fit over their wings like tiny backpacks. When the tagged birds return the next spring, the data reveal their migratory routes, stopover spots, and wintering locations. “As we work to conserve species, we need to know where the threats are,” Bakermans says. “And for our New England species, the threats may lie more on the wintering ground. We just don’t know.” By taking the fate of this cryptic night dweller in her hands, Bakermans hopes to once again make its lonesome song a familiar sign of summer.

Read more about this research in The Daily Herd at wpi.edu/+herd.
Last winter a series of severe Nor’easters gave a vivid picture of how rising oceans and intensifying storm patterns could put valuable properties of Boston Harbor underwater. The world watched in disbelief as kayaks plied the city streets and T stations turned into wading pools.

The robustness of Boston’s working waterfront underwent scrutiny by a team of WPI students. Their Interactive Qualifying Project, “Evaluating the Vulnerability of Boston’s Inner Harbor Designated Port Areas to Sea Level Rise and Coastal Storms,” advised by professors Seth Tuler and Jennifer deWinter, was sponsored by the nonprofit Boston Harbor Now. The findings made national news through an MSN Weather report on the issue.

Examining 18 representative parcels in the city’s industrial Designated Port Areas, the students found that 88 percent of the land lies in a predicted flood zone. With large quantities of hazardous chemicals and fuel stored on site, the release of toxins could pose significant health and safety risks. Recovery would be dubious, with only one in three businesses queried documenting that they have adequate resources in place.

Among the team’s recommendations to the city were the formation of a joint regulatory commission and the passage of regulations to require flood-proof containers for hazardous chemicals, with regular inspections and repairs.

“The report was a key topic of conversation during Boston Harbor Now’s January Working Port Symposium,” says Jill Valdés Horwood, the organization’s director of policy. “Boston is at a pivotal moment in time to address resiliency in a timely and cost-effective manner. This project report is an important first step to highlight the different threats and solutions.”

—Joan Killough-Miller

“People may try to tell you that you have to choose between doing your job and doing the right thing, but it’s a false choice. Doing the right thing is your job.”

Honorary degree recipient Margot Lee Shetterly, author of bestseller Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race, in her 2018 Undergraduate Commencement address. She praised WPI graduate Henry Reid, Class of 1919, suggesting he did the right thing by hiring those “hidden figures” at NASA.
The Foisie Business School’s first PhD recipient not only discovered a warm, supportive community at WPI but she also found herself diving into an emerging technology that could very well change the way we receive information on the Internet. Mina Shojaeizadeh left her homeland of Iran eight years ago to pursue a master’s degree in physics at WPI. Achieving that goal, she continued on to work on her doctorate in information systems, with a concentration in innovation with user experience.

She says she stayed at WPI because of the people she met here, who she says made her feel included and supported. She changed her focus of study from physics to the design of computer interfaces and how people best receive and use information on them. She said she wanted to be able to improve people’s lives. Focusing on business enabled her to put her scientific background into practical use, she says. Her work has been focused on creating websites and systems that will automatically change to meet individual users’ needs, making it easier for people to find and understand information.

“WPI changed everything for me,” Shojaeizadeh says. “It really changed my path.”

—Sharon Gaudin

Through a new initiative, Supporting WPI through Effective and Equitable Teamwork, this fall WPI researchers are teaching students how to identify and address bias in teamwork.

SWEET, funded by a $240,000 grant from the Davis Educational Foundation, comes to life during a time when the culture in higher education crackles with unconscious bias in race, ethnicity, gender, socioeconomic status, and more. This is particularly present in STEM institutions, including WPI, where women and students of color are still underrepresented, and traditional stereotypes exist.

Since WPI’s curriculum is founded on project-based learning and working in teams, the campus was a good place to start SWEET. Working through four simultaneous phases, SWEET is helping students working in teams become aware of problems of inequity, such as biases in task assignments, or certain team members dominating the decision making.

• Phase 1: Curriculum Modules – Develop and implement team building and dynamics modules in courses, laboratory classes, and projects

• Phase 2: Activate – Initiate a student-led series of team experiences to foster a culture of high-performing teams with a focus on effective and equitable teamwork.

• Phase 3: Faculty Training – Develop and implement a training program for faculty to use the team development modules and resources in both curricular and co-curricular settings.

• Phase 4: SWEET Squad – Create and launch a network of students, faculty, and staff trained to provide support and guidance to teams members and those advising teams. The SWEET Squad serves as a campus-wide consultation and support network for teams experiencing challenges.

The long-term goal for this initiative is to move from a diverse and equitable workforce.

By applying SWEET within WPI’s project-based curriculum, we hope to raise the awareness of unconscious bias and provide tools that will help everyone,” says Adrienne Hall-Phillips, associate professor of marketing in the Foisie Business School, and cofounder of SWEET. “We believe that the learning from the SWEET initiative is critical for working successfully as a team here on campus, and vital in preparing our students to thrive in their careers by helping them recognize bias when they see it, experience it, or feel themselves expressing it.”

—Jessica Messier
The Benjamin A. Gilman International Scholarship provides financial support for undergraduate students to study or intern abroad; an important point that needs to be touched upon during the application process is the opportunity for students to have unique experiences.

Thanks to the Global Projects Program, WPI applicants have that part more than covered.

And we’re not the only ones who think so—WPI was recently named a Top Producing Institution for the 2016–17 academic year, earning additional recognition as one of the top producers of STEM students and one of the top small colleges and universities that produce Gilman Scholarship winners. Three graduates of the Class of 2018 were named Gilman Scholars during their time at WPI, and took advantage of the honor to complete their I4Ps in countries as varied as they are, all with one common goal: to leave the world a little better than they found it.

Allysa Grant (above, right) and her team created an online database of resources, networks, medical professionals, and other services with the goal of ultimately improving conditions for people with autism in Morocco.

Abigail King and her team immersed themselves in the rural community of San Rafael, Ecuador, to draft and compile a catalog of bio-sustainable building designs for the mountainous region and its people.

Zachary Ligham and his team implemented a biodigester system to reduce the energy cost of Paraguay’s La Escuela Agrícola, and determined the feasibility of a bakery business run by the school to generate additional revenue.

About 10,000 attendees flocked to WPI’s campus on Sat., June 9, for TouchTomorrow, the seventh annual festival that celebrates all things STEM and, of course, robots. Visitors of all ages had the chance to participate in hands-on experiments and activities, control robots, get up close and personal with a variety of animals, and tour WPI labs.

Among the attendees were future engineers, builders, teachers, and physicians, all eager to explore labs, get their hands dirty, and learn how they could use what they love to make a difference.

Area locals weren’t the only ones who got in on the fun—over 300 student, faculty, and staff volunteers from the WPI community and beyond came together to share their love of STEM and help create a memorable day for all, whether ensuring a pristine campus setting, welcoming visitors into their labs, or setting aside their Saturday to help kids make their own slime.

Chemical engineering grad students Lindsay Lozeau, Cameron Armstrong, and Avery Brown rocked curly-haired wigs and dapper bowties, channeling their inner wacky scientists as they showed visitors how fuel cells work. “It’s really fun to do outreach and promote STEM education and majors to kids,” Brown said. “Even if they don’t become scientists, it’ll help them with anything—business or politics—and promoting that is a good thing … it’s why we do this.”

—Allison Racicot
Q. I remember hearing on a campus tour that roughly 100 years ago they built and tested electric cars in Atwater Kent. Is this true?

A. Yes, that is true, but they were not like the electric automobiles commonly seen plugged into campus charging stations. Students attending “Tech” at the onset of the 20th century were involved with the design and testing of electric trolley cars. Built in 1907 and named for the year of its construction, the WorcesterTech trolley’s 40-ft. body was painted Pullman Green with gold trim and featured side and end doors, though no steps. It was a popular attraction each time it left its berth through the oversized doors on the west side of the building onto the tracks outside of the “great laboratory” now known as Atwater Laboratories onto West Street.

Tech students modified “1907” in order to test speed capacity, voltage, current, resistance, as well as many other elements of electric railways. In 1915 a feature article in Maine’s Lewiston Saturday Journal marveled at the test car’s ingenuity, stating, “not only does it search out the defect but it records it … by means of fire, so controlled that even when the ink has faded, the spark record will remain.”

After 30 years of service to students of electrical engineering and 3,878 miles of testing throughout New England rail system, “1907” and the tracks on campus were dismantled in 1937 to make room for more modern work being done in Atwater Kent. As municipalities increasingly invest in eco-friendly mass transit—including the return of trolley cars to many cities—perhaps WPI students will once more host a trolley car as they work to engineer a brighter future.

Lakshmy Krishna Moorthy, aerospace engineering, “CubeSat and the Atmosphere: An Enduring Relationship”) prepped with a workshop offered by WPI’s Department of Graduate Studies, then watched many 3MT videos online.

Hardest Part: Condensing three years of research into three minutes, but still being able to convey my research in its complete sense.

Advice: Don’t think of your research the way we do in our labs. Give it a different perspective, figure out its value in the real world; this will make you feel better about your research, I promise. And don’t forget to amuse the audience.

Lida Namin, chemical engineering, “Developing Effective Catalysts for Ethanol-based Fuel Cell Cars”) says three years in the i3 (Investing in Ideas with Impact) contest was a good warm-up.

“For the 3MT competition, I had the materials carved in my brain and I just practiced around six times to my family members.”

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Advice: Practice a lot. Have eye contact with every single person in the audience. I also owe my success partly to WPI Toastmasters, which improved my presentation skills and my confidence.

THE THREE MINUTE THESIS (3MT) COMPETITION was born at the University of Queensland when drought conditions had Australians in the region speed-showering with an egg timer. More than 600 universities in 65 countries (250 in the United States) now host official 3MT events, challenging doctoral candidates to present their research to a general audience in 180 seconds or less, with only a single slide allowed.

WPI joined the fun this spring, with an event on the main campus and one at Gateway Park. “To my surprise, everyone finished within three minutes,” says director of graduate student professional development Rory Flinn, who initiated WPI’s competition. “A handful of presenters went into the final second or two, which was a little nerve-wracking.”

The judges at each location awarded winners a $500 prize ($250 for runners-up), plus a $100 “People’s Choice” award chosen by audience vote. The first-place winners shared their secrets for success.

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ASK THE ARCHIVIST

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WPI STUDENTS DO THINGS—DEVELOP GROUNDBREAKING SOFTWARE, CONDUCT ORIGINAL RESEARCH, DESIGN NOVEL TECHNOLOGY.

That’s the idea behind the Major Qualifying Project (MQP), a professional-level design or research experience that is a requirement for graduation. Here are just a few real-world projects tackled in the past year.

What’s In Your Water Bottle?
Feeling extra healthy as you sip from that reusable BPA-free water bottle? Not so fast say MQP teams advised by biology and biotechnology professor Natalie Farny. Research suggests that BPA (bisphenol-A) alternatives might carry similar health risks. The chemical may contribute to problems like elevated blood pressure, birth defects, and neurological damage, research has shown. Some manufacturers have switched to related bisphenols BPF and BPS, but the student teams examining the chemicals’ effects at the cellular level have found that, like BPA, they also cause stress responses in human cells.

Can Robots Fight Marine Invaders?
The lionfish, a candy cane-striped, spiny fish native to the South Pacific and Indian Oceans, is an unwanted invader in the Caribbean and along the southeastern U.S. coast, where it preys on commercially and recreationally important fish and spreads economic and ecological havoc. Advised by robotics engineering professors Ken Stafford, Craig Putnam, and Brad Miller, an MQP team took the first step toward an autonomous underwater lionfish harvester that will use machine learning, artificial intelligence, and computer vision to distinguish lionfish from other species and then shoot them with buoyant spears. A new team will add global navigation and three-dimensional search patterns to the developing prototype.

Can Robots Patrol Unmanned Bases?
The U.S. Air Force would like to deploy autonomous security robots to investigate alarms at remote unmanned installations. Thanks to the work of a robotics engineering team, that vision took an important step forward this year. Students entered a challenge to build a proof-of-concept robot that could quickly investigate possible intrusions, sending images from the scene. The students’ work so impressed the challenge organizers that an Air Force representative said it may adopt some of the team’s innovations. Ken Stafford, teaching professor and director of the university’s Robotics Resource Center, and electrical and computer engineering professor Alex Wyglinski were the MQP advisors.

Can Big Data Spot Bad Drug Interactions?
Studies have shown that at least 100,000 deaths per year in the U.S. can be attributed to the adverse reaction of medications, making the ability to identify and raise alarms about potentially harmful drug interactions a literal matter of life and death. Last year an MQP team advised by computer science professor Elke Rundensteiner developed a big data tool and then processed more than a million reports (filed by healthcare professionals, manufacturers, and consumers) contained in a U.S. Food and Drug Administration database. This visual analytics system uses machine learning and natural language processing, and is designed to automatically flag bad drug combinations that may have escaped notice.
ENCOUNTERING HIS HOLINESS THE 14TH DALAI LAMA

D-Term students at WPI’s India Project Center stumbled upon a once-in-a-lifetime opportunity for global enlightenment. It was sheer coincidence, reports project center advisor Ingrid Shockey, that the group’s visit to the Main Tibetan Temple in Dharamsala coincided with a talk for foreigners by His Holiness the 14th Dalai Lama. Speaking in English, he began by casting himself as merely one of the seven billion human beings that populate the planet. Thinking of himself as Tibetan and Buddhist—and as the Dalai Lama—creates barriers, he said, which makes him lonely. “If I too much emphasize I am HIS HOLINESS the Dalai Lama, then I REALLY feel lonely.” His giggles and his self-deprecating humor drew many laughs from the audience, and he responded warmly to questions for almost an hour. Confessing that he’d been a lazy student in a system that emphasized memorization, he stressed that modern education should build compassion. “Given the context of our IQP work,” says Shockey, “it was especially meaningful to hear the Dalai Lama speak of building unity between individuals.” Casting the Buddha as a scientist and claiming that ancient Tibetans were the first scholars of quantum theory, he spoke of the need for a sense of oneness to manage the destructive potential of today’s technology. “We were all touched by the experience,” says Shockey. “The temple and residence grounds were built with reverence for the landscape, so that trees grow freely though the floor and roof of the structure. The site also honors the painful history of the many Tibetans who have protested Chinese repression. A peace walk surrounds the temple to promote meditation and contemplation.”

—Joan Killough-Miller

Can Experiences Be Inherited?
Another biology and biotechnology team has shown that your great-grandmother may have left you more than her best cookie recipe. Events from her life, like famine or abuse, could be encoded in your genes, raising your risk of cardiovascular disease or anxiety. Working under the guidance of professor Jagan Srinivasan, the team studied microscopic worms known as nematodes; they found that experiences can cause epigenetic changes in DNA, and that these can be passed on to later generations. This year a new MQP team will explore the connection between such epigenetic changes and neurodegenerative diseases, like Alzheimer’s.

—Sharon Gaudin
Worcester native Justin Amevor ‘20 had an inside connection when it came to WPI (besides the school’s reputation and his goal of tackling a computer science major); his brother, Denzel Amevor ’15.

“My brother had good things to say about WPI, and since it was recognized as a great engineering school—and I love this city—it seemed like a perfect fit.”

The enthusiastic junior has thrown himself into the WPI community with vigor, serving as Sigma Alpha Epsilon’s Community Service chair as well as a Connections program assistant, helping multicultural first-year students transition into the fast-paced WPI lifestyle.

Most recently Amevor took on the role of president of the National Society of Black Engineers chapter on campus. With NSBE’s overall goal of providing professional development and cultural education to campuses across the nation, Amevor says he hopes to achieve this at WPI through workshops, discussions, events, and community involvement to focus on improving the professional skills of its members, in the hopes of better preparing students for the working world.

“The goal of the NSBE organization is to graduate 10,000 black engineers by 2025 and I will help support that mission,” says Amevor. “As president, I hope to send members to the annual conference for job opportunities, to host discussions on campus about the state of our country and how it affects minorities, to engage in community service tutoring opportunities, and to run general body meetings to educate students on professional growth.”

“You’d think that Amevor would feel overwhelmed with a rigorous academic program and involvement in several organizations, but he says it’s actually the opposite.

“I have always liked being involved and I feel it helps me stay focused throughout the school year,” he admits. “If I am not involved extracurricularly, then I am wasting time where I could be helping something or somebody.”

When asked what his favorite class has been to date, he eagerly offers up a course taught by Professor Wilson Wong. “In Software Engineering the professor personally made the class great with his enthusiasm and all-around great teaching. He taught Softeng, which is what I want to do as a career so it was a great taste of what my hopeful future has in store.”

The talented young man seems almost surprised at his success at WPI as he shares, “When I came to WPI I never thought I would be where I’m at now, but college is about taking opportunities,” says Amevor.

As for advice for incoming freshmen, he says, “Every day you wake up in control of where you will take your day, so make the best of it—not according to anyone else but yourself.”
JAIME STEPHEN '18 AND JULIE MARIE McLARNON '18
CLASS OF 2018 SENIOR GIFT CO-CHAIRS

“For our 2018 Senior Class Gift, we wanted to capture as much of the year’s initiatives under one gift to inspire meaningful philanthropy this year and lifelong engagement in the years to come. By funding a new IQP site in Montana’s Glacier National Park, we are contributing to the WPI Plan, backing President Laurie Leshin, and enabling more students to experience the amazing IQP. Now, as alumni, we hope we can ignite a similar urge to donate and give new students the same or better experiences that we loved as undergrads.”

Through their Senior Class Gift campaign, over 50 percent of the Class of 2018 rose to the challenge to contribute significantly to WPI’s goal of Global Projects for All. Beginning with the class of 2022—who entered this August—every full-time, degree-seeking student will receive a Global Project Scholarship—a credit of $5,000 to defray the cost of an off-campus project.

Help shape tomorrow’s great minds.

Empower engineers and scientists to solve problems no one person can solve alone.

Join the Class of 2018 and make your gift to the WPI Fund today.
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The WPI Fund
100 Institute Rd.
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From the bustling makerspace to the high-tech classrooms to the welcoming café, WPI’s distinctive project-based approach comes to life in the Foisie Innovation Studio. Atop the building, Messenger Residence Hall promotes integrated living and learning.

Now Open.

Worcester Polytechnic Institute
A first-generation college student, Bettyann (Gustafson) Cernese '83 (EE) says she will always remember the day her mother took her to interview at WPI. “She told me I could do anything I set my mind to,” she fondly remembers. “That guidance has served me my entire life.”

“I just knew WPI was where I was meant to go, despite having been told by a guidance counselor that I was an unlikely candidate to be accepted at such a school—given my family’s means—and that I should focus on applying to state schools,” she recalls. “This made me even more determined to make it happen.”

And so began a career within the software and computer industries. But in 1999 the unexpected happened—her mom died (at 68)—and life-changing momentum began.

Deciding a change was in order, she pursued her love of horses through a clinic centered on a body-mind base connection to horse riding. Around this time her own quarter horse was receiving regular massages to keep a few back issues at bay. “The equine massage therapist taught me basic massage work to do on her between our appointments,” she explains.

Describing how therapeutic massage for horses and humans helps restore normal motion promoting balance, health, and relaxation, Cernese says, “Whenever we ask our horses (and ourselves) for maximum performance in any discipline, their fullest potential is only achieved through good movement.”

Next came routine massages for herself, and she soon found herself enrolled in a full-time massage therapy program while still working in the corporate world.

“Working full-time, attending 16 hours of massage school, and performing a few hours of clinical massage sessions each week, I discovered that I perceived the energy in people in quite a different way than others did. That was the beginning of a shift to being open to the energetic aspects of our being.”

In 2000 Cernese was offered a VP position at a start-up company and she jumped at the opportunity—only to discover two months into the job that the owner had lost his funding. Driving home that day with thoughts about her next steps, she noticed an “Office for Rent” sign. She pulled over, called the phone number—and Forward Motion Massage was born.

Now, with both horses and humans as her clients, Cernese has evolved her turning point into a healthier way of living. Most recently she has been exploring the deeper connection between memories and trauma and how they manifest in the physical body as pain.

Throughout her career transitions, she says that her own sense of inquisitiveness that expanded at WPI has kept her pushing to explore, learn, and continue to be curious.

“My IQP partners and I explored the relationships between left brain logic and right brain creativity,” she says. “What I took away from that project is that we have the ability to learn, and to engage our less dominant side. We can be open to exploring possibilities of life if perceived and navigated with a bit of creativity and intuition.”

With that, and the words of her mom, Cernese believes she can accomplish anything.
MATTHEW GOLDMAN
THE MAN BEHIND TELEVISION’S NEXT BIG THINGS

BY ERIN PETERSON | PHOTOGRAPHY MATT FURMAN
Goldman among the many Emmys SMPTE has garnered through the years.

A member since 1997 and current President, he’s worked on four different projects that have earned him Emmys.
Matthew Goldman ’83 (’88 MS) might not always have been able to see television’s future—but he’s definitely helped create it.

He would be the first person to tell you that he doesn’t have much in common with red-carpet celebrities like Bryan Cranston, Justin Timberlake, and Helen Mirren. But there is one similarity worth mentioning: each has taken home four Emmys.

Goldman’s engineering Emmy wins—shared with the teams and companies he worked with to develop his award-winning technology—weren’t broadcast to millions. But the statues, which sit on a bookshelf in his office, are prestigious, nonetheless. They recognize work that has transformed the way we watch television.

Having emerged as one of the brightest leaders in a medium that has undergone almost constant upheaval, Goldman, has helped propel the changes that have made watching television more expansive and immersive. And the ambition and curiosity that have driven him to where he is today were honed, in part, during his days at WPI.

**EARLY INKLINGS OF A LEADING VOICE**

Goldman, son of an engineer who was general manager of an independent cable company, admits that before he arrived at WPI, he dreamed of going to MIT, where one of his brothers studied.

But when he arrived on WPI’s campus after receiving his acceptance letter, he knew he was home. “It was such a small, personal place,” he says. “It felt like going to camp.”

He loved the small classes, the ability to meet one-on-one with his professors, and the opportunity to do hands-on projects. But more than anything, he loved the chance to get deeply involved in many parts of campus life. He joined a fraternity, served as junior prom spring weekend chairman, and was elected student body president his senior year.

He still marvels at the opportunities he could create for himself. Through his classes and leadership work, he learned to collaborate with others, whether that meant finishing an academic project or hosting a campuswide event. As a student leader, he loved rubbing shoulders with some of WPI’s most powerful decision makers. “I got to hang out with the provost and the dean of students,” he says. “That meant a lot to me, especially when I think I might have been a nobody at a different school.”

Those skills sharpened at WPI—working with others and solving hard problems—would prove to be exceptionally valuable going forward.

With his BS in electrical engineering, Goldman spent his first few years after graduation working on military projects at Raytheon before landing at Digital Equipment Corporation. One of his first projects there was to design circuitry for the VAX 9000, digital’s first foray into high-performance mainframe computing. He was thrilled to be working with top-flight engineers, soaking up their knowledge and ideas. “I wanted to be in the best engineering group so I could learn from the best and be part of the best,” he says.

Eventually, he ended up working in high-end data-server design. One day, while manning a booth at a trade show during the early ’90s, two customers stopped and asked, “Has DEC ever considered sending live or real-time video over data servers?”

At that moment, Goldman recalls with a laugh, the other employees in the booth turned toward him and said, “Oh, Matthew used to work in a cable company—he knows all about video.” He admits that his knowledge was limited to what he’d gleaned doing odds and ends over summer vacations at his father’s company. “It got dumped on me,” he says.

That serendipitous moment turned into an inflection point. At the time, the idea of sending video over data servers seemed so wild that a 1992 article in the New York Times described it as nothing short of science fiction. “Imagine,” the reporter wrote, “if you could send yourself by phone and television to a professor’s live lecture at a distant university, or pick up your phone, call the neighborhood video store, and ask that Casablanca be transmitted to your TV set.”

By 1993, Goldman was attending Moving Picture Experts Group (MPEG) meetings to help develop international standards for encoding, compressing, and transporting video images. MPEG founder Leonardo Chiariglione remembers that it didn’t take long for Goldman to make an impact. “Matt was a newcomer, but he immediately became part of the core MPEG-2 Systems group of experts and co-editor of the MPEG-2 Systems standard,” he says.

Many have heard of MPEG without perhaps knowing what the group created. This includes the video compression technologies used on DVDs and Blu-ray discs and in digital television systems; the audio compression technologies used for mp3 files and 3D immersive audio; and the core transport technology used for all of these solutions. Even today, MPEG-2 Systems is commonly used in cable, satellite, and terrestrial media.

Goldman is quick to clarify that he didn’t work on the compression of audio or video, but the systems and transport layer of these initiatives. “It’s like trains,” he says. “If you create a standard—for example, if the thickness and spacing of the track is known—then different companies can design their wheels to fit on the track, and the cars to fit on those wheels. The whole point of doing standardization is to foster interoperability, so that everybody’s technology can communicate with each other.”

His work on the MPEG-2 Systems ultimately earned him and his team an Emmy.

While Goldman is proud of the work he did on MPEG-2 Systems, he adds that he didn’t foresee its immense and enduring value. “I’d love to say that when I got put in the MPEG community, I knew exactly what it was and took full advantage of it. Hell, no!” he says, joking that if he’d had the foresight to retain some ownership in the intellectual property that emerged from the project, he’d be busy helicoptering to his own private island. “I just got dragged along in the tornado.”

**SEEING THE NEXT WAVE**

Over ensuing decades, Goldman continued to tackle innovative projects for the companies he worked for, which include DiviCom, Tandberg Television, and, since 2007, Ericsson Media Solutions, the media division of the networking and telecommunications company Ericsson, which recently re-launched as MediaKind, a joint venture of One Equity Partners and Ericsson.

For example, after television went through its massive analog-to-digital switch, Goldman and his team worked on Emmy-winning hardware and code that made it easier for television affiliates—local stations that are linked to big national networks—to add in special effects, like on-screen logos and “squeeze and tease” effects that compress the size of a show on screen to allow the affiliate to promote upcoming programming.
He and his team also received an Emmy for a set of protocols linked to digital ad insertion, an innovation that allows companies to offer targeted ads to consumers. “Everybody hates us for that,” he admits. Goldman’s efforts didn’t just earn industry accolades; his work has been integral to six patents.

Today, as senior vice president technology at MediaKind, Goldman is still involved with creating standards and defining products, but much of his work is as a technology evangelist, which includes speaking at trade shows and writing white papers.

What he’s excited about now is high-dynamic range (HDR) television. More so than the other hyped technologies like 4K or even 360-degree video, Goldman says that this technology will change the way we think about television as an experience. “HDR is probably the most important change to happen to television since we went from black and white to color,” he enthuses.

HDR’s high contrast ratio makes colors pop and seem more real—even compared to screens with higher resolutions. “If you think today’s televisions feel immersive, just wait until you have an HDR experience,” he says.

He’s not the only one excited about this next-generation technology: in 2015, the National Association of Broadcasters honored him with a “Best Paper Award” for a publication he co-authored about the techniques and potential of the technology.

Richard Friedel, executive vice president and general manager for Fox Networks Engineering and Operations, isn’t surprised that Goldman’s work got attention. Goldman has long been able to balance his industry expertise with persuasive enthusiasm. “His technical knowledge is thorough and deep,” Friedel says. “He communicates well and is a great educator, often in demand to provide presentations at industry meetings.”

Goldman’s passion and knowledge have also been essential for his work with the Society of Motion Picture & Television Engineers. As the current president of the global professional organization that has more than 7,000 members worldwide, he has further developed standards and mentored young engineers who will make television’s next big advances.

A MINDSET GEARED TOWARD PERFECTION

In a world where our attention seems increasingly gobbled up by the things we watch in bits, bytes, and pixels—a world that Goldman has happily helped create—it may perhaps come as a surprise that, outside of his job, he delights in analog technologies.

He loves spending time on his sleek Indian motorcycle and in his sporty 2001 BMW M Roadster, complete with analog dials. “Digital gauges?” he scoffs, “They just don’t look cool.”

He wears an analog watch, too, and loves the sweep of the hands around the dial—and the fact that, unlike some of his younger colleagues, he can still read the time off it.

But if there’s an overarching idea that connects his love for these physical objects with his enthusiasm for digital television advances, it’s this: he cannot help but appreciate elegant engineering perfectly executed. It’s a trait fostered at WPI, and one he’s carried throughout his career. “Matthew,” says fellow SMPTE executive director Barbara Lange, “is someone who is focused on getting things right.”

As much as Goldman expects himself to meet high standards, he appreciates when such standards are achieved in other fields as well. In both the digital world and the physical one, he loves to see perfectly refined technology—every part—working together in sync to deliver an experience that delights.
THE NEWS CORP/FOX NEWS CONTROL ROOM IN NYC IS ONE OF MANY IN A TYPICAL BROADCAST CENTER WHERE LIVE PROGRAM SCHEDULES ARE CREATED, MIXED, AND SWITCHED ONTO AIR. BECAUSE THE BANDWIDTH OF VIDEO IS SO HIGH (BANDWIDTH IS A LIMITED RESOURCE), VIDEO GOES ON AIR IN A COMPRESSED FORMAT. GOLDMAN WORKS ON COMPRESSION EQUIPMENT USED BY FOX AND OTHER BROADCASTERS WORLDWIDE.
A HOPE FOR

SARAH HERNANDEZ ’15 (PHD) HUNTS FOR A CURE WITH A PERSONAL VENDETTA

BY AMY CRAWFORD | PHOTOGRAPHY MATT FURMAN
HUNTINGTON’S

Hernandez at the entrance of UCI’s Biological Sciences III building, which houses the mouse models Leslie Thompson’s team works with—those that aid Hernandez’s lab in their HD research. The amaryllis flower is the symbol used internationally by organizations associated with Huntington’s disease.
Huntington’s disease is a neurodegenerative disorder that strikes people during the prime of their lives, causing personality changes, memory loss, impaired judgment, problems with movement, speech, and swallowing—and, ultimately, death. There is no cure and no treatment that slows the progress of the disease. It has long been known that Huntington’s runs in families. In 1993 scientists discovered that it is linked to a single dominant gene, which each child of a sufferer has a 50 percent chance of inheriting, and which always leads to a fatal outcome.
"When I was a kid, there were conversations that were kept away from the children, but Huntington’s kept coming up, and I didn’t know what it was,” says Sarah Hernandez, who watched two of her uncles suffer from Huntington’s when she was a teenager. “But then, in a biology class in high school, there was this little blurb in a textbook—literally one paragraph about what Huntington’s is. That’s when I became obsessed with understanding what the implications were and learning more about it.”

Huntington’s killed her maternal grandmother before Hernandez was born, and her uncles would die of it too. Now her 29-year-old cousin has begun experiencing symptoms—a situation made all the more tragic because she has a young daughter. Unable to endure not knowing her own fate, Hernandez underwent genetic testing and learned that she does not carry the gene. But that relief did not diminish her urgent need to know more about the disease that continues to stalk her family. So since high school, she has charted each step in her education and career—from an undergraduate major in biology, to experience as a laboratory technician in industry, to a PhD in biology at WPI, and to her current postdoctoral position in one of the top Huntington’s labs in the United States—with the goal of discovering a cure.

“I obviously know a cure can’t come fast enough and that we needed it 40 years ago,” she says. “But I hope, down the road, that what I’m doing now will help get us there.”

DEFINING INTERESTS
Hernandez admits she can’t be sure whether she would have become a scientist if she hadn’t already been obsessed with Huntington’s disease. “I learned about Huntington’s right around the time you start to define your interests in life,” she says. “So it’s hard to say if I would have been driven toward a scientific career otherwise. I think I would have, because it’s incredibly interesting, especially neuroscience. Everything is new, it’s always changing, and there’s really no limit to what you can discover or to the applications, as long as you’re creative.”

Hernandez grew up in suburban Massachusetts and attended Franklin Pierce College in New Hampshire, where she majored in biology and minored in chemistry. Since she wasn’t sure which approach she wanted to take in the fight against Huntington’s, a broad scientific background made sense—as did a post-college stint in a commercial chemistry lab, where she learned the basics of bench science. Hoping to find the same intimate environment she had enjoyed as an undergraduate, she applied to
WPI’s graduate program in biology and biotechnology, winding up in the lab of Tanja Dominko, whose research focuses on the molecular mechanisms behind processes involved in wound healing, tissue regeneration, aging, and cancer.

“That may not sound very linear,” she says, “but having come from working as a chemist, I was new to some techniques in biology, especially cell culture.”

For her dissertation work, Hernandez identified a novel variant of an enzyme found only in certain cancer cells, specifically the devastating brain cancer glioblastoma. From that research emerged a patent covering brain cancer glioblastoma. She was also named an NSF Integrative Graduate Education and Research Traineeship (IGERT) fellow, which allowed her to supplement her scientific education with entrepreneurship courses and to spend a summer conducting research at Tsinghua University in Beijing.

“I pretty much say yes to everything—I’m one of those ‘yes’ people,” she says. “I feel like at WPI, if you’re willing to say yes, WPI will present you with life-changing experiences. You just have to be willing to step outside your comfort zone.”

She didn’t speak Mandarin, and she was the only American in her lab, but Hernandez made the most of her time in China, relishing the everyday reality of navigating life in an unfamiliar country. It’s an experience she says served her well as a scientist. “Often, creative problem solving requires making connections between things that aren’t obvious,” she says, referring to research she did at WPI with biomedical engineering professor Glenn Gaudette and current PhD candidate Josh Gershak. Their project involved using the cellulose network of a spinach leaf as scaffolding for human cardiac cells, effectively transforming the leaf into a miniature heart. A video of blood pulsing uncannily through a translucent leaf went viral and was recently featured on the Netflix program Bill Nye Saves the World.

“It has really vast applications,” she says, “and it goes back to that creativity I was talking about. We can see the veins in our hands and we can see the veins in the leaf, and why not try to bridge those two?”

**A NOVEL APPROACH**

Even as Hernandez explored cancer and tissue regeneration at WPI, she was keeping up with Huntington’s research, reading the latest breakthrough papers and following the work of the major players. When it came time to seek a postdoctoral position, she quickly realized there would be no better choice than the lab of Leslie Thompson at the University of California, Irvine.

“I was talking with different people in the field of HD research,” she says, and everyone kept saying how great a mentor Leslie was.”

Hernandez arranged a visit, and Thompson was so impressed by the younger scientist that she hired her on the spot, without even asking Dominko for a letter of recommendation.

“Leslie later called to apologize,” Dominko says with a laugh. “I said, ‘No, no, you couldn’t have paid me a better compliment!’ And it doesn’t come as a surprise to me—Sarah is the most accomplished graduate student I’ve had in my 13 years here.”

So after graduating from WPI in 2015, Hernandez made the 3,000-mile trek across the United States, where—feeling fully prepared for the challenge—she finally took up the fight against Huntington’s, with a project that focuses on understanding how the extracellular matrix, a network of proteins that supports cells from the outside, is changed in Huntington’s disease.

“We get skin cells from patients, and then we kind of reverse the biological timeline, turning them into what’s called induced pluripotent stem cells—which means they can become any type of cell in the body,” she explains. She coaxes these stem cells into becoming neurons—the cells affected by Huntington’s—and uses them to investigate how the Huntington’s gene interacts with other genes and proteins. The work is funded by a fellowship through the Huntington’s Disease Society of America until 2020, after which Hernandez hopes to continue her research as the head of her own lab.

“Sarah has come up with a very novel way of studying Huntington’s disease,” Thompson says. “She read a lot and proposed an idea, and I think it’s something that really has potential for developing treatments. The extracellular matrix is an up-and-coming area for the neurodegenerative field, and Sarah is really at the forefront of it.”

Hope may be on the horizon for Huntington’s, but the disease remains a devastating reality for the approximately 30,000 current sufferers in the United States, and many more around the world. In addition to her research, Hernandez has also become an advocate, joining the board of the support organization HD-CARE, or Huntington’s Disease Community Advocacy Research and Education, through which she helps to raise funds and organize free symposia to disseminate the latest Huntington’s knowledge to affected families. She is also helping the group to lobby lawmakers about requiring health insurers to cover in vitro fertilization with pre-implantation genetic diagnosis, since screening embryos is currently the only way to prevent Huntington’s. Through this work, she meets many patients and their families—and they in turn motivate her research.

“Of course, there’s my family, but there are people all over the country that are afflicted with this disease, and they give so much,” she says. “These are the people who are contributing the cells that we work with in the lab here at UCI. It helps keep me going, to know how much they look forward to the research. We’re all waiting with bated breath for the cure to come through.”
The mentor

One of the pioneering scientists focusing on Huntington’s disease, Leslie Thompson, professor of psychiatry and human behavior at UCI, was among the researchers who discovered the gene responsible for Huntington’s. The 1993 breakthrough allowed for the development of a genetic test that can tell people if they carry the gene—which means not only that they will suffer from Huntington’s, but that they could pass it onto their children.

Thompson’s more recent research has led to better understanding of how the faulty gene causes abnormal proteins to build up in the brains of patients, and she has experimented with using stem cells to fight it. She also created models of the disease in fruit flies, mice, and human cells that other researchers rely on for their own work.

For Hernandez, the opportunity to work under such a highly respected scientist was the opportunity of a lifetime—although she admits to being a little intimidated at first by Thompson’s “scientific celebrity status.” The mentorship has been crucial as Hernandez conducts her own research—one of several lines of inquiry that Thompson believes show promise in making headway against this cruel disease.

“A better understanding of how Huntington’s works will lead to new treatments,” Thompson says. “There’s definitely hope now for the newly diagnosed, and especially their children.”

THE MENTOR One of the pioneering scientists focusing on Huntington’s disease, Leslie Thompson, professor of psychiatry and human behavior at UCI, was among the researchers who discovered the gene responsible for Huntington’s. The 1993 breakthrough allowed for the development of a genetic test that can tell people if they carry the gene—which means not only that they will suffer from Huntington’s, but that they could pass it onto their children.

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“A better understanding of how Huntington’s works will lead to new treatments,” Thompson says. “There’s definitely hope now for the newly diagnosed, and especially their children.”
It’s not inhuman to suggest that the human body can be viewed as a data center with arms and legs. Just as our DNA is a rich data repository that unfolds into the complexity of an individual human life, so too each life emits a continuous stream of subtle signals that can be pieced together for a view into that person’s health.

Emmanuel Agu thinks smartphones can help crack this code. “Smartphones are the perfect platform to augment—anytime, anywhere—the care given to patients in offices, clinics, and hospitals,” says the professor of computer science. “Healthcare is appointment-driven, which leaves patients underserved outside of scheduled times. But patients must be able to access care 24/7, and the large amount of data that’s continuously generated needs to be analyzed and put to use. Many questions that could not be answered previously can now be answered using data-driven approaches.”

What better way to gather and make sense of the data than with the constant companion of modern life—as anybody who has walked the streets or malls, or been disturbed by flashes of light in the movie theatre, can attest. “More than 80 percent of people in the United States, across all socioeconomic, age, gender, race, and literacy levels, own a smartphone, making it the first truly pervasive computing device,” he says.

Smartphones have the computer power and sensors to make it work. Among the many data types captured by our phones are environmental factors (temperature, humidity, altitude, light), soft data (call and SMS times, as well as browsing and social media patterns), location (GPS, places/types visited), and sounds and images from microphones and cameras. “Machine learning can use this raw data to discover patterns to infer health status,” he says.

Agu’s research isn’t theoretical—he’s building health apps rooted in medical research, developed in collaboration with physicians, and tested in clinical trials. His team’s patented Smartphone Wound Analysis and Decision Support (SmartWanDS) app—a continuation of his work on an NSF-funded diabetes management app called Sugar—enables chronic wounds to be imaged, then analyzed for healing progress via machine learning algorithms. The app deduces parameters, like wound depth and tissue composition, and generates a healing score.

“Wounds that are not healing in a timely fashion can be flagged for closer attention,” he says. “The app can be used by patients or their caregivers to self-monitor their wounds, engaging them more in their care. It can be used by visiting nurses for decision support, and to get a second opinion. Based on wound status and the patient’s Electronic Health Record [EHR] information, machine learning algorithms can make recommendations and decisions similar to those of a world-class wound expert.”

Professors Peder Pedersen, Diane Strong, Bengisu Tulu, and Clifford Lindsay are co-investigators on a new $1.6 million National Institutes of Health (NIH) grant to research and develop the SmartWanDS app.

AlcoGait (patents filed) is his smartphone sensing app that detects users’ level of intoxication from their walk patterns. The app extracts accelerometer readings and infers posture and sway from gyroscope data, then classifies them through machine learning. “The app helps smartphone users know when they are too drunk to drive,” Agu says. “Identifying intoxication from gait is almost as accurate as a breathalyzer. Drunk smartphone users are alerted immediately; an Uber can automatically be called to pick them up, avoiding possibly fatal outcomes.” Doctors Michael Stein and Ana Abrantes of Brown University’s Butler Hospital are co-investigators on a current NIH grant to validate the accuracy of AlcoGait.

Machine learning is core to Agu’s work. “Machine learning has become one of the hottest and most usable branches of artificial intelligence,” he says. “I work in mobile sensing, which involves running machine/deep learning algorithms on smartphone or mobile device sensor data. With the rise of Big Data from smartphones, social media, sensors, and wearables, machine learning has become essential to discovering useful, actionable patterns in massive data sets.”
SHIFTING PARADIGM

Agu's research dovetails with the widespread consensus that healthcare must become more proactive, through early detection and just-in-time notification, rather than reactive, in treating only ill patients using expensive procedures. He believes that doctors and patients should be rewarded and incentivized for improved health, and to control costs. “The extent to which patients abstain from smoking and drugs, exercise regularly, and eat healthily can all be quantified using sensed smartphone data,” he says. “Incentivizing individual patients, and the doctors who care for them (as opposed to how many procedures are done, or how much time is spent with the patients) would be a paradigm shift.”

That drives his work with the WPI Healthcare Delivery Institute (HDI). Agu is the faculty director for the steering committee of HDI, which aims to further healthcare research, education, and thought leadership, especially in digital health. HDI targets larger funded projects that cut across multiple departments at WPI. “Many of my projects involve multiple HDI faculty members,” he says.

Interdisciplinary work is a WPI strong suit, Agu explains. “WPI’s size makes it easy to work as a team across departments and schools; most of my collaborators are outside the WPI Computer Science Department. I hold collaborative appointments in seven WPI departments, making it easy to attract good students with diverse backgrounds for my projects.”

Wielding his skills alongside those of others suits his nature. “Applying cutting-edge computer science solutions to solve real problems that impact people’s lives is exciting,” he says. “My father always emphasized pragmatism, and having broad interests. I am equally comfortable discussing healthcare problems with clinicians and the requisite machine learning and app solutions with computer scientists.”

MOBILE GUY

Agu has been working in mobile computing for more than 20 years. He’s researched and developed a range of applications beyond health-
care, including location-aware tour guides and security modules, and a mobile emergency medical services incident reporting app. One focus area is energy management—Agu and his first master’s student developed a tool called PowerSpy 13 years ago. It detected which apps and devices were using too much battery power so they could be shut down. “This functionality is now widely available on most smartphones today,” he says.

He also researches mobile graphics, and has prototyped a middleware architecture that takes up the challenge of rendering high-quality graphics, with their high resource usage, on mobile devices with low resource availability. “We synthesized techniques for making graphics more efficient on mobile devices,” he says. “For instance, 3D graphics content, like meshes and images, can be automatically scaled down based on the target mobile device’s hardware constraints. Remote servers can also do some of the work, optimizing preprocessing to speed runtime rendering on low-end devices.”

Agu’s research has been funded by the National Science Foundation, U.S. Department of Education, U.S. Army Research Laboratory, National Institutes of Health, DARPA, the Air Force Research Labs, Google, NVIDIA, and AMD. He gives top marks to WPI students for their help in the investigative work. “My research is quite applied, which makes WPI an excellent place to conduct it,” he says. “WPI students love concrete and well-defined projects with clear goals. And once they get excited by a project, WPI students deliver unbelievably high-quality work in record time.”

The university scores a high grade as well. “WPI’s current push to increase commercialization is quite commendable,” Agu says, “and I am excited to be part of that effort. I have been involved in entrepreneurship and created Internet start-ups as a grad student. For example, we are in negotiations with several potential partners that have expressed interest in the wound healing app.”

Agu pays it forward—he loves to teach. “I like to help students figure material out,” he says. “I also benefit, since I understand the material on a deeper level when I explain it to students. I taught karate in my undergraduate years, which made me realize that I have a passion for teaching.”

**BACK TO AFRICA**

Some of that comes from his upbringing. Agu comes from Nigeria, and education has always been important to his parents. “My father started out as a high school teacher, and rose to the position of Justice of the Supreme Court of Nigeria; I just found out he has his own Wikipedia page,” Agu says. “We were fortunate to attend great schools, and take extra lessons. Mixing with other students who were overachievers instilled in me some ambition, and a belief that I could do well.”

He thinks some of what he does well can find its way back to his homeland. “Healthcare apps could have great impact in Africa, where health disparities are extreme, and a large proportion of the population now own smartphones,” he says. “Some of the machine learning healthcare.screeners and apps we have researched and developed here could save lives across the continent.”

The WPI seal is graced with an image of open books and an arm and hammer, signifying theory and practice. Agu integrates the two in his life’s work—and through that work, honors the first verse from his college anthem at the University of Benin in Nigeria, where he earned his BS in engineering:

“All over the wide wide world Our fruitful works unfurl;
What we sow’d with joy and pride With good our common goal…”

**HELPING WARRIORS**

The Warfighter Analytics for Smartphone Healthcare (WASH) program is working on detecting early signs of traumatic brain injury (TBI) and infectious diseases like flu, tuberculosis, and pneumonia. The goal of the initiative—funded by a four-year, $2.8 million award from the Defense Advanced Research Projects Agency (DARPA)—is to create a mobile application that passively assesses a warfighter’s readiness, both immediately and over time. Professor Elke Rundensteiner, director of the WPI Data Science Program, is a co-investigator on the DARPA WASH grant.

Warfighter assessment is currently accomplished with EKGs and other specialized medical devices—difficult to do in hostile, non-controlled environments, or after the fact in an office setting. “Our team will research and develop machine/deep learning algorithms that synthesize reliable smartphone biomarkers captured unobtrusively from smartphone sensors,” says Agu, the principal investigator for the project.

The biomarkers are key: smartphone-sensible characteristics and patterns that can be measured and evaluated to indicate normal or pathogenic processes and health status—like slurred speech and reduced communication and social interaction for TBI, or coughing and fatigued movement with infectious disease. “This will enable continuous, real-time assessment of TBI and communicable diseases afflicting warfighters, who can then be contacted by a clinician to confirm their status,” Agu says.

DARPA dates back to the launch of Sputnik in 1957, with a mission to make pivotal investments in breakthrough technologies for national security. Agu is pushing for his breakthrough by integrating feature engineering of smartphone sensor data; statistical modeling of personalized behavior; detection of higher-order activity states from low-level signals; machine/deep learning of deviations from normal, healthy behavior; inference of disease classes; and evaluating the robustness of biomarker detectors.

“The military is frequently the first funder of big ideas, like the Internet, which decades later is benefiting the whole world massively,” Agu says. “I think that some day, the work we are doing in WASH may be used by everyone.”
Kevin Petrini ’95 thought he would save the world by tracking the spread of air pollution. His mission turned out to be much bigger than that.

We are all in the same canoe

BY JOAN KILLOUGH-MILLER | PHOTOGRAPHY MATT FURMAN
MY SUVA PARK, SUVA, FJ: WITH MORE THAN 70% OF THE PEOPLE IN THE PACIFIC LIVING ALONG THE SHORELINE, COASTAL ZONE MANAGEMENT IS AN IMPORTANT PRIORITY. MANGROVES REPRESENT A KEY PART OF THE ECOSYSTEM THAT PACIFIC ISLANDERS RELY ON EVERY DAY. THEY FUNCTION AS NURSERIES FOR YOUNG FISH, WHICH MANY COASTAL COMMUNITIES RELY ON FOR PROTEIN; THE ROOT SYSTEMS ALSO PROTECT COMMUNITIES FROM STORM SURGE DURING STORMS AND CYCLONES BY DISSIPATING THE ENERGY OF WAVES. ADDITIONALLY, THE MANGROVES COMBAT CLIMATE CHANGE BY SEQUESTERING CARBON, WHICH REMOVES IT FROM THE ATMOSPHERE. PACIFIC COMMUNITIES RELY ON MANGROVES FOR A VARIETY OF OTHER NEEDS, INCLUDING MEDICINAL PURPOSES.
WHEN WE ASKED PETRINI FOR HIS TOP CONCERNS REGARDING CLIMATE CHANGE, HE GAVE US THREE POINTS:

GLOBALLY, THE LEVEL OF POVERTY HAS BEEN REDUCED OVER THE PAST COUPLE OF DECADES. IF NOT ADDRESSED, CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION HAVE THE POTENTIAL TO REVERSE THIS TREND AND PUSH PEOPLE BACK INTO POVERTY.

INNOVATIVE TECHNOLOGICAL ADVANCES WILL BE EXTREMELY IMPORTANT TO COMBAT CLIMATE CHANGE AND ENVIRONMENTAL DEGRADATION IN THE 21ST CENTURY.

PROTECTING THE EARTH STARTS WITH THE WALLET. HOWEVER YOU USE YOUR MONEY—WHETHER FOR INVESTMENT OR GROCERIES—IT IS IMPORTANT TO UNDERSTAND THE IMPACT.
While Petrini sat sweating out his chemistry final in Goddard Hall, the polar ice caps in Antarctica were melting, setting the stage for disastrous flooding in the Pacific. That was the year the island nation of Fiji began using satellites to monitor sea levels—documenting a rise of 90 millimeters to date. For residents of those low-lying islands, just two degrees of global warming can be a matter of life or death.

Petrini wasn’t worried about Fiji back then. He’d had a hard time locating it on a map. “Fiji” in his world was on the corner of Boynton and Salisbury streets, where Phi Gamma Delta fraternity—rival to his beloved Alpha Tau Omega—enlivened their parties with bamboo tiki torches. He had no idea that two decades after graduation, he’d be pulling a very serious type of all-nighter—supporting representatives from the Pacific Islands in late-night negotiations for a global agreement on climate change.

“I was there in the room when the Paris Accord was adopted,” he relates, the awe in his voice coming through strong and clear over a long-distance Skype connection. “It was an amazing moment in history.” Fiji—which he now calls home—was the first nation to ratify the watershed 2015 agreement. Back in the early 1990s, words like carbon footprint and zero emissions weren’t in the everyday vocabulary of most Americans. There wasn’t an academic track for students who wanted to save the planet. Although WPI students were addressing environmental issues around the globe through projects, an environmental engineering degree program was more than a decade away.

Petrini had found his happy place. A first-generation college student, he came to WPI with a strong attraction to math and science, but no clear career plans. He chose chemical engineering as a major. He pledged the ATO fraternity and bonded with a great community of friends. He even embraced his English classes. In Modern British Literature, he discovered James Joyce, and for his Humanities Sufficiency took on Ulysses, a 700-page albatross full of cryptic references and passages in eight different languages, including Gaelic, Greek, and Hebrew. Petrini liked it because it was challenging, like his engineering courses. “Reading a normal book—I can do that easily. But Ulysses was amazing.”

Anytime he mentioned his major, people would rave about the high starting salaries for chemical engineers in industry. He only knew that he loved math and chemistry, but he didn’t really know where he would to go with that.

A trick question from one of his professors illuminated a path. “Kevin, do you know what the largest chemical reactor on Earth is?” asked his advisor, Barbara Wyslouzil (now at Ohio State University). He figured the location had something to do with Pfizer, or Dow Chemical, or one of the other corporate giants—which was the direction he figured he’d be heading after graduation.

The answer was right in front of his face, but he couldn’t see it. “The largest chemical reactor on Earth is the atmosphere,” Wyslouzil informed him.

He got caught up in her specialty—aerosol pollution. He got two friends on board for an MQP doing point source modeling of air pollutants in the Worcester area. The realization that he could apply his chemistry background to environmental problems set him on a course. It led to the doctoral program at the University of Colorado Boulder, where he worked on computer models of atmospheric behavior during smog outbreaks in Los Angeles.

WANDERLUST

Perhaps it wasn’t the right track after all. He loved the work. (“Anytime I find myself with numbers, I’m happy,” he says.) But he also knew he wanted work that let him interact with people. He yearned to travel. He’d gone to Belgium for his IQP, ventured cross-country for his graduate work, and he was restless for more. Then he found the Peace Corps. He was looking for a change; they were looking for math and science teachers.

Two years shy of a PhD, Petrini defended his thesis and left Colorado with a master’s instead. The Peace Corps sent him to Samoa, where he learned the language, embraced the culture, and taught his favorite subjects in a rural village school. It was exciting to think he might inspire students there the way his AP chemistry teacher had inspired him as a teenager back in Connecticut.

“Romance plays a role here,” he interjects into the saga of his nonlinear career trajectory. While in Samoa, he’d met a woman—ironically, the daughter of two American Peace Corps volunteers who’d been stationed there in the ‘70s. Taialofa Russell was born in Samoa, but lived there only the first few years of her life. Kevin had gone to Samoa to see the world; she’d returned to re-connect with her birthplace. They were married in New Hampshire, and a few years later returned to Samoa to make a life there.

Kevin was offered a job at the local Peace Corps office training new volunteers. He was glad to share the lessons from his own experience. “You can have all the technical competency,” he says, “but if you can’t translate that, in a respectful way, into the local cultural context, then you’re probably not going to get the job done. And you’re not going to help the communities that you’re trying to help.” He adds, “I still use that concept a lot in my current work. It’s not only what you know—it’s how you communicate it.”

One day a newspaper ad stopped him in his tracks. The United Nations Development Programme (UNDP) was seeking a Climate Change Community-Based Adaptation Officer. In that single posting, it all came together: the atmospheric chemistry and math; saving the planet; the community organizing and development work. “I was like, ‘Hello! This was made for me!’” he says. The position was only open to Samoan nationals. Not a problem. Petrini had qualified for citizenship the previous year, by means of his wife’s dual citizenship.

THE BUCK STARTS HERE

Since then, a series of promotions brought Petrini from Samoa to the UNDP Pacific Office in Fiji, and expanded his reach from a single country to the region’s 15 island nations. He knows them well: he’s been to 13 of them. Today, as Team Leader for Resilience and Sustainable Development, he supervises a staff of 45 in planning and carrying out 42 projects across 15 countries, with a budget of $130 million. He also helps secure funding: This year his team is expected to deliver more than $28 million in financing to address problems related to climate change, the environment, disasters, and energy. Over time, he’s become known as an expert on climate finance—speaking, writing, and helping countries navigate the complex process of accessing funding earmarked for climate change adaptation or mitigation.

Which is why the government of Tonga asked him to join that delegation for the historic 2015 Conference of Parties in Paris. Most people know the Paris Accord, Petrini explains, but few realize that those parties have been gathering annually since 1995. He insists that his role was tiny. “People had been working on this for decades. I came in to help where I could during that last year in the lead-up to Paris, and was able to witness this very significant moment in history.

“I really believe that this was a triumph of multilateralism in protecting our Earth for the future,” he concludes. “In Paris, 196 countries came to an agreement. When you think about it … can you even get 196 people to agree on anything?”
THE RAINFOREST AND ITS SERENE WATERFALLS IN THE COLO-I-SUVA FOREST NATIONAL ARE A FAVORITE VISITING PLACE OF PETRINI AND HIS YOUNG FAMILY. "THE RAINFOREST REPRESENTS THE WORK I DO ON LAND TO PROTECT THE ENVIRONMENT AND COMBAT CLIMATE CHANGE," HE SAYS. "THE BIODIVERSITY OF TROPICAL RAINFORESTS IS IMMENSE, AND EVEN TODAY THERE ARE SPECIES OF ANIMALS AND PLANTS BEING IDENTIFIED. BY CONSERVING THE FORESTS WE NOT ONLY PROTECT BIODIVERSITY, BUT ALSO SEQUESTER CARBON. HEALTHY FORESTS ARE A KEY WAY TO REDUCE SOIL EROSION. IF UNCHECKED, SOIL EROSION AFFECTS DOWNSTREAM WATER QUALITY AND CAN CAUSE SEVERE FLOODING."
Paris wasn’t just a glory moment, but a work order for Petrini. “A lot of the past few years, on my end, have been defined by ‘How do you take the Paris Agreement and translate it into action? How do we make that policy statement into something concrete on the ground?’”

In his workday, that can literally mean concrete: for example, revetments to fortify shorelines against future storms. It can mean enhancing natural coastal protective systems, such as mangrove trees, sea grass, or coral. Some adaptations aren’t concrete at all: for example, helping nations develop frameworks for recovery from natural disasters. There’s even computer modeling of rainfall baselines to predict the outcomes of possible drought scenarios.

“I’ve made a shift from doing the very hands-on, hands-dirty work at the community level, up to policy work,” says Petrini. “I now manage a very large portfolio to ensure that the work we do will have the greatest possible impact in the Pacific.” He never forgets that community connection is the heart of it all. “If you’re trying to impose policy in isolation of that, then it’s really wonkish and it’s not going to be grounded.”

One benefit of his advancement: “Back when I was an advisor, people could say, ‘OK, Kevin, good advice, but I’ve decided to do something else.’ But now I’m a decision-maker within my organization,” he says, “and I have the power to apply what I think is the best way to go about this.

“My work is making a difference in people’s lives,” he reflects. “That matters a lot to me. The trade-off is that I’m so far from friends and family.”

Asked how long he expects to remain in that part of the world, Petrini just laughs. “As you can tell from my story, anything could happen tomorrow.” Right now he and Taialofa are glad to be raising their three sons where the air is clean, in a more relaxed social climate, surrounded by a paradise of natural beauty. Their schoolmates come from around the Pacific and the world. “I pass a mosque, a church, and a Hindu temple just driving across town,” he says.

Although school is taught in English, his kids may need some coaching on American culture if they wind up moving back to the United States. On one visit, their American cousins taught them to play baseball. One son ran inside, all excited, exclaiming, “Dad, Dad, we’re playing bat-ball!” Petrini, with his international perspective, can see the rightness of that. “When you think about it, you’re playing with the bat and the ball. The bases just sit there.”

The advent of Facebook was priceless, collapsing continents and crossing oceans to give him a direct line to his ATO brothers. At best, the Petrinis manage a trip home every year or two to see their extended families in Connecticut and New Hampshire. “I would return to WPI for Homecoming in a heartbeat,” he says, but the dates never seem to line up.

In December, the Conference of Parties will gather again, this time in Poland. It’s unclear whether Petrini will be able to pull himself away from his responsibilities to attend. Last year, he traveled to Bonn, Germany, for the 2017 meeting. The Prime Minister of Fiji served as conference president—the first time for a small developing island nation. To bring others on board, he decorated his pavilion with a traditional island outrigger and the slogan “We are all in the same canoe.”

Petrini took a long and winding route to bring his disparate talents on board, but it now makes sense. This is where he was heading all along.
17 GOALS TO TRANSFORM OUR WORLD

ON 1 JANUARY 2016, THE AGENDA FOR SUSTAINABLE DEVELOPMENT—ADOPTED BY WORLD LEADERS IN SEPTEMBER 2015 AT A HISTORIC UN SUMMIT—OFFICIALLY CAME INTO FORCE. OVER THE NEXT 15 YEARS, THESE GOALS CALL ON ALL COUNTRIES TO MOBILIZE AGAINST POVERTY, FIGHT INEQUALITIES, AND TACKLE CLIMATE CHANGE, WHILE ENSURING THAT NO ONE IS LEFT BEHIND. PETRINI’S TEAM WORKS PRIMARILY WITH THREE OF THE UN’S INITIATIVES:

SDG7: AFFORDABLE AND CLEAN ENERGY
Petrič’s team supports the implementation of Nationally Determined Contributions (NDCs), the building blocks of the Paris Agreement. This includes increasing access to affordable, reliable, and sustainable energy services, expanding the share of renewable energy, and creating incentives for public and private investment in energy efficiency.

SDG13: CLIMATE ACTION
Petrič’s work addresses the root causes of vulnerability and increases resilience through policy advice and community-level action, with a special focus on women, youth, and other marginalized groups. Strong community engagement is key. Vulnerability is addressed through initiatives in the areas of flood control, coastal zone management, and water and food security, including agriculture and fisheries. Resilience is built through diversification of livelihoods and adaptive capacity for the vulnerable populations, including those living on atolls, along the coast, and in urban areas. The team also supports the Pacific voice in global forums, such as the United Nations Framework Convention on Climate Change.

SDG14: LIFE BELOW WATER
The work is guided by an innovative, culturally appropriate, “Ridge to Reef” approach that integrates management of land, water, forest, biodiversity, and coastal resources. The team helps unlock the economic and social benefits of community-based conservation in protected areas, promote ecotourism, and support access to finance for biodiversity and ecosystems management. It supports the strengthening of the management of coastal biodiversity by promoting sustainable fisheries and livelihoods, focusing on the economic empowerment of women and youth. Also supported is the scaling up of sustainable waste management initiatives, focusing on behavioral change towards reducing and recycling waste, and innovative treatment options in small island contexts. Petrič’s team supports advocacy campaigns involving communities as agents of change, helps countries develop appropriate policy incentives, and promotes social entrepreneurship, especially among youth.
Arthur C. Heinricher  Dean of Undergraduate Studies
CAMERA
I STARTED COLLEGE AS A FINE ARTS MAJOR FOCUSED ON PHOTOGRAPHY. THAT ACT OF CREATING, OF SEEING AND IMAGINING THE FINAL PRINT AND THEN MAKING THAT PRINT, IS STILL POWERFUL FOR ME. THERE IS REALLY NOT MUCH DIFFERENCE BETWEEN A BEAUTIFUL PRINT AND AN ELEGANT PROOF.

BEAN COUNTER CUP
A GROUP OF STUDENTS STARTED THE TEST KITCHEN FOUR YEARS AGO, MEETING ALMOST EVERY FRIDAY MORNING AT THE BEAN COUNTER IN WORCESTER TO TALK ABOUT PROJECTS, TEAMWORK, EDUCATION, AND THE WPI OF THE FUTURE. THIS GROUP REMINDS ME THAT STUDENTS ARE MORE THAN PASSIVE CONSUMERS OF THE ACADEMIC PROGRAMS FACULTY DESIGN.

THE WPI CHARTER
THIS IS A COPY OF THE HANDWRITTEN CHARTER THAT CREATED WPI IN 1865. REMEMBERING ROOTS MATTERS. I KEEP THIS ON MY SHELF NEXT TO SOME OF THE DOCUMENTS CREATED WITH THE WPI PLAN.

BOOKS
I HAVE ABOUT FOUR TIMES AS MANY BOOKS AS THE SHELVES IN MY OFFICE WILL HOLD. I RETURN TO ALFRED NORTH WHITEHEAD’S AIMS OF EDUCATION EVERY YEAR WHEN I AM THINKING ABOUT THE WELCOME FOR FIRST-YEAR STUDENTS AT THE START OF NEW STUDENT ORIENTATION. HE SAID THAT THE “TASK OF THE UNIVERSITY IS TO WELD TOGETHER IMAGINATION AND EXPERIENCE.” WE HAVE A LOT OF EXPERIENCE, BUT WE NEED EVERY NEW CLASS’S WEALTH OF IMAGINATION.

FACULTY TRADING CARD
THIS IS ABOUT FAMILY AND REMEMBERING WHAT AND WHO REALLY MATTER. WHEN I WAS A NEW FACULTY MEMBER HERE, ONE OF THE EVENTS RUN DURING NEW STUDENT ORIENTATION USED “FACULTY TRADING CARDS” TO HELP FIRST-YEAR STUDENTS GET TO KNOW THE FACULTY. I WAS SUPPOSED TO PROVIDE A PICTURE AND SOME INTERESTING STATISTICS ABOUT MYSELF. MY SON, ALEX, WHO WAS FIVE YEARS OLD AT THE TIME, PROVIDED A SKETCH IN PLACE OF THE PHOTO (YOU CAN SEE MY GLASSES AND BEARD IF YOU LOOK CAREFULLY).

PICTURES FROM THE MISSISSIPPI RIVER
I DID THREE “TOURS” AS A DECKHAND ON RIVER-BOATS BEFORE I STARTED COLLEGE, WORKING ON TOWBOATS MOVING CRUDE OIL FROM NEW ORLEANS TO MINNEAPOLIS AND CHICAGO AND KANSAS CITY. THE WORK WAS HARD AND DIRTY AND A REALLY GREAT WAY TO LEARN THAT YOU WANT TO GO TO COLLEGE.

THE WIZARD BOOK
ONE OF THE BOOKS ON MY SHELF, NOT FAR FROM AIMS OF EDUCATION, IS A COPY OF THE WIZARD AND THE MONSTER BY BILL BRITAIN. THE WIZARD IS MODELED AFTER JOHN VAN ALSTYNE, MATH PROFESSOR AND DEAN OF ADVISING AT WPI. I THINK THE BOOK BELONGS TO BILL BRITAIN MORE THAN ANY OTHER SINGLE PERSON.

BULGARIAN MASK
THIS IS A SCULPTURE GIVEN TO ME BY A WPI GRAD. HE WAS FROM BULGARIA AND HE TOLD ME THAT THIS WOULD PROTECT ME “FROM EVIL SPIRITS AND THEIR PARENTS.” I DON’T THINK THAT THE PARENTS WERE INCLUDED IN THE ORIGINAL TRADITIONS.

THE GORDON PRIZE AND BILL GROGAN’S TIE
WPI WAS RECOGNIZED BY THE NATIONAL ACADEMY OF ENGINEERING’S GORDON PRIZE FOR THE INCREDIBLE WORK THAT THE WPI FACULTY DID IN THE EARLY 1970S TO CREATE AN ENTIRELY NEW APPROACH TO SCIENCE AND ENGINEERING EDUCATION, AS WELL AS FOR THE WORK THAT FACULTY DO EVERY DAY TO ADAPT AND IMPROVE THE ORIGINAL PLAN. THE TIE WAS GIVEN TO ME BY BILL GROGAN WHEN I JOINED HIM IN ADVISING THE PHI KAPPA THETA FRATERNITY CHAPTER AT WPI. I THINK THAT THE GORDON PRIZE BELONGS TO BILL GROGAN MORE THAN ANY OTHER SINGLE PERSON.
HAVE YOU INCLUDED WPI
in a will or trust?
in a life income gift?
as a beneficiary of life insurance,
IRA, or other retirement account?

Membership is about giving you recognition NOW for your plans to support WPI in the FUTURE. To join visit plannedgiving.wpi.edu.

"For several years now, Bonnie and I have sat in the audience of Alden Society luncheons during Alumni Weekends and admired the work that Al and Barbara Levesque have done for the Society. Now, we are honored to be following in their footsteps as co-chairs of the Alden Society."

- Tom ’64 and Bonnie Newman

FOR MORE INFORMATION
Contact Lynne Feraco
Executive Director of Gift Planning
888-974-4438
lferaco@wpi.edu
FROM THE DESK OF
David Wheeler ’93, ’04 MS
Alumni Association President

TO DO—
✓ In October, visit TechConnect—the new online portal just for WPI alumni—and sign up!—wpi.edu/+techconnect
✓ Come back to the Hill for Homecoming, Oct. 26 and 27—info at wpi.edu/+homecoming

CONGRATS—
TO WPI—on the official opening of the Foisie Innovation Studio and Messenger Residence Hall
TO THE CLASS OF 2022—welcome to the WPI community! And a big “thank you” to the alumni and parents who hosted Welcome Receptions for incoming students and their families this summer.
TO TECH OLD TIMERS—on its 60th anniversary
TO THE WOMEN OF WPI—on another engaging and well-attended Fall Leadership Conference (on campus Oct. 20) To get involved, email alumni-office@wpi.edu.

COMING SOON—
✓ GIVING DAY, Nov. 27—be part of this day of community, love for WPI, and giving back!

ENJOY THE FALL!
David Wheeler ’93 ’04
wheelerda@alum.wpi.edu

SAVE THE DATE—
✓ ALUMNI WEEKEND, MAY 31-JUNE 2 ... and many more events and activities to keep you involved and engaged throughout the year—wpi.edu/alumni

OVER
[Earlebridge]
George Davagian Jr.’s roots are deeply embedded within WPI. In a span of 35 years, he, his father, and his uncle graduated with engineering degrees from the place Davagian affectionately refers to as Worcester Tech.

George says the family legacy began with his grandfather, Sarkis Davagian, who escaped from Armenian in 1898, in a time of great violence and upheaval. Coming to America at age 15 with only the shirt on his back and haunting memories of the horror he witnessed, Sarkis later married a woman of Armenian descent and set up a small farming operation. With their meager earnings carefully cultivated, they were able to send their sons, George and John, to WPI for $500 per year—a rather substantial sum in the 1930s.
“My grandfather worked all the time. He wore dungaree overalls every
day of his life,” George recalls. “My grandparents came over from the old
country and started from scratch.”

The work ethic Sarkis and Nartoohi exhibited in developing the farm,
while cultivating a strong sense of family, laid the foundation for the
success of George’s father and uncle. George Sr. earned a BS in mecha-
nical engineering in 1933; John graduated a year later with a BS in civil
engineering. George followed in his uncle’s footsteps, earning a BS in civil
engineering in 1968 followed by an MS in the same field.

“My father was the greatest influence on my life for his work ethic and
honesty,” says George “Uncle John was a close second, having worked
closely with him for 25 years and learning his vast knowledge of the
heavy/highway construction business.”

RETURNING THE FAVOR

George recalls with fondness his college years, which included a proud
role as president of Sigma Phi Epsilon fraternity. “I will always be grate-
ful to WPI,” he says, “not only for my education but for the friendships of
classmates, fraternity brothers, and professors in a close-knit supportive
college community.”

In celebration of his gratitude, George recently established the Dav-
agian Family Global Project Center Fund. The fund will provide financial
support for WPI’s Armenia Project Center in Yerevan, the administrative,
cultural, and industrial center of the country.

While serving on his class’s 50th Reunion Committee this year, George
spoke with a student who worked on an IQP, “Improving Eye Care Delivery
Through Data Sharing Technology,” which was completed at the Armenian
Project Center and went on to win a coveted President’s IQP Award earlier
this year.

Katharine Dunphy ’19 told him that “the Armenian people were
welcoming, warm, and thankful for the projects undertaken by the WPI
students in their country,” he recalls. “I wish to applaud co-founders Pro-
fessor Diran Apelian and Mike Aghajanian ’80 for their insight in establish-
ing the Center. With our gift to WPI I hope the Armenia Project Center
will continue to help the people of Armenia.”

Through this gift, George Davagian honors both his family legacy
at WPI and the family’s heritage and continued connection to Armenia.
“I believe my grandparents would be proud of our donation to the coun-
try they were forced to leave during a dark time for the Armenian people,”
he says. “This is a good way to help out their native country.”
The Foisie Innovation Studio is now teeming with activity—students are creating prototypes of all kinds in the McDonough Maker Space and Fitzgerald Prototyping Lab, testing their robots in the Noiles Teaching Laboratory, taking innovative new courses in the Oliver and Aberdale Active Learning Classrooms, and holding team meetings in the many Tech Suites and open collaboration spaces. Faculty members are working with students in new spaces and WPI’s Global Project Programs and Innovation and Entrepreneurship initiatives have new homes in the facility. Likewise, students have already made Messenger Residence Hall (top three floors of the building) their home away from home.

The spaces being enjoyed by students, faculty, and staff today were made possible thanks to generous support from alumni and friends. Some 1,550 donors contributed $18 million to make the Foisie Innovation Studio a reality. Many were motivated by the George I. Alden Trust, which contributed $3 million toward the project after the WPI community met a challenge of raising $9 million for it. In May donors and WPI trustees were treated to a special preview of what the finished building would look like, with donor names in place. These photos captured some of the early excitement back in the spring.
Karen Oliver ’82 with President Laurie Leshin outside the Oliver Active Learning Classroom

WPI trustee Andy Aberdale ’89; LindaLeigh (Richert) Aberdale ’88, Women’s Impact Network Executive Committee member and co-chair of the Dean’s Council of Strategic Advisors for the Foisie School of Business; and their son, Andrew Aberdale ’18, outside the Aberdale Active Learning Classroom

Trustees of the George L. Alden Trust: from left, Doug Meystre, Warner Fletcher (WPI trustee emeritus, and former board chair), and James Collins
There are other online networking sites—and then there’s WPI TechConnect, the exclusive network for all things WPI. The Office of Alumni Relations and the Alumni Association are excited to offer this new portal. Peter Thomas, executive director of WPI’s Office of Lifetime Engagement, says, “We are very excited to offer WPI alumni a new platform for online engagement. WPI TechConnect goes well beyond the standard ‘alumni directory’ by offering opportunities for job searching, mentorship, and volunteer engagement. We are very grateful to the Alumni Association for their support in providing this great new way for our alumni to stay connected.”

Here’s what you can do with TechConnect:

**Network with alumni**—about hobbies, books, careers, adventures

**Find alumni in your area**—or your company, or where you’re moving to

**Keep up with all things WPI**—news, alumni events, photos, social feeds

**Give back**—through volunteer opportunities and supporting WPI with a donation

Alumni Association treasurer Dan Sullivan ’12 looks forward to the partnership and alumni using the tool. He says, “The Alumni Association is thrilled to support WPI TechConnect. We believe the alumni base is filled with successful, driven professionals who want to connect with and meet other WPI alumni, whether that be through continuing education, networking, a mentor-mentee relationship, or volunteering. And with this WPI-exclusive tool, it provides an easy avenue to facilitate those meaningful connections and relationships.”

Tori Alexander ’15 was one of the first to activate her WPI TechConnect account. Her reaction: “It’s almost like being Facebook and LinkedIn friends with all of WPI, and that can lead to a lot of opportunities to join together in work, fun activities, volunteering, and other possibilities.”

Signing up for the site is easy—and you can even do it through LinkedIn. Activate your account in October at wpi.edu/techconnect.

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Setting a High Bar

Seventeen alumni were sworn in as members of the Supreme Court Bar on June 18, in a university-organized event capped by personal visits from Chief Justice John Roberts and Justice Ruth Bader Ginsburg. WPI senior vice president and general counsel David Bunis voiced a motion to admit the 17 alumni—naming each individually—as members of the bar. Admission to the bar is necessary for attorneys who argue cases before the highest court in the land. It also provides bar members who want to see cases argued with their own section in the courtroom. Although the bar section is first come, first seated, the line is generally much shorter than seating for the general public, which is extremely limited. Membership also provides the privilege of access to the Supreme Court Law Library.

While most of WPI’s new Supreme Court bar members said they had no immediate plans to argue a case before the court, their new status was a source of pride. Bunis says, “Membership in the Supreme Court bar is one of the highest honors available to an attorney practicing law in the United States. For me, it was an honor to stand before the nine justices on behalf of the WPI lawyer alums who accompanied President Leshin and me to Washington, D.C.” In addition to the alumni attorneys listed, WPI general counsels Jeffrey Snider and Matthew Thaler were also sworn in, along with David Nickless’s wife and law partner, Deborah Phillips.

1946

Robert McGoldrick, who left WPI in his freshman year to become an Army pilot, was interviewed by the Worcester Telegram & Gazette about his military service. “We were at war. We didn’t question anything,” he told the reporter, explaining the sense of obligation of the so-called Greatest Generation. “No one talked about whether you liked it or anything. You went in.” The bombing of Hiroshima and Nagasaki ended the war before he could serve overseas, so he became trained in agriculture, and still owns The Green Thumb garden center in the town of Westborough, Mass., where he and his wife, June, reside.

1956

Barbara Rogers, wife of John Rogers, sends word of his death on June 2. She notes, “Until close to the end, he always looked forward to emails from ‘Pappy.’ Thank you, Al [Papianou ‘57], for all the fun and laughter you brought into his life.”

1958

Bill Rabinovitch writes, “I made a powerful speech at NYU to save the sublime Elizabeth Street Garden from the developer and agency who wrongfully wish to destroy this space, the only remaining green space in the entire SoHo, Little Italy, and Chinatown area three short blocks east of SoHo, which hundreds of thousands globally seek out every year. Picasso never shied from taking on political issues in his art and what he said, even directly confronting the Nazis in Paris during the Occupation. This happened Monday, June 25—I’m keeping both traditions alive.

“Also at the meeting was ACLU attorney Norman Siegel, who told me he was very impressed as I uncovered the hidden root issues. We both made impassioned speeches. I must have said the right things, as the Elizabeth Street Garden used a photo of me speaking as one of three images in their email blast to more than 6,000 the next day.”

1960

To commemorate the 100th anniversary of the “bit” flip-flop circuit, Richard Brewster built a reconstruction of this pre-digital synchronizable relay switch. IEEE Spectrum published his two-page story on the project in the June 2018 issue. He says, “Having found an obscure article in an ancient radio magazine, I determined to construct, using vintage components, the Eccles-Jordan circuit for which a patent was applied just a century ago. Aside from batteries, all circuitry is composed of parts available in the early ’20s. Oh, yes, I first heard about the flip-flop in an electronics course back in 1957 at WPI!

“In the fall of 1963, I was fortunate to have the opportunity to work with one of the very first mass-produced transistorized electronic computers, the 4000-bit NAVDAC. The Navy employed this machine on Polaris subs as the centerpiece of the inertial navigation system. I personally confirmed that the NAVDAC was a general purpose computer by developing a simple program that would generate prime numbers. It ran for hours and produced many feet of print-out!”

1963

Bob Magnant sends news of his latest publication, Short Stories from Earth. “It’s the third installment of what I’m calling my ‘Fingertips’ series on iTunes,” he says. “I am now writing with a purpose. The basic idea is to expose my readers to some personal thoughts of what the communications world is by showing them what digital storytelling means to me. From time immemorial, even before written words, storytelling was a part of the social and cultural activity of mankind. Every culture that has ever existed has had different narratives that it used to educate, entertain, preserve itself and instill its values in others. Writing not only made storytelling a portable process, it has established the structures of our communications and educational systems, extending itself to represent our history and creating innovations in processes. I am still trying to reach parents and the kids alike.”
Bob’s books are available to Apple users on iTunes. Android and PC users can download a free pdf version from magnant.org/Cyberspace/fgingertipsseries.html.

1964
Milt Dentch writes, “The American Society for Quality has published my third book, The ISO 45001:2018 Implementation Handbook. The previous books were The ISO 9001:2015 Implementation Handbook and The ISO 14001:2015 Implementation Handbook—the first covering quality management systems; the second book environmental. The ISO 45001 book provides guidance to companies seeking certification to ISO 45001:2018, based on my experiences in auditing and consulting for over 500 companies the last 20 years. Every year, over 2.5 million workers around the world die due to work-related injury, disease, or ill health. The International Organization for Standardization established ISO 45001 to encourage companies to have their workplaces audited by an independent agent to improve workplace safety. While the audit is voluntary, the hope is large companies will only buy from ISO 45001-certified suppliers. BMW has written the requirement into its contracts.”

1970
Vinay Mudholkar (MS CE), a transportation consultant in the field of rail and transit, was invited to speak at the Africa Rail 2018 conference in Johannesburg, South Africa. He writes, “Over 6,300 participated in this annual event. I presented “Lessons Learned from Global Programs,” based on my experience managing programs for U.S. companies such as Bechtel and the I. Berger International Group. I emphasized critical elements of Economics, Environment, Education, and Employment in the selection of systems applicable to Africa Rail and Transit programs. Representatives and suppliers of many countries attended the conference.”

1974
Jim Kudzal and his wife, Tara, were pleased to be back at WPI in May to attend their daughter’s graduation. Andelle Kudzal holds a bachelor’s and a master’s from WPI, and now a PhD in manufacturing engineering.

1975
In June Michael Dolan announced his retirement as senior vice president of Exxon Mobil Corp., effective Aug. 1, 2018. He began his career with Mobil in the 1980s, became regional director in ExxonMobil Chemical Company after the merger of Exxon and Mobil in 1999, and was elected senior vice president 2008.

1979
Norm Guillomette ran the Boston Marathon this year sporting his WPI shirt. “I have now run it four times. My first time was as a WPI senior. My 4:03 time pales in comparison to my 2:30 back when I ran track, cross country, and indoor track for WPI (1975–79). I remain an active runner still. You can see my results on athlinks.com. My best memories from my years at WPI are of running. I enjoy the old pictures found in the archives of the Poly Club.”

Phil Rubin retired from global industry in May 2017 to enjoy the outdoor life near Park City, Utah. He reports, “Finding myself unable to sit still, I became involved in the municipality of Hideout, Utah, where much to my surprise I was elected mayor in November 2017.” He adds that when not resolving community issues, he and his wife, Lynn, and their two Labrador retrievers enjoy the outdoors and spend their free time skiing, hiking, and biking. “We also enjoy travel and will spend three weeks touring in China in the summer of 2018, and we expect to visit Europe in the fall.”

1983
Ronald Ranauro (’88 MS CS) is founder of TrialO, a search interface that provides up-to-date information on clinical trials. His business was a winner in StartUp Worcester, a joint effort of the Worcester Regional Chamber of Commerce, the Venture Forum, and Worcester CleanTech Incubator. The winners received full-year memberships to all three organizations and have access to work space, publicity, business resources, and a network of professionals.

1986
John Joseph was appointed CEO of Datamix, a data analytics provider for manufacturing companies that want to deploy Industrial Internet of Things (IIoT) technologies to improve production processes.

1988
Sean Luck was recently promoted to chief technology officer at Psyche Systems in Milford, Mass. He has been with the company since 2013, working on Laboratory Information Systems (LIS) software. He leads the company’s Research & Development group.

Suzanne (Giroux) Sontgerath was honored by her WPI colleagues at the university’s Town Meeting in May, when she was presented with the Board of Trustees’ Award for Outstanding Staff Member. The award recognizes outstanding work and dedication by a member of the staff in support of the mission of WPI. Employees are nominated by their peers, and the Board of Trustees approves one or more winners. Recipients are awarded a cash prize and a plaque in their honor is displayed in the Rubin Campus Center. After taking some time off to raise her children, Sue returned to WPI in 2008, and now serves as K-12 outreach program manager and associate director of admissions. She was praised as a dedicated alumna, employee, and mother.

Col. Michael Thurston is chief of staff for the Army’s Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) at Aberdeen Proving Ground, Md.

1990
Paul Dombrowski was recognized as a fellow by the Water Environment Federation for long-term, significant contributions to enhance and protect the global water environment.

John Lombardi co-authored a chapter devoted to forensic THC analysis in a new book, Medicolegal Aspects of Marijuana: Arizona Edition. “Besides running a successful defense contracting business,” he writes, “I have also served as an expert witness in over 100 criminal (toxicological and firearms ballistic) and civil (trade secret misappropriation and patent infringement) matters. I originally became interested after serving on a DUI case. I was overwhelmed by the quality of the forensic alcohol toxicological analysis performed by the police crime lab. After gaining experience testifying as an expert in criminal cases, I was also hired to testify in patent cases. I have always found the intersection between chemistry and the law to be interesting. I credit a lot of my success as an expert to the problem analysis and solving skills I gained while studying at WPI. Some of the reverse formula analyses I had to perform in a trade secret misappropriation case required unusual chemical methods development.” John is CEO of Ventana Research Corp. in Tucson.

Matt Oney has returned to WPI as head wrestling coach after two years at Kansas Wesleyan, where he hosted three NAIA national qualifiers, five KCAC Champions, two KCAC Most Outstanding Wrestlers, and the program’s first All-American standing. Prior to leading the Coyotes, he served as an assistant men’s and women’s coach at Wayland Baptist for two years. He takes charge of WPI’s program from Steve Hall ’87, who retired following the program’s best season since the Phil Grebiner era. Director of physical education, recreation, and athletics Dana Harmon says, “We welcome back Matt to the WPI Athletics Family. He brings a wealth of knowledge and experiences to the position that will help our student-athletes reach their full potential not only in competition but, more important, in the classroom and in the community.”
1992
Houssam Toutanji (PhD CE) is dean of the College of Engineering and Applied Sciences at Western Michigan University in Kalamazoo.

1994
Andy Peterson assumed command of Naval Nuclear Power Training Command on June 1, 2018, relieving Capt. Kevin Byrne as NNPTC’s commanding officer. “NNPTC is the first stop for all officers and enlisted sailors in their training to become Navy Nuclear Propulsion Plant operators on board fleet carriers and submarines,” he writes. “It’s the most academically demanding training program in the military. It’s located in Goose Creek, S.C., a few short miles up the Cooper River from Charleston.”

2000
Christopher Stank writes, “On May 5 I ran the Providence Marathon. I completed it in three hours and 31 minutes, with no marathon training. While this was my first marathon, it will not be my last. I have started training for the Beantown Marathon on Sept. 9.”

2002
Sarah Lovell shares, “My husband, Andrew, and I have settled in Manhattan for the foreseeable future. I started my own business here five years ago and currently work as a birth doula and Certified Lactation Counselor and Childbirth Educator in the Metro NYC area. I have most recently become a Midwife Assistant, attending homebirths with Tanya Wills of Manhattan Birth Midwifery. My husband finally received his green card in December 2017 and works as an investigator for a large law firm in NYC. We look forward to continued success in NYC.”

2004
Nehal Ibrahim Abu-Lail (PhD CM) is associate professor of chemical engineering at Washington State University.

2005
The work of Piya (Mazumdar) Samant (MS OIT, ’14 MBA) was shown at the Fitchburg Art Museum in the exhibit “Call and Response: Fluribus Unum.” She also curated “Flora and Fauna,” a group show at the Worcester Sprinkler Factory in July. In an interview in Boston Voyager, Piya answered questions about her portraits of pets and people, and her floral paintings inspired by the beauty of New England. “I was trained in Information Technology and spent the majority of my adult life working in tech, so the transition to becoming a full-time artist was a big leap of faith,” she said. As a self-taught artist, she calls herself fortunate to have a circle of people who provide opportunities to grow, and who “encourage me to chase my passion.” See her work at artbypiyali.com.

2008
Jen Hosker became an FAA certified commercial drone pilot. She is the manufacturing engineer responsible for the integration and testing of hyperspectral equipment, high-grade GPS units, and lidar systems on industrial drones for a variety of industries.

2011
Todd Alexander teamed up with Lindsay Lozeau ’18 (PhD CM) to found AMProtection, based in WPI’s Gateway Park innovation complex. Combining his initial research in food-borne pathogens, with Lozeau’s work on wound dressings, the two have developed an antimicrobial coating for urinary catheters that uses peptides to reduce the risk of urinary tract infections without increasing antibiotic resistance. Todd is completing his doctoral work in innovation and entrepreneurship at WPI.
2012

Nikki Connor and Ryan Shooshan ’13 were married on May 5, 2018. “Present at the wedding were 45 WPI alumni ranging from the class of 1974 to the incoming class of 2022,” they report.

Jetta Garrity and Andrew Lybarger were married on May 12, 2018. “We loved celebrating with our fellow swim alums!” they write. The photo includes, from left, Eric Spazzarini ’13, Carl Curran ’12, Eva Skorupka ’14, Antonia Labella ’12, Sonja Kent ’14, Alex Sanz-Guerrero ’12, Chase Johnson ’08, Colleen ( Heckley) Vecchiarelli ’12, Nick Catano ’11, Andrew Lybarger ’12, Jetta Garrity ’12, Rob Cakounes ’12, Jess Shelsky ’12, Eric Prouty ’12, Alana Aubin ’12, Will Grebe ’14, Racheal Weinrick ’13, swim coach Paul Bennett, and Lee Chiang ’11.

Jessica Shelsky and her MOP teammates Michael Doyle and Nicholas Workman were honored at the annual meeting of WPI’s chapter of the National Academy of Inventors in May. A twist-off ski boot designed to prevent knee injuries, based on their work with mechanical engineering professor Chris Brown, has been licensed to Brown’s company, Sports Engineering Inc. The prototype is undergoing further development at WPI.

2013

Aileen Caceres, now Dr. Caceres, completed medical school at Boston University and has begun a three-year family medicine residency at Brown University.

2014

Raj Patel writes, “WPI is always in our heart and soul. We all have gone in different directions. We may be finishing up graduate school and/or working full-time, but we still make time for friends and know how to enjoy our vacations and time off. I joined Bill Zhang ’13, Ben Pulver ’17, and Earl Ziegler ’13 on a weeklong hiking and camping trip in Rocky Mountain and Yellowstone national parks.”
Shahbaz Soofi was among 12 “fledgling entrepreneurs” selected as winners in StartUp Worcester, a joint effort of the Worcester Regional Chamber of Commerce, the Venture Forum, and Worcester CleanTech Incubator. Winners receive full-year memberships to all three organizations and have access to work space, publicity, business resources and a network of professionals. His business, WooRides, serves Worcester visitors and residents with a zero-carbon emission transportation, including a fleet of bicycle-drawn pedicabs.

2015

Tori Miller and Tyler Alexander tied the knot on May 19, 2018, at Higgins House. She writes, “Higgins House will always hold countless memories for us, and we’re so happy The Hill has seen us through a number of life’s milestones so far. We’re living and working in Worcester County, so we look forward to coming back whenever we can.”

2016

Derek Johnson founded Half Axe, an indoor hatchet-tossing game located in the Apex Entertainment Center in Marlborough, Mass. On his website, halfaxe.com, he describes it as “the latest, must try, thing to do in Massachusetts.” Yes, it’s safe, according to the FAQ, “Safety is our number one priority. Coaches walk everyone through proper techniques and safety before entering the specially designed, individual throwing lanes.” No, you may not bring your own axe or other sharp objects.

2018

Lindsay Lozeau (PhD CM) is cofounder of AMProtection in Worcester, with Todd Alexander ’11. Their company name comes from antimicrobial peptides, which is the basis of the infection-deterring coatings they are developing for catheters and other medical devices. Their collaboration has received media attention from the Worcester Telegram & Gazette and from WPI’s Daily Herd.
Wilhelm H. Eggimann, a longtime associate professor of electrical engineering, died July 19, 2018, at age 89. A dedicated teacher and mentor, he worked with colleagues to create teaching approaches to inspire students and increase comprehension and retention.

Born in Zurich, Eggimann came to the United States for graduate study at Case Institute of Technology after completing a degree at the Swiss Federal Institute of Technology. He joined the WPI faculty in 1964 and retired in 1999. He established an international exchange program between WPI and the SFIT. He also published and presented his findings on the best sequence for introducing basic concepts of electrical and computer engineering through demonstrations and hands-on design projects.

He is survived by his wife, Mary-Louise Prunier Eggimann, and two daughters from his first marriage. He also leaves twin grandchildren, Luisa Earle and Avery Earle.

Robert Foisie ’56, died June 18, 2018. He was a successful entrepreneur whose generosity made it possible for hundreds of students to attend WPI.

Bob began his career as an engineer at Hamilton Standard Co. and later served as chief production engineer at Pratt & Whitney in Hartford, Conn. As a young engineer, he found a way to simplify the design of a fuel control valve for jet aircraft, which led to a patent. Among his many credits, he was founder and former president of Matik North America Inc. in West Hartford, an import, distribution, and service firm specializing in paper-processing machinery.

His many entrepreneurial and business interests span telecommunications to real estate.

He was a first-generation college student who received scholarship support when he attended WPI. Over the years, he paid that support forward, building a long and generous history of philanthropy at his alma mater focused on undergraduate scholarships. Thanks to his support, generations more will earn their degrees here aided by his scholarships. The Foisie Innovation Studio and Foisie Business School are named in honor of Bob Foisie’s philanthropic legacy.
Alumni Weekend is the perfect opportunity to come back to WPI to reconnect with friends, revisit favorite spots, and see how the campus has changed since your student years.

Special reunion activities for undergraduate classes ending in 4 and 9.

Contact us at Reunion2019@wpi.edu or 508-831-5600 if you’re interested in serving on your reunion committee.

For complete details on our biggest alumni gathering of the year visit

wpi.edu/+alumniweekend