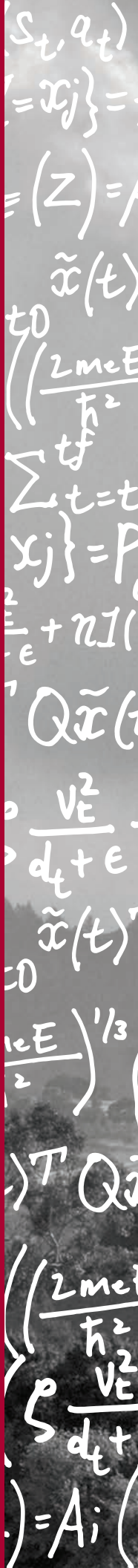
DONOR IMPACT REPORT

TOGETHER, OUR SOLUTIONS ARE GREATER THAN OUR PROBLEMS.



Stanford ENGINEERING | The Engineering Fund

NOVEMBER 2019

Your gift today is a commitment to solving tomorrow's greatest challenges.

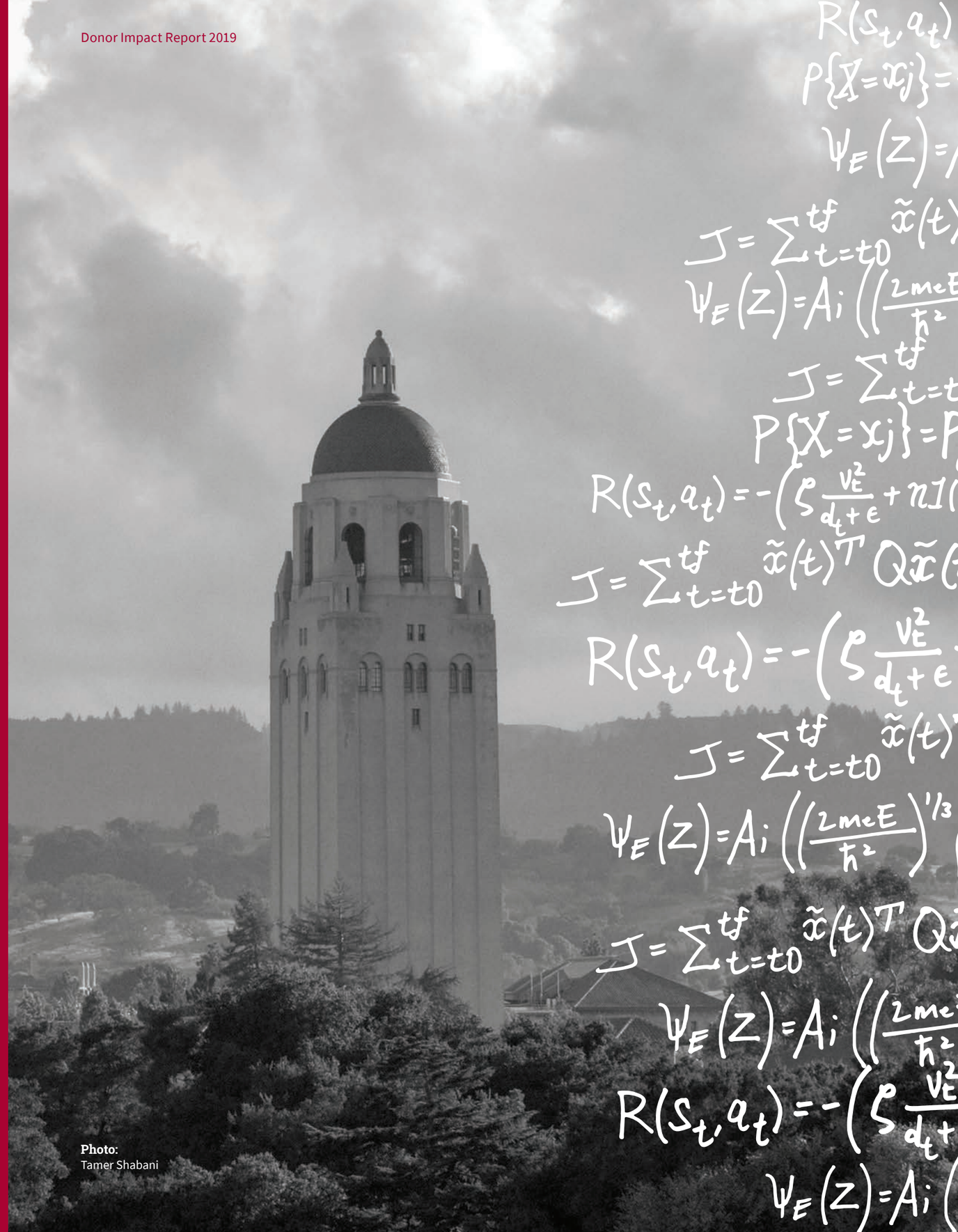


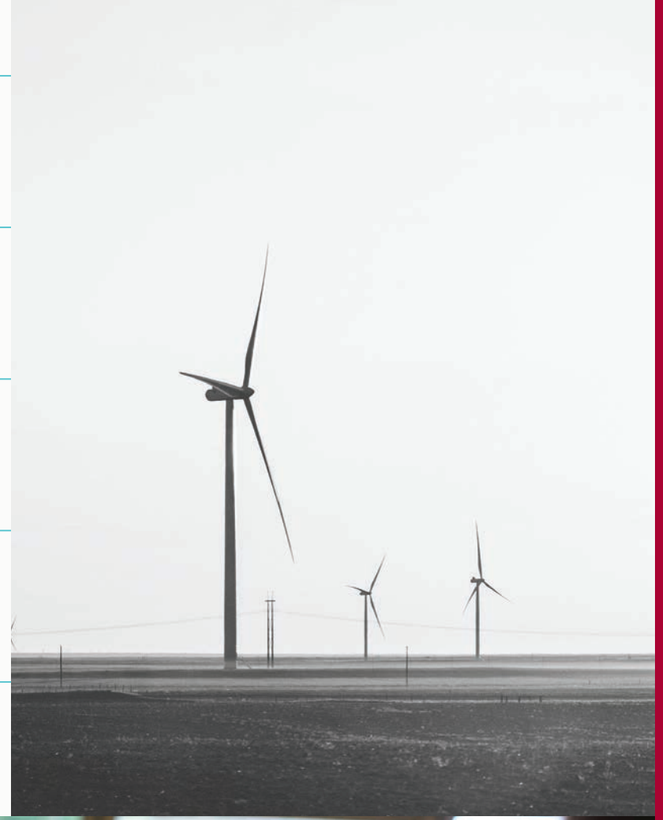
Photo:
Tamer Shabani

Engineer today. Solve for tomorrow.

In a fast-moving discipline like engineering, we must be ready for unexpected opportunities. Your generous gifts to Stanford Engineering are what keep us on our toes, poised for forward progress.

You keep alive Stanford Engineering's tradition of asking—and answering—questions in new ways: What does an engineer do? What does an engineer look like? How does an engineer change the world?

Sometimes we move ahead with precise plans, and sometimes in intuitive leaps.



Thanks to your support, our students and faculty are developing:

Mathematical models
to help public health officials and policymakers curb the opioid epidemic.

Ultra-high-resolution 3-D maps
of reefs using drones so that we can better understand the effect of climate change on the world's oceans.

Industrial-grade manganese-hydrogen batteries
capable of recharging up to 10,000 times and with a lifespan of more than a decade.

Solar-powered water purifiers
to bring drinkable water to remote, thirsty regions.

Nanoscale sensors
for space exploration that won't malfunction in the extreme conditions found on other planets.

Your gifts to our annual fund are vital for these advances and many others. While the vast majority of philanthropy to the school is tied to a project, person, or department, gifts to the Engineering Fund are building resources that are ready wherever and whenever they are needed most. Thank you for being part of our community of donors who contribute and make this nimble strength a reality.

Photo:
Nancy Rothstein

Computer Science the Cardinal Way

Each spring, Professor James Landay teaches *CS 377E: Designing for Global Grand Challenges*, guiding students through 10 weeks of design thinking and developing applications to assist with complex social and environmental challenges. The course, offered in partnership with the Haas Center for Public Service and the School of Engineering, is one of nearly 200 Cardinal Courses at Stanford that pair community organizations with classroom learning.

"By integrating service learning into courses, students are able to work on real problems, rather than abstract problems," says Landay. "No one team will solve these crises in a semester, but it broadens their view of what is possible for engineering."

In the second year of the course, students became deeply emotional as they outlined apps that could assist nonprofits in Greece helping Syrian refugees as they landed on the shores, boat after boat. In its fifth year, the course spurred students to develop apps to reduce unconscious bias in performance reviews, empower individuals to better manage their own mental health, strengthen eco-conscious habits, crowdsource to identify community needs, and more.

"What excites me most about teaching a Cardinal Course is that the students are self-selecting. So, they really engage in the problem, they really engage in people's stories," says Landay.

James Landay
Anand Rajaraman and Venky Harinarayan Professor in the School of Engineering
Department: Computer Science

Photo:
Ge Wang

Curriculum focus:

2019	Designing for human-centered artificial intelligence
2018	Designing for smart healthcare
2017	Designing for an inclusive technology economy
2016	Designing for the aid response to the Syrian refugee crisis
2015	Designing for health, education, and the environment

"In technology, we often see the same people solving the same problems over and over. What's really going to be amazing is when you get people like me and others who aren't historically in tech and you get them to start solving problems.

"The idea that I would be building something that would not only impact just me but potentially millions of workers across the nation was incredibly compelling."

Photo:
Nancy Rothstein

Alona King
BS '17, Computer Science
2017 Participant in *CS 377E*

Graduate [Speed,] Financial [Need]

The Engineering Fund supports the school's highly successful co-terminal program, which allows undergraduates to simultaneously complete their bachelor's and master's degrees in five years.

Because Stanford does not provide need-based financial aid to graduate students, the co-terminal program steps in to allow scholarship recipients to continue with their studies. The co-terminal program has attracted nearly 40 percent of the school's undergraduate engineers, and we take great pride in the diversity of perspectives and ambitions represented.

"As I begin my career, I recognize that the fields I am passionate about lack representation of people with hearing loss and disabilities, like me. I am a bioengineering major, and I hope my research will contribute to improving lives."

Zina Jawadi

BS '18 Biology, MS '18 Bioengineering
Co-Terminal Master's Recipient

Photo left:
Drew Kelly

Photo right:
Courtesy of
Christopher Fleming

Photo:
Amanda Law

"As someone from a disadvantaged and underrepresented community, I have seen from a young age that knowledge is one of the most powerful tools we have. Thanks to your financial support, I am able to complete my master's degree and push the boundaries of what humankind understands."

Christopher Fleming

BS '17, MS '17, Materials Science and Engineering
Co-Terminal Master's Recipient

Robot Reboot

Forget a vision of autonomous robots replacing human tasks.

A growing number of Stanford faculty are rethinking how robots can bring more humanity to life's challenges, and do so with humans remaining at the center of the equation.

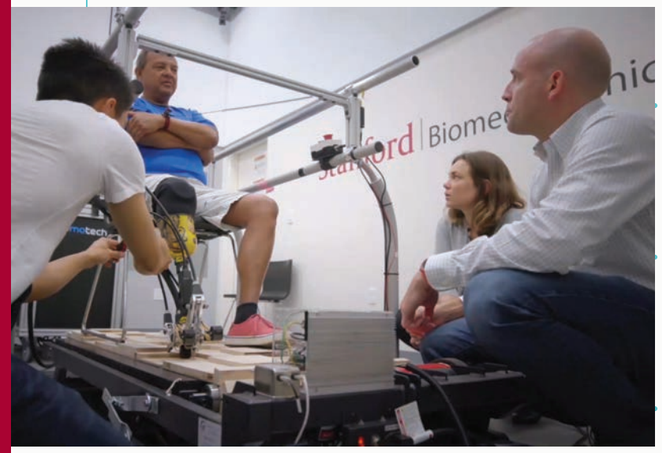
Allison Okamura
Professor of Mechanical Engineering and, by courtesy, of Computer Science

Photo:
Amanda Law

Allison Okamura, MS '96, PhD '00, who joined the Department of Mechanical Engineering in 2012, is focused on a new approach to robot design called "soft robots." She designs robotic devices that can stretch and grow to mimic human tissue for medical training, and even snake into previously unreachable corners during surgery. In search and rescue missions, they could extend the lifesaving team's reach by contorting into tight places where no person—or traditional, rigid robot—could ever go.

"People are asking: How do humans stay in the loop—play a role in an artificially intelligent system—rather than just turning things over to autonomous robots?" says Okamura.

Meanwhile, **Steven Collins**, one of the latest ME faculty recruits, is intent on using robotic exoskeletons to bring mobility to people who have difficulty walking. He envisions people being able to walk or run faster, more stably, and with less effort than someone moving by her own muscles. The problem, from an engineering perspective, is variability.



Steven Collins
Associate Professor of Mechanical Engineering (far right) in the Stanford Biomechatronics Lab

Photo:
Kurt Hickman

Photo:
Nancy Rothstein

Every person, every disability, is different. Which is why his research is centered on studying his subjects using versatile exoskeletons that automatically customize assistance to each person's unique needs.

Stanford Engineering offered both professors startup packages to spring their research agendas into action as soon as they arrived on campus. From capital support to outfit a lab space to stipends to attract top graduate students and postdocs, the Engineering Fund helps the school to recruit and hire only the most exceptional faculty, like Okamura and Collins, who will shape the future of the field.

“I am giving back to Stanford because it transformed my life. Thanks to those who generously gave to Stanford before me, I received a fellowship during my graduate studies. Through my own giving, I hope to inspire future Stanford students to make a difference in the lives of others.”

June Lee
MS ’13, PhD ’17
Management Science and Engineering

Photo:
Jongmin Baek

YOU MATTER.

You gave back to Stanford Engineering. You joined over 3,400 alumni and friends from 24 countries in giving the gift of innovation. More than 500 corporate matching gifts amplified your investment in new ideas. You said yes and together raised over $3,700,000 to help students transform how they learn, lead, and lean into the future.

THANK YOU.

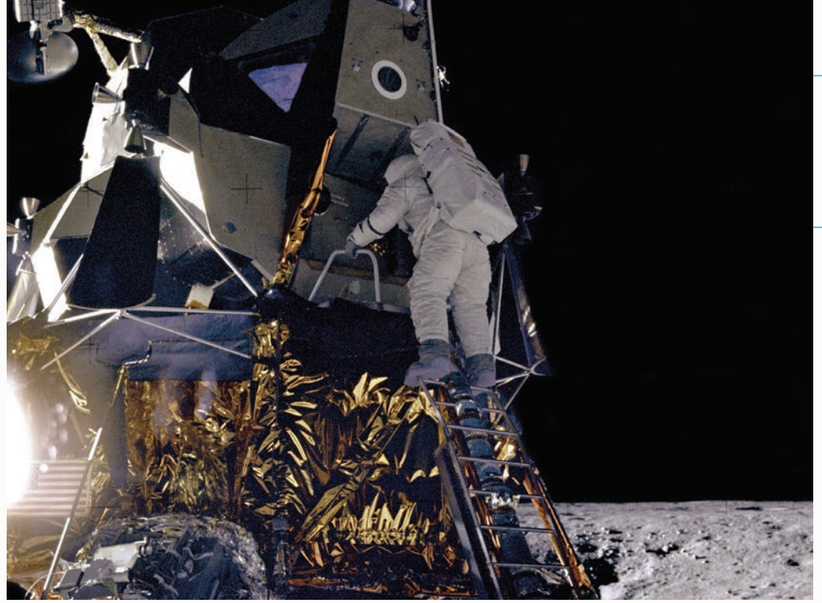


Photo:
NASA

“Stanford Engineering inspired me to follow my dreams and be a part of the NASA team that landed Americans on the moon and then brought them safely back to Earth. I want to help future Stanford Engineers make their own impact.”

David Spokely
BS ’50 Mechanical Engineering
MS ’51 Engineering Science

“Thanks to your support, Stanford Engineering students and faculty can truly innovate and be of service. Gifts like yours allow our engineers the creative freedom to develop breakthrough technologies and solutions for the modern world.”

Photo left:
John Todd

Back Cover:
Jack Li

Jennifer Widom
Frederick Emmons Terman Dean
of the School of Engineering
Fletcher Jones Professor in Computer Science
and Professor of Electrical Engineering

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