

## 2019 Jacobs School of Engineering milestones

The Jacobs School of Engineering celebrated many achievements and milestones in 2019, from breaking ground on our newest engineering building, to hiring 18 incredible new faculty, and jumping to #11 in the nation in the US News Best Engineering Graduate Schools ranking. Watch the milestone video for just a few of the ways we work across disciplines and industries to address challenges no individual group can solve alone.

Learn more: [bit.ly/JS2019HIGHLIGHTS](https://bit.ly/JS2019HIGHLIGHTS)



## 2019 research highlights

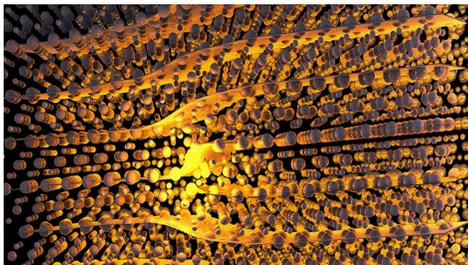
From building drones for early wildfire detection to leveraging plant viruses for human health and developing flexible robotic catheters that could aid in saving endangered rhinos, Jacobs School of Engineering faculty, students and staff are hard at work solving the global challenges of today and tomorrow. Here's a look back at just a few of the ways our engineers and computer scientists made research impacts in 2019.

Learn more: [bit.ly/JSRESEARCH2019](https://bit.ly/JSRESEARCH2019)

## Undergraduates shine in 2019

Our undergraduate students bring fresh approaches to solving challenges and serving others. In 2019, they partnered with the Red Cross in Tijuana, Mexico, to develop an ambulance tracking and dispatch app; created an orthotic device to help a 5-year-old move his arms again; inspired the next generation of engineers through many outreach events; competed in everything from a concrete canoe race to a Formula SAE car and human-powered submarine races; and much more.

Learn more: [bit.ly/2019StudentHighlights](https://bit.ly/2019StudentHighlights)



## Institute for Materials Discovery and Design launches

The Jacobs School of Engineering, in collaboration with the Division of Physical Sciences at UC San Diego, launched the Institute for Materials Discovery and Design. The Institute further positions UC San Diego as the global academic leader in nanoscale and quantum materials design and discovery. Researchers across campus are applying data analytics and machine learning, together with rapid materials synthesis and multi-scale characterization, in order to accelerate the discovery, design, synthesis and evaluation of novel functional materials. Application areas include energy systems, electronics, information technology, telecommunications, space systems and medicine.

Learn more: [bit.ly/IMDDlaunch](https://bit.ly/IMDDlaunch)

## How quickly could you take over a self-driving car?

Electrical and computer engineers at UC San Diego are working to understand how long it would take a non-attentive human to assume control of an autonomous car in an emergency. Led by electrical engineering professor Mohan Trivedi, the team developed a convolutional neural network that tracks the driver's and passenger's hands, wrists and elbows to understand how quickly they could assume control of a self-driving car if necessary. "This project is part of our larger research effort on the development of safe autonomous vehicles," said Trivedi.



Learn more: [bit.ly/IEEETrivedi](https://bit.ly/IEEETrivedi)



## Thin hair is stronger than thick hair

Nanoengineers at the Jacobs School collaborated with engineers from UC Berkeley to analyze hairs from eight different mammals using a scanning electron microscope. They tied individual strands of hair to a machine that gradually pulled them apart until they broke. To their surprise, they found thin hair was able to endure greater tension before it broke compared to thick hair. These findings could help scientists design better synthetic materials.

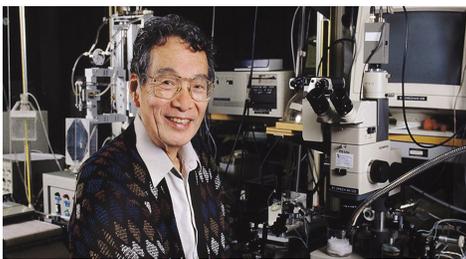
Learn more: [bit.ly/HairStrength](https://bit.ly/HairStrength)

## New record for cracking encryption keys

An international team of computer scientists including Nadia Heninger from UC San Diego set a new record for two of the most important computational problems that are the basis for nearly all of the public-key cryptography that is currently used in the real world. The team factored the largest key yet, a 795-bit integer, and also computed a discrete logarithm of a 795-bit integer. In total, this took them around 35 million hours of computation time.



Learn more: [bit.ly/CrackingEncryptionKeys](https://bit.ly/CrackingEncryptionKeys)



## Obituary: pioneering bioengineer Y.C. Bert Fung

Yuan-Cheng "Bert" Fung, known as "the father of biomechanics" and one of the founders of the discipline of bioengineering passed away Dec. 15, 2019 of natural causes. He was 100. Fung changed the world when he realized that physics and mechanics apply to living tissues just as they do to manmade structures, giving rise to the field of biomechanics. Later, Fung was the first to coin the term "tissue engineering."

Learn more: [bit.ly/YCFungobituary](https://bit.ly/YCFungobituary)

## Obituary: materials scientist Joanna McKittrick

Joanna McKittrick, a pioneering engineer at the Jacobs School and a renowned expert in materials science, passed away Nov. 15, 2019. She was 65. McKittrick was one of the first women to join the engineering faculty at UC San Diego, in what is now the Department of Mechanical and Aerospace Engineering. She is remembered by her colleagues as a generous collaborator and by students and alumni as an inspiring and caring mentor.

Learn more: [bit.ly/McKittrickObit](https://bit.ly/McKittrickObit)



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Contact newsletter editor, Daniel Kane: [dbkane@ucsd.edu](mailto:dbkane@ucsd.edu)

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