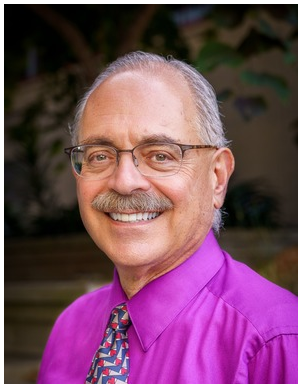
UC San Diego
JACOBS SCHOOL OF ENGINEERING

NEWS
June 2025

Thank You and Let's Keep At It



Even though my Dean's column goes to a broader community, this month I'm sharing a more internal message. I'd like to give a most sincere thank you to all of our Jacobs School of Engineering faculty and staff.

Commencement is over, and we just launched another 2,800 engineers and computer scientists who will leverage their technical expertise as a force for public good. Faculty and staff, thank you for all you did to transform the class of 2025 into engineers and computer scientists. At multiple ceremonies last weekend, students cheered in affirmation when I asked if they were ready for the challenges ahead.

In the face of sustained uncertainty, your excellence, hard work, creativity and collaboration are extraordinary. Thank you for all your efforts to advance engineering and computer science for the public good – this is our mission no matter what.

As we close the 24/25 academic year and look ahead to the challenges of the 25/26 academic year, I wish I could say it's all smooth sailing from here; but I think we all realize there are significant challenges coming. With your help, we will surmount these challenges.

Despite the headwinds, our job is to advance engineering and computer science education and research to improve lives.

Doing this job means fueling the economy, maximizing national security and propelling the U.S. forward in various global innovation races. Our job is to build new partnerships with government, industry, foundations, and donors in order to educate the innovation workforce that US industry wants and needs.

In fact, we are fueling emerging industries in fusion engineering, healthcare engineering and wearable sensors, biomanufacturing, emerging intelligence including AI Tutors, and new approaches to semiconductors. All these initiatives are gaining traction.

At the same time, we are working incredibly hard to protect the research and educational foundations that enable us to push forward these bold new initiatives against the headwinds. See our UC San Diego Behind Every Breakthrough campaign.

I know that it's not easy to work from both of these playbooks at the same time, but it's essential. To all our Jacobs School faculty and staff, thank you again for the time and energy you devote to this important work.

Many in our broader community have already deeply engaged with us. And to each person, I am grateful. We are energetically working to expand, yet further, our network of fully engaged

collaborators and partners.

I am eager to hear from the broader community. If you would like to engage with me and the Jacobs School faculty and staff on efforts to fulfill our mission, please email me at: DeanPisano@ucsd.edu.

Sincerely,

Al

Albert ("Al") P. Pisano
Dean, UC San Diego Jacobs School of Engineering
Special Adviser to the Chancellor for Campus Strategic Initiatives

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Ten Stories of Steel to Get Realistic Earthquake Shakes

A 10-story building, made of cold-formed steel, will be put to the shake test on our outdoor earthquake simulator at UC San Diego. Studying how well the building withstands the earthquake simulations will help determine whether the height limit for this kind of construction can safely be increased. This is an especially relevant question because cold-formed steel is easy to manufacture, strong, light and made from mostly recycled steel. Current building codes in the United States only allow for six-story buildings made of cold-formed steel. Could this limit rise to ten stories? The ongoing tests are led by engineers at UC San Diego and Johns Hopkins, with funding from the National Science Foundation and from industry. Watch drone footage of the building here.

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We Are Safer Thanks to 20 years of Shake Table Tests

The upcoming cold-formed steel test is the latest in a long line of tests performed on our outdoor earthquake simulator. The real-world impacts of this facility are impressive. Research on our shake table over the past 20 years has made buildings, bridges, and other infrastructure in the United States and the world more earthquake-safe. Wood-framed building retrofits, better concrete parking garages, and strengthened older brick buildings are just a few of the ways research on our shake table has made us safer during and after earthquakes. National Science Foundation funding has been critical over these years. Watch this video to see the shake table in action, and learn about more infrastructure safety impacts over the past two decades.

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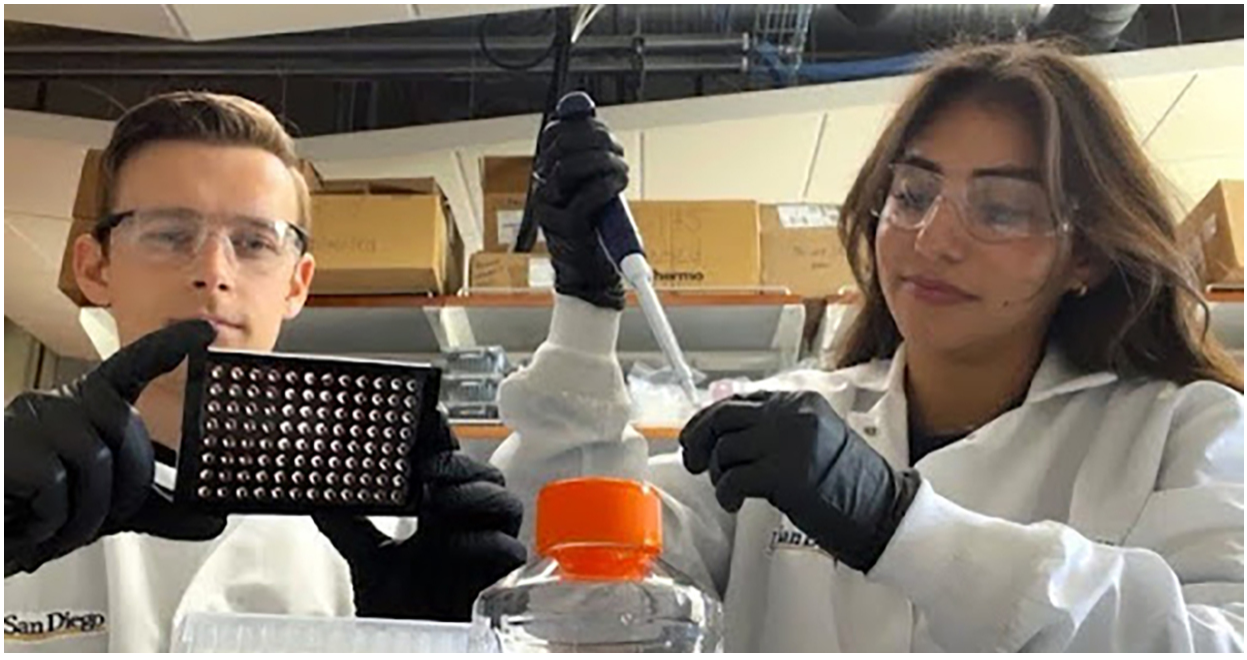

Studying Sex Differences in Disease Helps Everyone

For a type of heart valve disease called aortic valve stenosis, drug treatment outcomes are significantly different in males versus females. This new research reveals that a digital medicine platform that uses AI can help optimize drug therapies based on sex differences at the cellular scale in how this and other diseases progress. The new study, led by bioengineers at UC San Diego, is published in *Science Advances.*

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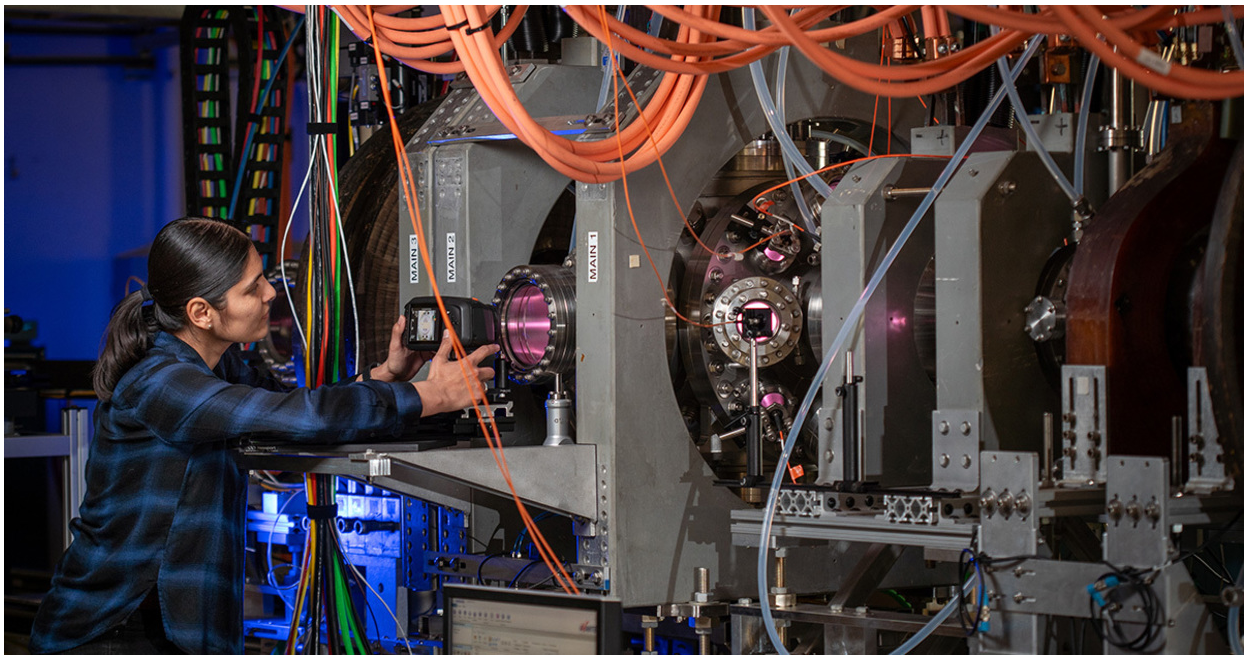

Our Students Are the Fusion Energy Workforce of Tomorrow

With growing industry funding for both inertial confinement and magnetic confinement fusion, commercially viable fusion power plants are getting much closer to reality. Solving the final challenges to develop commercially viable fusion energy requires a highly skilled technical workforce from a wide range of engineering and computer science disciplines. UC San Diego is a hub for educating and training this fusion workforce. There are incredible opportunities for donors looking to make a decisive difference, via education, in the global race to practical fusion. On the site linked below, hear from Jacobs School students and alumni — including Tammy Ma, lead of the Inertial Fusion Energy Institutional Initiative at Lawrence Livermore National Lab. You will learn how many different engineering and computer science disciplines can lead to a fusion energy career.

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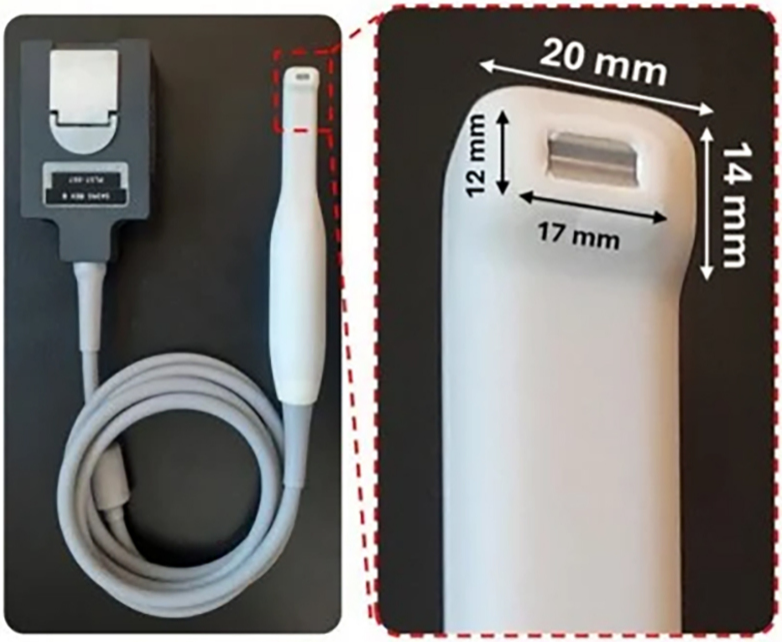

Ultrasound Could Replace Annoying Gum Measurements at the Dentist

A small, yet powerful, toothbrush-shaped ultrasound transducer could lead to a less invasive screening for gum disease — something better than today's pokes around each tooth with a sharp object. In proof-of-concept demonstrations on animal tissues, the device produced measurements similar to those manual probes and could even identify gum problems earlier than today's approach. The small device can also image hard-to-reach molars and premolars at the back of the mouth. The device was invented by nano engineers at UC San Diego.

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1,500 Incredible Seniors Graduating from the Jacobs School

On June 13, nearly 1,500 students graduated with bachelor’s degrees in engineering and computer science from the Jacobs School of Engineering. At our annual Ring Ceremony,

graduating seniors vowed to practice engineering and computer science with integrity and high ethical standards. All our graduates put in the hard work to earn a degree from a Top 10 engineering school. Congratulations! Six students enjoyed special recognition as recipients of awards of excellence from their academic departments. Be sure to read their stories in the link below.

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Computer Scientist Elected to National Academy of Science

Russell Impagliazzo, a professor of computer science and engineering at UC San Diego, has been elected to the National Academy of Science. Election to NAS is an honor of excellence in science and widely regarded as recognition of the prominence of an institution's faculty. Impagliazzo focuses on computational complexity theory, which seeks to determine how hard any given mathematical problem is. In particular, his research aims to clarify what makes a computationally difficult problem useful for cryptography, with applications in security. Read his 2024 profile in Quanta magazine.

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