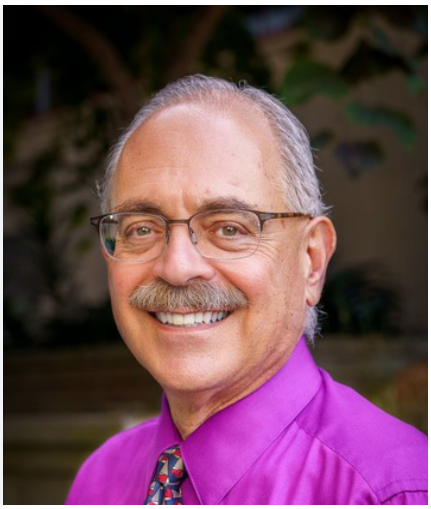
UC San Diego
JACOBS SCHOOL OF ENGINEERING

MONTHLY NEWS DEC 2021

Capitalizing on the G7 Research Compact



Last week, I co-authored a Policy Forum in the journal Science entitled "Capitalizing on the G7 Research Compact." The topic is the dire need for international science and technology research agreements for robust collective action in research and development. At a high level, our argument is that there are a series of global challenges that can only be effectively addressed by multilateral, public-private applied research and development collaboration. These challenges include the design and deployment of 6G wireless networks, cross-border digital epidemiology, resilient AI-enabled global supply chain management, infrastructure resilience in the face of sea-level rise, and sustainable aviation and propulsion systems.

While I'm not a tech policy person, I ended up in these circles through my efforts to make engineering and computer science research and education as relevant as possible. As an engineering dean, I understand the importance of engineering schools partnering with others to take on projects that no faculty-led lab, company, or industry can solve alone. The students, faculty, and staff of the Jacobs School of Engineering at UC San Diego are especially adept at this. Our ability to partner across campus and across industries helps us graduate students who are ready for the complexity of engineering and computer science in the real world.

But what happens when the scope of the challenge makes it impossible to stop at the national border, and we must embrace an international solution? I ran into this first hand through discussions on how and why to set up new kinds of research infrastructure for the wireless technologies of the future.

I'm well aware that conversations about international research agreements are fraught with controversy in different circles for different reasons. I firmly believe, however, that there are many win-win scenarios that can be developed.

In this coming year, I will be redoubling my efforts with the U.S. Federal government to reinforce the message. Second, I will also be reaching out to other universities to build national consensus. Third, I will be working in a number of international venues to convey the message that there are groups in the U.S. that are eager to engage. I hope you'll read the Policy Forum in Science, and if you support the premise, I hope you'll share it with people who can make a difference. (It looks like I've signed myself up for a busy 2022!)

As we near the end of this calendar year, I wish you peace, health, and the energy to pursue what matters most to you. I look forward to another year of advancing efforts here in San Diego and well beyond that to strengthen our collective ability to leverage engineering and computer science for the public good.

As always, I can be reached at DeanPisano@eng.ucsd.edu.

-Albert P. Pisano, Dean

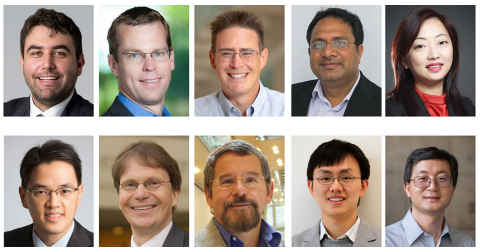
UC San Diego Jacobs School of Engineering

New program connects student veterans with national security careers

The Jacobs School of Engineering recently launched Veteran Forge, a new program designed to connect US government agencies, defense contractors, and National Laboratories with military veterans earning engineering and computer science degrees at UC San Diego. The program, launched as a pilot, aims to provide a job upon graduation at one of the Veteran Forge partner organizations to qualifying student veterans at the Jacobs School. At the same time, the program offers partner organizations access to top talent that is qualified for required security clearances.

Learn more: bit.ly/VeteranForge

Ten faculty among 2021 most highly cited researchers in the world



Ten professors at the Jacobs School of Engineering are among the world's most influential researchers in their fields, according to the 2021 Clarivate listing of Most Highly Cited Researchers in the World. The Jacobs School of Engineering faculty members are among 51 professors and researchers at UC San Diego named in the prestigious list of Highly Cited Researchers in 2021. Researchers earned this distinction by producing multiple publications that rank in the top 1% by citations in their field over the past decade. UC San Diego was ranked 9th globally for institutions with the most highly cited researchers.

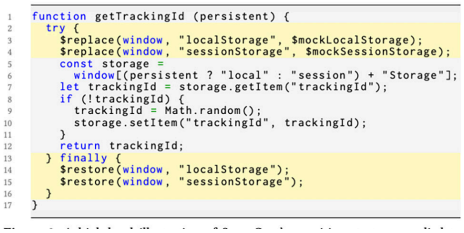
Learn more: bit.ly/JSOEHighlyCited2021

Personalized system helps lower blood pressure

Engineers at UC San Diego developed an artificial intelligence platform that fuses data from disparate health and lifestyle sensors, wearables and apps into one site, using this combined data stream to make personalized recommendations for users to improve a specified health outcome. In a clinical trial, people with high blood pressure who used the P3AI platform saw their systolic and diastolic blood pressure decrease significantly more than the control group which did not receive personal recommendations. "When you hear 'virtual healthcare,' people often think of an inferior version of what you do at the clinic. But what we're working on here is truly proactive and personalized care, empowering patients, with insights from their doctors, to make changes in their daily lives," said electrical engineering professor Sujit Dey, director of the UC San Diego Center for Wireless Communications.

Learn more: bit.ly/PersonalizedBPtool

This tool protects your private data on the web



```
function getTrackingId (persistent) {
  try {
    $replace(window, "localStorage", $mockLocalStorage);
    $replace(window, "sessionStorage", $mockSessionStorage);
    const storage =
      window[(persistent ? "local" : "session") + "Storage"];
    let trackingId = storage.getItem("trackingId");
    if (!trackingId) {
      trackingId = Math.random();
      storage.setItem("trackingId", trackingId);
    }
    return trackingId;
  } finally {
    $restore(window, "localStorage");
    $restore(window, "sessionStorage");
  }
}
```

Computer scientists have developed a tool that increases protections for users' private data while they browse the web. The tool, named SugarCoat, targets website scripts that harm users' privacy—for example, by tracking their browsing history around the Web—yet are essential for the websites that embed them to function. SugarCoat replaces these scripts with scripts that have the same properties, minus the privacy-harming features. SugarCoat is an open source project involving UC San Diego, Brave Software, and Imperial College of London.

Learn more: bit.ly/UCSDSugarCoat

$6M grant to secure wireless communications

A team co-led by electrical engineers at UC San Diego has been awarded a $6 million grant from the Intelligence Advanced Research Projects Activity (IARPA) to secure classified data transmissions using smart radio technology. The goal is to develop smart radio systems to detect and characterize suspicious radio frequency signals, or RF anomalies, in complex RF environments. The researchers will partner with JASR systems, a San Diego-based company focused on advanced remote sensing and navigation technologies. The team will test their systems on the RF testbed at UC San Diego.

Learn more: bit.ly/IARPAWirelessGrant