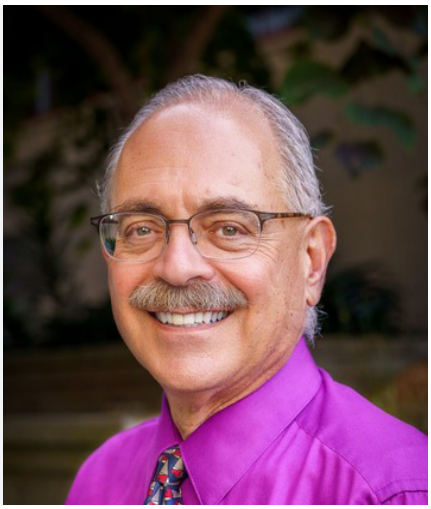
UC San Diego
JACOBS SCHOOL OF ENGINEERING

MONTHLY NEWS MAR 2022

Practice at Scale



In my last two messages, I wrote about how important it is for engineering and computer science students to "Learn the Math that Matters" and "Find your Why." The third leg of this stool for stepping up into the innovation workforce is practice.

We don't talk enough about practice. In particular, we don't talk enough about what we could achieve as a country if we leaned into the notion of practice at scale.

I'm focused on practice at scale because, if we do it right, we can:

*Improve outcomes and diversify engineering and computer science education

*Make and keep US industries competitive in the global marketplace

*Capture ever more benefits from US Federal investments in research

As part of my efforts to get practice at scale onto the national agenda, I've written an article entitled, "A More Effective Innovation Practice" which just appeared in Issues in Science and Technology.

The sub-headline makes the connections between opportunities for individual students and opportunities for the nation:

Practice-focused innovation centers could help the United States translate federally funded research into tomorrow's essential technologies.

In the article, I use future wireless technologies to illustrate what's possible when we build virtual and physical infrastructure that empowers nation-wide, pre-competitive practice of emerging wireless technologies.

My call to double down on practice for developing future wireless technologies aligns with what UIUC Engineering Professor William S. Hammack and National Academy of Engineering (NAE) President John L. Anderson write in a recent article in Issues of Science and Technology in which they call for a deeper understanding of engineering in order to harness innovation to achieve the nation's goals.

Below is the final paragraph of my piece, but I hope you will read the entire article. (It's a six-minute read.)

"Built correctly, these practice-focused research ecosystems will create rich, dynamic virtual platforms with physical roots. They will create opportunities in which students of all levels as well as seasoned researchers in industry, government, and academia can interact. The nation will possess networked, virtualized research infrastructure that is specifically designed to encourage learning and engagement through practice. This vision is a blueprint for a more equitable and prosperous future in which anyone across the country has entry points to practice creating innovations. Moreover, policymakers will have found ways to build and rebuild America's innovation-driven industrial ecosystems. This is practice as policy."

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

-Albert P. Pisano, Dean

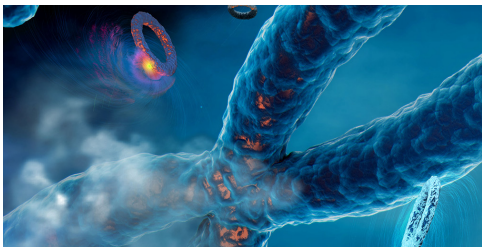
UC San Diego Jacobs School of Engineering

Simplifying RNA editing for treating genetic diseases

An RNA editing technology developed by UC San Diego bioengineers could make it much simpler to repair disease-causing mutations without compromising precision or efficiency. The new RNA editing technology holds promise as a gene therapy for treating genetic diseases. In a proof of concept, UC San Diego researchers showed that the technology can treat a mouse model of Hurler syndrome, a rare genetic disease, by correcting its disease-causing mutation in RNA.

Learn more: bit.ly/SimplerRNAEditing

Mapping mutation "hotspots" in cancer reveals new drivers



Researchers led by bioengineers at UC San Diego have identified and characterized a previously unrecognized key player in cancer evolution: clusters of mutations occurring at certain regions of the genome. The researchers found that these mutation clusters contribute to the progression of about 10% of human cancers and can be used to predict patient survival. The work sheds light on a class of mutations called clustered somatic mutations, which are grouped together at specific areas in a cell's genome, and not inherited, but caused by internal and external factors such as aging or exposure to UV radiation, for example.

Learn more: bit.ly/ClusteredMutations

Mechanical engineer receives ONR Young Investigator award

Sylvia Herbert, a professor in the Department of Mechanical and Aerospace Engineering, is one of 32 researchers in the United States to receive an award from the 2022 Young Investigator Program at the Office of Naval Research. The highly competitive, early career award recognizes prior academic achievement and potential for significant scientific breakthrough. Herbert leads the Safe and Autonomous Systems Lab at the Jacobs School and is part of the UC San Diego Contextual Robotics Institute.

Learn more: bit.ly/Herbertonryip

Computer scientist receives prestigious Sloan Research Fellowship

UC San Diego computer scientist Deian Stefan has been honored with an Alfred P. Sloan Research Fellowship. The fellowship supports young scientists pursuing fundamental research with great potential to impact their fields. Code developed by Stefan and his team to make web browsing safer is part of the newest releases of the Firefox and Brave browsers.

Learn more: bit.ly/SloanStefan2022

Bioengineering alumnus on COVID-19 antiviral pill development team

UC San Diego bioengineering PhD alumnus Britton Boras was part of the Pfizer team that developed the Paxlovid COVID-19 antiviral pill, the first oral antiviral treatment for COVID-19 to receive FDA emergency use authorization. He shares how his graduate work with Professor Andrew McCulloch prepared him for a career as a principal scientist at Pfizer, and what it was what it was like to work on such a timely and highly anticipated drug, in this Q&A.

Learn more: bit.ly/BrittonBorasQA
