UC San Diego
JACOBS SCHOOL OF ENGINEERING

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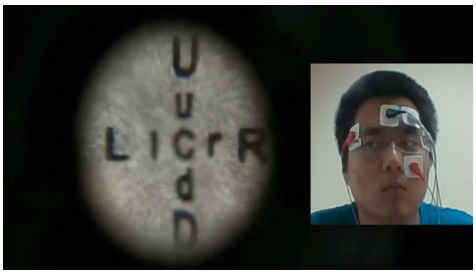


These robotic lenses are controlled by your eye

Mechanical engineers developed a soft robotic lens whose movements are controlled by the eyes—blink twice and the lens zooms in and out; look left, right, up or down, and the lens will follow. The prototype system responds to the electric signals generated around the eyes during movement. Patches of electrodes placed on the skin around the eyes measure these signals and then the system transmits them through wires to the lens. "We could expand this idea and use other biological signals (hand movement, heartbeat, etc.) to control soft grippers, for example. There is more potential to this technology than just one specific application or commercial product."

Learn more: bit.ly/SoftRoboticLens

AI tool spots spoilers

Computer scientists developed an AI-based system that can flag spoilers in online reviews of books and TV shows. The tool, called SpoilerNet, was trained on more than 1.3 million book reviews from Goodreads and a dataset of more than 16,000 single-sentence reviews of about 880 TV shows. This is the first dataset with spoiler annotations at this scale and with such fine-grained granularity. The system could detect book spoilers with 89 to 92 percent accuracy, and TV spoilers with 74 to 80 percent accuracy. Most of the errors came from the system getting distracted by words that are usually loaded and revelatory – the words "murder" or "killed," for example.

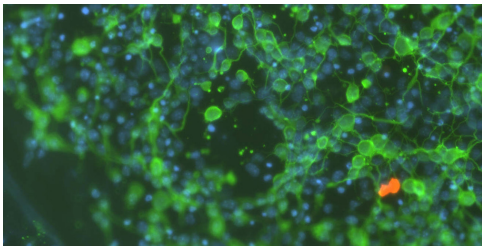
Learn more: bit.ly/SpoilerNet

When will robots walk away from the 3D printer?

A robot that walks away from the 3D printer that created it. This goal is one step closer to reality thanks to UC San Diego robotics researchers. Using a commercial 3D printer, mechanical engineers printed embedded complex sensors inside robotic limbs and grippers during the original 3D printing process. The researchers say this work "could enable and enhance seamless integration of sensors into soft robots, but there does not yet exist a suitable, commercially available, easy to use platform that allows users to simultaneously print soft actuators and sensors."

Learn more: bit.ly/tolleysensors

Neuroscience and AI can improve each other



Despite their names, artificial intelligence technologies and their component systems, such as artificial neural networks, don't have much to do with actual brain science. Bioengineering professor Gabriel Silva is dedicated to understanding how the brain works as a system – and how that knowledge can be used to design and engineer new machine learning models. Silva recently wrote about these issues in an article in The Conversation. He concludes, "Focusing on the principles and mathematics that AI and neuroscience share can help advance research into both fields, achieving new levels of ability for computers and understanding of natural brains." Silva is director of the UC San Diego Center for Engineered Natural Intelligence.

Learn more: bit.ly/SilvaAI

Professors receive Presidential Early Career Awards

Darren Lipomi, professor of nanoengineering; Piya Pal, professor of electrical and computer engineering; and Padmini Rangamani, professor of mechanical and aerospace engineering, have been named recipients of the Presidential Early Career Award for Scientists and Engineers. This is the highest honor bestowed by the U.S. government on scientists and engineers in the early stages of their independent research careers. Awardees are recognized for their contributions to the advancement of science, technology and engineering, and their commitment to community service as demonstrated through scientific leadership, public education and community outreach.

Learn more: bit.ly/PECASE2019UCSanDiego

One step closer to lithium-metal anodes

Improvements to a class of battery electrolytes that UC San Diego engineers introduced in 2017 offer a new possible path toward one of the holy grails for batteries: a cost-effective way to replace graphite anodes with lithium-metal anodes. The team's liquefied gas electrolytes work both at room temperature and at -60 C. The work is a collaboration between nanoengineering professor Shirley Meng's lab and a startup that spun out of UC San Diego called South 8 Technologies. Professor Meng recently became editor-in-chief of the MRS journal Energy & Sustainability. She also directs the UC San Diego Sustainable Power and Energy Center.

Learn more: bit.ly/LithiumMetal2019

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