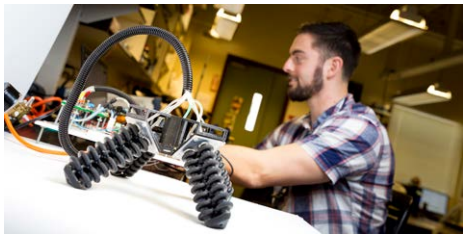
UC San Diego
JACOBS SCHOOL OF ENGINEERING

MONTHLY NEWS SEPT 2017

Mechanical Engineering Ranks #1



UC San Diego ranks #1 in the nation and #2 in the world for Mechanical Engineering, according to a new subject area ranking from Academic Ranking of World Universities (ARWU). The ranking reflects the many strengths in mechanical engineering at the Jacobs School including thermo-fluids, combustion, renewable energy, mechanics, materials, controls, and biomechanics. The new ARWU rankings, which are based on five hard-data metrics, place the Jacobs School among the top programs in the nation in a wide range of areas including: #5 in civil engineering, #7 in biotechnology and #10 in automation and control (which includes robotics).

Learn more: bit.ly/MechanicalEngRanking

Cognex Funds 3D Image Reconstruction Research

Computer scientists at UC San Diego have received a $100K gift from Cognex Corp. that will help fund research at the intersection of deep learning and 3D image reconstruction. Applying deep learning principles to 3D image reconstruction could lead to advances in robotics, medical imaging, autonomous vehicle navigation, tele-medicine, and more. With this gift, Cognex joins the UC San Diego Center for Visual Computing, which is an industry-focused research center that draws together world-class faculty, students and industry partners working in computer graphics, augmented and virtual reality, computational imaging and computer vision.

Learn more: bit.ly/CognexJacobs

Tracking $25 Million in Ransomware Payouts

Over the last two years, victims have paid about $25 million to unlock their computer disks and get their data back during ransomware attacks, according to new estimates presented at Black Hat USA 2017. The researchers presenting "Tracking Ransomware End to End" investigated 300,000 files from 34 different types of ransomware by tracking payments on the blockchain to analyze the scale and the amount of money paid by victims. The research team hailed from Google, UC San Diego, New York University, and the blockchain analysis firm Chainalysis.

Learn more: bit.ly/BlackHat17Jacobs

4D Camera

Engineers have developed a new camera that generates information-rich images and video frames that will enable robots to better navigate the world. This includes better perception of object distance and surface texture. The camera generates four-dimensional images and can capture 138 degrees of information. Electrical engineering professor Joseph Ford at UC San Diego and colleagues at Stanford developed the camera, which they describe as the first single-lens, wide-field-of-view light field camera. "We want to consider what would be the right camera for a robot that drives or delivers packages by air. We're great at making cameras for humans but do robots need to see the way humans do? Probably not," said Donald Dansereau, a postdoctoral fellow in electrical engineering at Stanford and the first author of the paper.

Learn more: bit.ly/4DCamera17

Toyota Funds Intelligent Vehicle Research

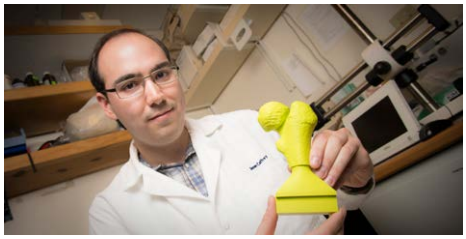
Toyota recently funded electrical engineering research at UC San Diego aimed at developing a computational prediction model for transferring control back and forth between car and driver. The research is led by Jacobs School electrical engineering professor Mohan Trivedi, whose teams of researchers have been working with Toyota and other carmakers for years to advance intelligent vehicle technologies. This most recent funding comes from Toyota's Collaborative Safety Research Center (CSRC). Intelligent vehicle research in the Trivedi lab often includes a particular focus on humans. For this project, Trivedi's team will focus on new computational frameworks for integrated perception, cognition and action. One goal is to make sure these frameworks conform to the comfort, safety and preferences of the humans who interact with them. This includes drivers, passengers and nearby pedestrians.

Learn more: bit.ly/ToyotaCSRC17

3D Models Cut Surgery Times

3D printed models of hip joints helped surgeons shorten surgery times for the most common hip disorder found in children ages 9 to 16. In a recent study, UC San Diego bioengineers collaborating with pediatric orthopedic surgeons showed that allowing surgeons to prep on a 3D-printed model of the patient's hip joint cut the amount of time needed for surgery by about 25 percent. The 3D models could save $2,700 per surgery while reducing the amount of radiation each patient is exposed to. The breakthrough grew from a collaboration initially focused on creating clinically relevant, hands-on classroom projects for bioengineering undergraduates as part of Dean Albert P. Pisano's Experience Engineering Initiative.

Learn more: bit.ly/3DPrintSurgery17



Save the Date: Contextual Robotics Institute Forum is October 27

The UC San Diego Contextual Robotics Institute is bringing leading developers of intelligent vehicle technologies to campus on October 27. The theme for the Institute's fourth annual forum is Intelligent Vehicles 2025. Panel topics include: Driver Monitoring, Autonomous Driving Technologies, and Social Implications of Autonomous Driving. The forum offers many opportunities to connect with top researchers, students and industry professionals working on intelligent vehicles, autonomy, and enabling technologies. The event also includes a poster session and technology showcase highlighting robotics research on campus. Registration coming soon.

Learn more: bit.ly/ContextualRoboticsInstitute

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