CENTER FOR **Machine-Integrated Computing & Security**

Summer News

COVID-19 PROGRESS UPDATES

TraceCORONA: Anonymous distributed contact tracing for pandemic response

In collaboration with the system security lab at Technical University Darmstadt, Farinaz Koushanfar is leading the development of a privacy-preserving contact tracing mobile app called 'TraceCORONA'. To satisfy the needs of users and encourage user installation, TraceCORONA has the following intriguing features: (1) Anonymity without compromises using cryptographic Encounter Tokens; (2) Secure messaging with health experts and organizations; (3) Prevention of fake news; (4) Interoperability with other applications over the secure communication channel of TraceCORONA. With the capability of TraceCORONA, users can opt-in to various services, including confidential and trustworthy interactions with healthcare providers, testing centers, health authorities, and hospitals. These services will be implemented using secure messaging, secure document exchange and secure health process capabilities provided by the platform.
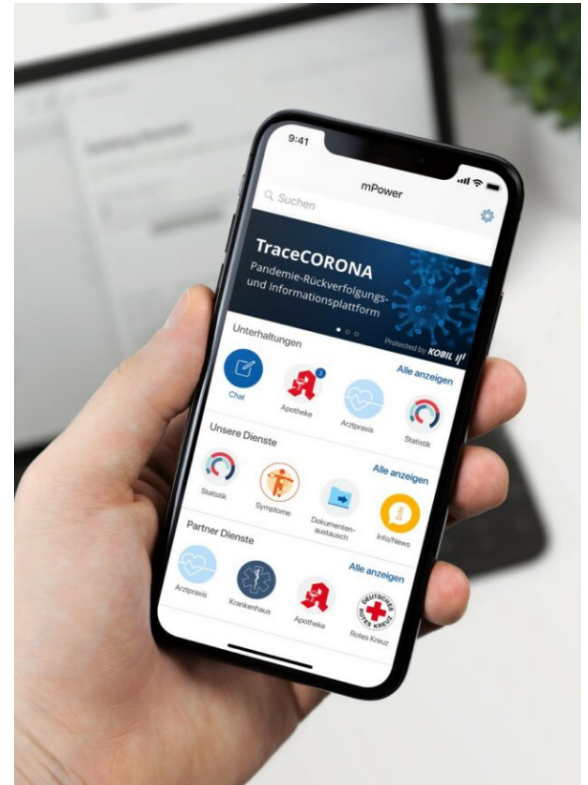
Covid-19 forecast and mitigation boosted by refined wastewater detection developed in a first collaboration between MICS and the Center for Microbiome Innovation

The wastewater sampling initiative began on our campus in the past summer, but its expansion was bottlenecked by the manual effort required to concentrate samples. This issue was overcame in a first-ever joint effort between the Center for Microbiome Innovation (CMI) and the Center for Machine-Integrated Computing & Security (MICS) to develop an automated system. This new system removes the previous potential for human error as well as increased the number of samples processed concurrently, allowing for more rapid detection of positive results. Read more about the research paper and the on-going effort to mitigate the spread of Covid-19 in the Jacobs School article here

Learn more about our Covid-19 Initiatives at: http://mics.ucsd.edu/Covid-19

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Hanh–Phuc Le

MICS Faculty Spotlight
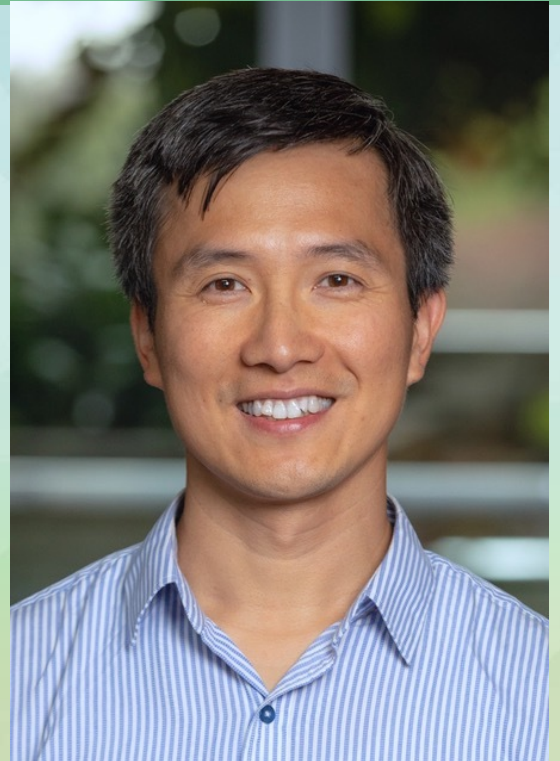
"I was lucky to be the first ever foreign student who did not know much Korean to be accepted to Prof. Gyu-Hyeong Cho's group at KAIST. With Prof. Cho's supervision, I successfully developed the converter that, 2 years later, was adopted to power the display of one of the first LG's AMOLED phones in 2008". Professor Le attributes his entry into the ECE world as part luck and part daring decisions. Graduating with an B.S. in Electrical Engineering at the Hanoi University of Science and Technology in Vietnam, Le began his journey across the world where he received his M.S. degree from KAIST, Korea, and his Ph.D at UC Berkeley.

Today, Hanh-Phuc Le is an Assistant Professor of the Electrical and Computer Engineering department at UC San Diego, where he leads the integrated Power Electronics and Energy-Efficient Systems lab. His team's goal is to develop an integrated DC-DC power delivery architecture to increase efficiency by eliminating AC/DC converters from households. "Since almost all electronics and electrical devices around us are DC systems in nature, the legacy AC power grid to every wall outlet creates not only bulky AC/DC adapters for every device, it causes the whole power distribution in houses to be very inefficient". The project aims to essentially turn the current AC power line to a safe, efficient, low-voltage DC micro-grid -- which could then serve as power distribution and data outlets for local data networks in houses and buildings. Le believes that their project will make the increasingly DC driven electronics world more modular, more compact, and more efficient.

In his free time, Le enjoys exploring the great outdoors with his family, playing soccer, and practicing carpentry.

Yao–Yuan Yang

MICS Student Spotlight

Computer Science Ph.D. candidate Yao-Yuan Yang aims to utilize his research to improve the accuracy of current machine learning methods. Yang began his undergraduate studies at the National Taiwan University, where he assisted Professor Hsuan-Tien Lin, Professor Tsung-Ren Huang, and Professor Chen-Mou Cheng on topics in machine learning, neuroscience, and cryptanalysis.

After earning his B.S. in Computer Science in 2016, he crossed the Pacific to pursue a M.S. at UC San Diego, which he has now transferred to a Ph.D. in one year. Here, Yang's attention and interest was quickly captured by Professor Kamalika Chaudhuri's projects on the topic of adversarial examples, which focus on examples that are specifically designed to yield incorrect outputs from machine learning models. He is currently working in Professor Kamalika Chaudhuri's research group on adversarial machine learning. For his thesis proposal, Yang plans to use his works on generic adversarial attack and defense algorithms for non-parametric methods and his study on the trade-off between accuracy and adversarial robustness as a base for his adversarial examples dissertation.

When asked to offer advice for any students interested in the field of machine learning research, Yang suggests a strong background in mathematics, "Math is not only the foundation of computer science research, it's also a means to communicate with peers in the field and a window that allows you to see things from different aspects". You can find more details about his previous works and publications at http://yyyang.me

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STUDENTS FOR HIRE*

Joseph Chang

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Projected Graduation Date: 2021
Master's in: Intelligent Systems,
 Robotics and Controls
Student CV:[PDF]
Video Introduction/Elevator Pitch

Hanxian Huang

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Projected Graduation Date:2024
Ph.D. Focus: Machine Learning for
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Student CV:[PDF]
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Mehmet Can Hucumenoglu

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Ph.D. Focus: Signal Processing
Student CV:[PDF]
Video Introduction/Elevator Pitch

Nitish Nagesh

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Efficiency Lab
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 Video Introduction/Elevator Pitch

Pulak Sarangi

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Ph.D. Focus: Signal and
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Student CV:[PDF]
Video Introduction/Elevator Pitch

Sina Shahsavari

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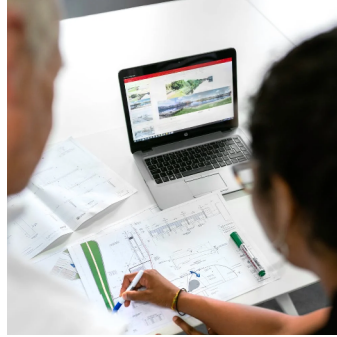**Projected Graduation Date:**2023
Ph.D. Focus: Machine Learning
and Data Science
Student CV:[PDF]
Video Introduction/Elevator Pitch

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MICS LATEST NEWS

Center for Machine-Integrated Computing and Security has taken steps towards a more active online presence to better communicate with students, faculty, and the greater scientific community via social media. Follow us on our various platforms to stay up to date on MICS news and online events!

Facebook: UCSD_MICS

Linkedin: @ucsdmics

Twitter: @ucsdmics

Youtube: UC San Diego MICS

Website: http://mics.ucsd.edu

UPCOMING EVENTS

2021 EVENTS

- ▸ MICS Partner Signature Recruiting Internship Event - Fall 2021
- ▸ MICS Board Meeting and Research Summit - November 2021
- ▸ MICS Alumni/Faculty/Industry Mixer - December 2021