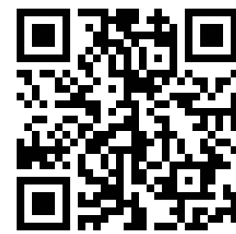


# AIoT for Safer, Healthier, and Smarter Environments

Date: 22 November 2023 (Wednesday)

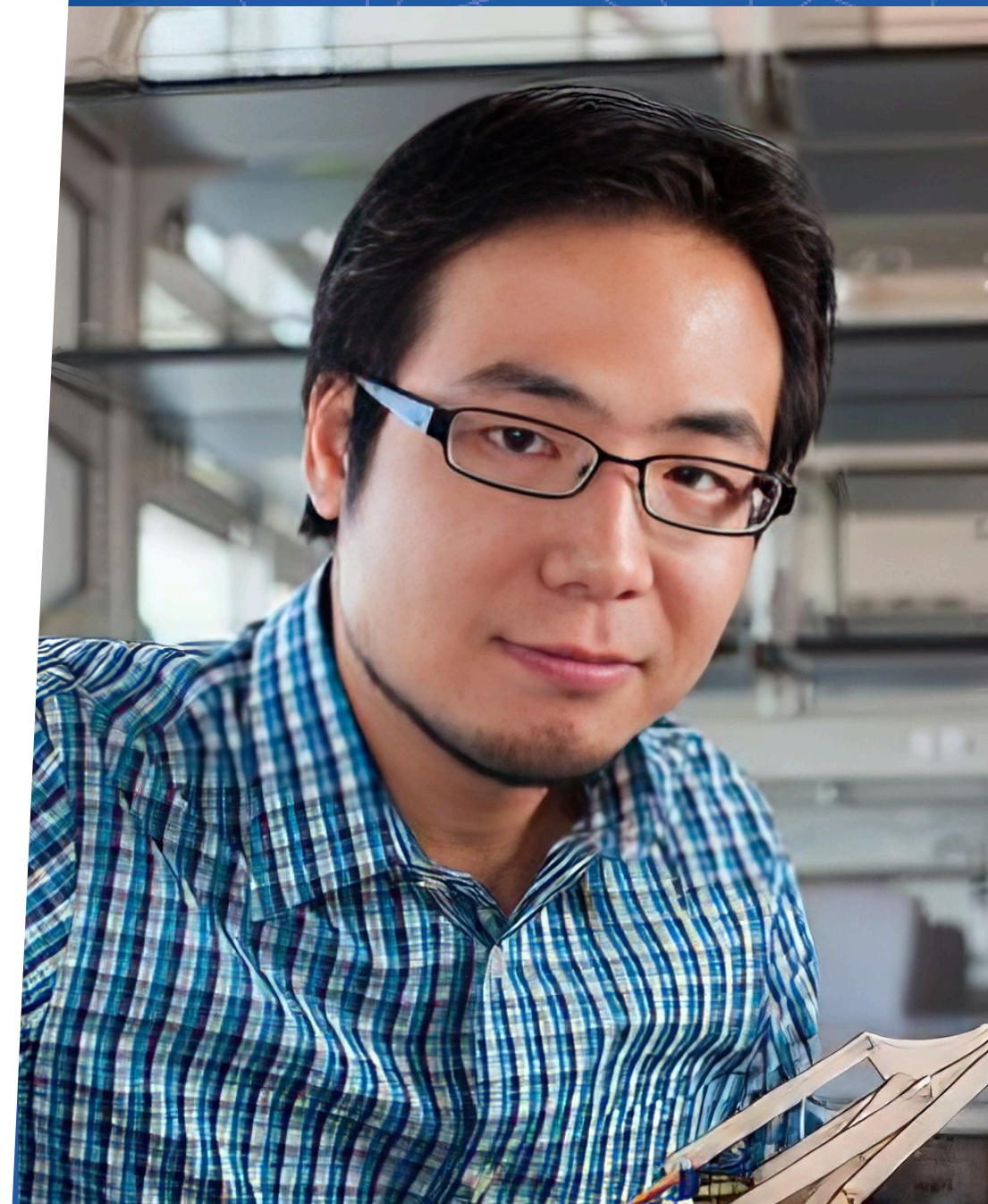
Time: 10:00am - 11:00am



Seminar Link: <https://cityu.zoom.us/j/99735256754>

## ABSTRACT

The combination of artificial intelligence and the internet-of-things, or artificial intelligence of things (AIoT), promises to transform the world. In this talk, I will present several projects at Columbia Intelligent and Connected Systems Lab that focus on AIoT for safety, health, and smarter environments. In the urban safety space, we create a mobile AIoT system that uses acoustic sensors combined with embedded machine learning to help alert pedestrians and construction workers of dangers from nearby vehicles. We further introduce a generalized audio filtering architecture that enables a wide range of applications. In the health space, we present a low-cost vision-based AIoT system for continuous multi-person fever screening. By using novel algorithms and models that take advantage of multiple frames of information from both thermal and RGB domains, our system achieves better accuracy than commercial solutions at a fraction of the cost. In the wearable space, we introduce a glasses-based platform for in-situ bio-signal acquisition and emotion recognition, followed by an AR-assisted intelligent stethoscope that enables self-screening at home. In the mental wellness space, we present an AI therapist for daily functioning assessment and intervention using custom-trained GPT models. Finally, in the smart homes space, we introduce a modular sensing architecture for enabling ambient assistive applications.



## Professor Xiaofan JIANG

### GUEST SPEAKER'S PROFILE

Professor Xiaofan (Fred) Jiang is an Associate Professor in the Electrical Engineering Department at Columbia University and co-Chair of the Smart Cities Center at the Data Science Institute. Fred received his PhD in Computer Science from UC Berkeley in 2010. His research lies at the intersection of systems and data, with a focus on intelligent embedded systems and their applications in mobile and wearable computing, intelligent built environments, Internet of Things, and connected health. His research has been published in top-tier venues and received numerous awards, including Best Paper Award at IPSN '05 and ITEC '21, Best Demo Award at SenSys '11, IoTDI '18, IPSN '20, SenSys '21, and IPSN '23, Best Poster Award at BuildSys '16, and Best Paper Runner-Up Award at BuildSys '17 and '19. He has served on technical and organizing committees of leading conferences in the field, including TPC Chair of BuildSys '14, TPC Chair of e-Energy '23, General Chair of SenSys '19, General Chair of BuildSys '21, and General Chair of IPSN '23. Fred was currently serving as the Vice Chair of ACM Special Interest Group on Energy Informatics (SIGEnergy). His research has been featured in many popular media outlets, including The Economist, New York Post, Mashable, Gizmodo, The Telegraph, and Fast Company. He is the recipient of an NSF Graduate Fellowship, a Vodafone-US Foundation Fellowship, and an NSF CAREER Award.