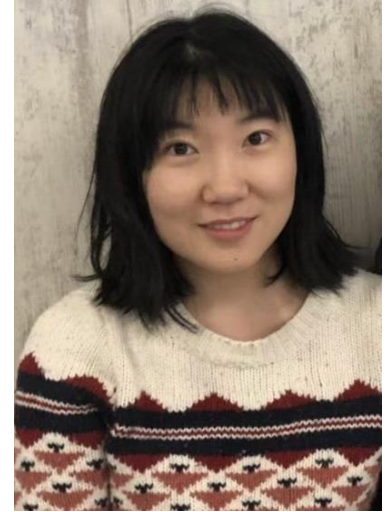




UAA Professional Development Seminar Series

On Feedback-Aided Next-Generation Wireless Communication

Presented by: Dr. Siyao (Olivia) Li



ABSTRACT: Recent advances in 6G networks have been reflected in smart homes, mind-machine interfaces, autonomous vehicles, next-generation electronics, etc. Such revolutionary 6G wireless networks utilize higher frequency bandwidth aiming to achieve faster speed, lower cost, and more reliable communication. Feedback-aided communication systems have emerged as a promising solution to increase the data rate and the robustness of the communication links by using channel state information. However, numerous challenges in terms of wireless information integration, intelligent networking, and energy efficiency still exist. To address such challenges, Dr. Li will discuss feedback strategies in wireless communication systems from both theoretical and practical issues by tightly integrating information theory, control theory, and machine learning.

This talk will present the advantages of feedback-aided 6G wireless systems in three sections: 1) higher transmission rate; 2) more reliable communication; and 3) more efficient transmission. Specifically, the first two sections will evaluate the information-theoretic capacity incorporating control-theoretic techniques and communication-theoretic bit error rate comprising deep learning algorithms based on the widely used wireless downlink channel model; and the third section will consider the joint communication and sensing performance based on a model characterizing the fundamental aspects of beam acquisition in millimeter-wave communications. These techniques and results serve as building blocks for 6G wireless communications..

BIO: Dr. Siyao (Olivia) Li serves as a Term Assistant Professor in the Department of Electrical Engineering at University of Alaska Anchorage. Previously, she was a Postdoctoral Research Associate in the Department of Telecommunication Systems at the Technische Universität Berlin from 2022 to 2023. She obtained her Ph.D. degree in Electrical and Computer Engineering from the University of Illinois Chicago (UIC) in 2021, with her doctoral research concentrating on the ultimate performance of multi-user downlink wireless communication systems. Before that, she obtained her Master's degree in Electrical and Computer Engineering from UIC in 2016, and her Bachelor's degree in Telecommunication Engineering from Jilin University in 2015. Her current research interests focus on advancing 6G communication, with an emphasis on resource-efficient wireless systems and artificial intelligence-aided communication and sensing networks.

Friday, April 12, 2024

11:45 am - 12:45 pm

EIB 211 or Online Via [YouTube Live](#)