COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF ENGINEERING AND COMPUTER SCIENCE

OAKLAND UNIVERSITY

CSE Research Talk
Friday, February 9th
11:00 am - 12:00 pm
Location: Virtual

Statistical Machine Learning in Data Processing: Challenges and Opportunities

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The primary objective of data processing applications is to derive statistical inferences from data and subsequently perform statistical tasks, addressing communication and computation constraints, as well as privacy and security concerns. In this presentation, I will begin by discussing statistical approaches applied to the perceptual quality of images and videos in the context of compression tasks. This is particularly relevant in applications such as online video streaming, where statistical tools play a crucial role in extracting information from newly available frames in a casual manner and propagating it for future reconstructions. I will explore two perception loss functions, highlighting their differences based on the reconstructions of consecutive frames. Next, I will delve into statistical inference within large networks of agents, emphasizing the necessity for adaptive decision-making to handle data under communication constraints. Additionally, I will briefly touch upon privacy and security challenges inherent in these two networks. To conclude, I will summarize the presentation and propose research directions aimed at addressing both statistical and privacy/security challenges.

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Sadaf Salehkalaibar is currently a research associate at the University of Toronto and a faculty affiliate researcher at Vector Institute for AI. From 2016 to 2022, Dr. Salehkalaibar was an assistant professor in the Electrical and Computer Engineering Department at the University of Tehran. She had a postdoctoral researcher position at Telecom ParisTech in 2017. Dr. Salehkalaibar held multiple visiting faculty appointments at McMaster University, Telecom ParisTech and the National University of Singapore in 2021, 2018 and 2019, respectively. Her research interests include statistical machine learning, data science, and security and privacy in wireless communication systems.