



Technical Committee on
Cognitive Networks (TCCN)

SIG in AI and Machine
Learning in Security

TCCN SIG in AI and Machine Learning in Security

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Monthly Virtual Rising Star Symposium Series

Speaker: Nasim Soltani, Northeastern University, USA

Title: Deep Learning for Next-G Wireless Communications

Date: April 18, 2024; **Time:** 11AM ET

Registration: Please register at

https://gmu.zoom.us/meeting/register/tJArfuiopzwqGNDlj7_5VA1fdjOGJjmMB8GD



Abstract: Wireless communications has been revolutionized by the use of deep learning for the physical layer applications. The benefits of applied AI/ML for wireless has inspired researchers and innovators to propose a fully AI-based paradigm for 6G communications. In this talk, we introduce the advantages and address the challenges of using AI/ML in two key areas in the physical layer: (i) spectrum sensing and (ii) signal reception and decoding. In the first area, we show the power of deep learning for signal detection and localization in increased noise regime in the citizen broadband radio service (CBRS) band, and we introduce a deep learning method for radio frequency (RF) fingerprinting hovering unmanned aerial vehicles (UAVs). In the second area, we show how deep learning can be leveraged to design waveforms with reduced communication overhead that lead to an increase in communication throughput.

Bio: Nasim Soltani is a PhD candidate at the Electrical and Computer Engineering Department at Northeastern University. Her research interest is broadly applied AI/ML for wireless communications. She has worked on applications of deep learning for spectrum sensing and signal classification including RF fingerprinting, as well as neural-network-based wireless receivers for next-G communication systems. Her work appears in different IEEE venues including IEEE TWC, TVT, TMC, JSAC, ComMag, WirelessComMag, IoTMag, INFOCOM and others.

About the Monthly Rising Star Symposium Series: The IEEE TCCN Special Interest Group for *AI and Machine Learning in Security* conducts a rising star symposium series where emerging scholars (e.g., senior PhD candidates and postdocs) present their research to a broader audience with the intention of fostering more mentorship, collaboration, and employment opportunities between the speakers and audience.