

## SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

**Area: Communications and Networks (CN)**

**Host: A/Prof Mohan Gurusamy**

TOPIC	:	Assessing Adversarial Resilience in DRL-Driven Multi-Slice UAV-based MEC
SPEAKER	:	Ms Divya Dattaprabodh Kulkarni Graduate Student, ECE Dept, NUS
DATE	:	Thursday, 13 March 2025
TIME	:	3:00PM-4:00PM
VENUE	:	Join Zoom Meeting <a href="https://nus-sg.zoom.us/j/83426888212?pwd=9Wct7Cnpm9jXRbp8Td1nRvLVozZN86.1">https://nus-sg.zoom.us/j/83426888212?pwd=9Wct7Cnpm9jXRbp8Td1nRvLVozZN86.1</a> Meeting ID: 834 2688 8212 Passcode: 727386

### ABSTRACT

Recent research into the feasibility of Unmanned Aerial Vehicles (UAVs) as flexible platforms for the dynamic deployment of 5G-based Multi-access Edge Computing (MEC) services has been increasing. This is particularly useful in environments where traditional infrastructure is either unavailable or impractical, such as disaster-affected areas or remote regions with limited connectivity. Given the energy constraints of UAVs, machine learning-based optimization techniques demonstrate considerable potential in enhancing the efficiency of UAV-based MEC services. However, the susceptibility of these techniques to adversarial attacks poses an important challenge that must be assessed. In this work, we explore a targeted Denial-of-Service (DoS) attack on a UAV-based multi-slice MEC employing Deep Reinforcement Learning (DRL) provisioning diverse low-latency services. We conduct experimental simulations to analyze the impact on service delay and job completion percentage for different slices, comparing these outcomes with static provisioning schemes. We also investigate the effect of the attack on the hovering time of the UAVs. The results indicate that while the attack has a significant impact, the continuous learning capabilities of DRL enable it to recover from the disruption.

### BIOGRAPHY

Divya Dattaprabodh Kulkarni is currently a PhD Year 3 student in the Department of Electrical and Computer Engineering in National University of Singapore. Divya received her M.E. Degree in Computer Science from BITS Pilani, Goa, India in 2022. Her research interests include 5G network slicing security, adversarial machine learning and reinforcement learning in 5G/6G security.

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