



<b>TOPIC</b>	<b>Multi Virtual Agent Exploration for Faster Convergence in Deep Q-Learning</b>
<b>ORGANIZERS</b>	Student Leadership Council and Faculty of ACIT Institute and TECHLAV Center
<b>AREA</b>	Deep Reinforcement Control for Autonomous Vehicles
<b>SPEAKER</b>	Abhijit Majumdar
<b>DATE</b>	Friday April 20, 2018
<b>TIME</b>	3:00 – 4:00 P.M. (EST)
<b>VENUE</b>	Fort IRC 410, North Carolina A&T State University, UTSA and SIPI will be joining through video-conferencing
<b>FEES</b>	No Charge

## SYNOPSIS

The development in autonomous vehicles and navigation in unpredictable environments demand the use of intelligence which learn-while-exploring such environments. The use of control policies obtained from Reinforcement Learning (RL) over conventional controllers, not just provides this advantage but also assures convergence to the most optimal policy under the given constraints encountered in the scenario. With research shown on how such algorithms are able to beat the world champion in board games and provide above-par performance in simulated computer games, we show how one such algorithm, Deep Q-Learning may be benefited from, to provide navigation to a four wheeled rear-drive vehicle to reach its destination while avoiding obstacles and learning the dynamics and its abilities to do so in the best possible manner. We also show how the process can be parallelized into using multiple vehicles to synchronously learn a generalized policy to govern them in all such situations.

## ABOUT THE SPEAKER



Abhijit Majumdar is a graduate student in the Electrical and Computer Engineering Department at the University of Texas at San Antonio (UTSA), currently working towards his thesis at Autonomous Controls Engineering (ACE) Labs as a Graduate Research Assistant. His research is focused on the use of Machine Learning based control applications, with primary focus on end-to-end control of a quadrotor using Reinforcement Learning algorithms. He has extensive experience in developing both hardware and software elements of small scale UAVs and UGVs.

