DEPARTMENT OF MECHANICAL & AEROSPACE ENGINEERING
WILLIAM MAXWELL REED SEMINAR SERIES

"Stochastic Machine Learning Techniques for Space Situational Awareness (SSA), Space Traffic Management (STM), and Space Weather Applications."

Smriti Nandan Paul, Ph.D.
West Virginia University

Abstract:

Safety of the near-Earth space environment, where we have many assets like communication and reconnaissance satellites, the International Space Station (ISS), space-based optical sensors, and others, is an ever-increasing concern because of the exploding number of satellite launches. Kessler's Syndrome, or the cascading phenomenon in which space debris collisions create more debris and collisions, could make this valuable near-Earth space inaccessible. In order to protect valuable space assets, we must have good space situational awareness (SSA) and space traffic management (STM) measures in place. This seminar focuses on the topic of stochastic machine learning techniques for SSA, STM, and space weather applications in low Earth orbit (LEO). The topic will cover the effect of uncertainty in atmospheric drag parameters on orbital perturbations under various space weather conditions. Uncertainties in drag parameters are the largest sources of dynamical uncertainties for objects in the LEO region and are particularly important during geomagnetic storms.

Speaker Bio:

Smriti Nandan Paul is a post-doctoral research fellow at West Virginia University (WVU). His research interests lie at the intersection of astrodynamics, space situational awareness (SSA), space traffic management (STM), space weather, and applications of machine learning techniques in SSA/STM/space weather. Paul earned his Dual Degree in Aerospace Engineering from IIT Bombay and his Ph.D. in Aerospace Engineering from the School of Aeronautics and Astronautics, Purdue University. He is the recipient of the Purdue AAE Teaching Scholarship 2019, AAE Teaching Fellowship 2020, and AAE Teaching Assistant Award 2019. Before his current position at WVU, he was a Visiting Assistant Professor at Purdue University. His internship experience in the aerospace industry includes Planet Labs (Attitude Determination and Control System Team) and IN Space LLC (Space Debris Re-entry Policy Analyst).

Date: Tuesday, February 14, 2023
Time: 3:00 PM EST
Place: Whitehall Classroom Building 114
Contact: Dr. Jesse Hoagg

Attendance open to all interested persons

College of Engineering

DEPARTMENT OF MECHANICAL & AEROSPACE ENGINEERING
UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY