

## GRADUATE SEMINAR

### Model-based Approaches for Cyber Risk Assessment of Space Missions

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Space assets such as satellites, drones and spacecraft are increasingly attractive targets for adversaries ranging from individual hackers, to hacker groups and nation states. This rapid rise in the cyber threat landscape necessitates smarter cyber tools to stay ahead of our adversaries. In this talk, I will present the work being done by the Cyber Defense Engineering and Research (CDER) group at JPL in addressing cyber challenges as pertaining to JPL's missions. I will specifically focus on our work combining model-based engineering and AI-based reasoning to build a unique capability for automated cyber risk assessments.



**Dr. Arun Viswanathan** is a senior cybersecurity researcher and manages the Cyber Defense Engineering and Research group (319C) at the Jet Propulsion Laboratory. In addition to leading the group, his work involves research and development of innovative cyber security solutions aimed at defending JPL missions against cyber adversaries, contributing to mission success. He has lead teams on cybersecurity projects with the DoE, NSA and various industry partners and has published in premier cybersecurity venues on the subjects of applied machine learning for cybersecurity; cyber physical resilience of autonomous systems; modeling and reasoning for cyber situational awareness; robust design of anomaly detection sensors; detection, diagnosis and response architectures for cyber resilience. Prior to JPL, he received his M.S. and Ph.D. in Computer Science (Cybersecurity) from the University of Southern California, where he explored model-driven approaches for cyber situational awareness, and worked on addressing cyber security challenges prevalent on the nation's critical infrastructures such as the SmartGrid.

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