SPCEET RESEARCH SEMINAR SERIES

DR. NIDHAL CARLA BOUAYNAYA

Associate Vice President for Artificial Intelligence, Professor of Electrical and Computer Engineering,
Rowan University

TOWARDS SELF-AWARE ARTIFICIAL INTELLIGENCE - LESSONS LEARNED FROM OPTIMAL ESTIMATION THEORY

DATE: WEDNESDAY, JANUARY 21ST
TIME: 11:15 AM - 12:15 PM
LOCATION: Q 107

BIO

Dr. Bouaynaya holds a Ph.D. in Electrical and Computer Engineering and an M.S. in Pure Mathematics from the University of Illinois at Chicago. Her research focuses on Machine Learning and AI. She co-authored more than 120 refereed journal articles, book chapters, and conference proceedings. Dr. Bouaynaya has won numerous Best Paper Awards. She is an entrepreneur, the co-founder of MRIMATH, LLC, an FDA-cleared startup that leverages artificial intelligence to enhance patient oncology outcomes and treatment responses, and the founder of Deep AI Solutions, LLC, an IBM-protégé startup that provides trustworthy machine learning solutions to government and industry clients.

ABSTRACT

This talk will advance Bayesian deep learning methods that are able to quantify their uncertainty in the decision and self-assess their performance, are robust to adversarial attacks, and can even expose an attack from ambient noise. This talk will establish the theoretical and algorithmic foundations of uncertainty or belief propagation through complex deep learning models by adopting powerful frameworks from optimal estimation problems in non-linear and non-Gaussian dynamical systems. We introduce Tensor Normal distributions as priors over the network parameters and derive a first-order Taylor series mean-covariance propagation framework.