PURDUE UNIVERSITY | Elmore Family School of Electrical and Computer Engineering

SEMINAR

Monday, February 6, 2023
2:00 – 3:00 PM
MSEE 112

Somayeh Sojoudi
Assistant Professor
Electrical and Computer Sciences
Mechanical Engineering
University of California, Berkeley

Zoom info: https://purdue-edu.zoom.us/j/98154460795 Meeting ID: 981 5446 0795

Computational Methods for Solving Non-convex Machine Learning Problems

Abstract
Efficient computational methods with proven guarantees are needed to handle the complexity and nonlinearity of many real-world systems. Practitioners often develop heuristic algorithms for specific applications, but the theoretical foundations of these methods are not well understood, which limits their use in safety-critical systems. In this presentation, we will focus on addressing this issue for certain machine learning problems. We will examine methods for certifying the robustness of neural networks against adversarial inputs and investigate when simple local search algorithms can solve a class of nonlinear problems to global optimality. We will present our recent findings on these topics and provide examples of their application in tensor decomposition with outliers and video processing.

Biography

Somayeh Sojoudi is an Assistant Professor in the Departments of Electrical Engineering & Computer Sciences and Mechanical Engineering at the University of California, Berkeley. She is an Associate Editor for the journals of the IEEE Transactions on Smart Grid, Systems & Control Letters, IEEE Access, and IEEE Open Journal of Control Systems. She is also a member of the conference editorial board of the IEEE Control Systems Society. She received several awards and honors, including NSF CAREER Award, ONR Young Investigator Award, INFORMS Optimization Society Prize for Young Researchers, INFORMS Energy Best Publication Award, INFORMS Data Mining Best Paper Award, and Best-of-the-Best conference paper award of IEEE Power & Energy Society General Meeting. She has also received several best student conference paper awards (as advisor or co-author) from the Control Systems Society and INFORMS.

Host: Jianghai Hu ~ jianghai@purdue.edu