EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

"Stochastic Approximation Methods for Solving Stochastic Nash Equilibrium Problems"

ABSTRACT – Nash equilibrium (NE) is one of the most important concepts in game theory, capturing a wide range of phenomena in engineering, economics, and finance. NE is characterized by the observation that in a stable game, no player can lower their cost by changing their action within their designated strategy. Equilibrium in the Nash game can be found by solving a variational inequality (VI) problem. Solving VI and stochastic VI (SVI) problems becomes more challenging when considering that players also interact at the level of feasible sets. This situation arises naturally when players share common resources, leading to a Generalized NE (GNE) problem that can be formulated as a Quasi VI (QVI) or Stochastic QVI (SQVI). In this presentation, we introduce efficient iterative schemes with guaranteed convergence to solve SVI and SQVI problems.

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SPEAKER BIO – Dr. Jalilzadeh is an assistant professor at The University of Arizona in the Department of Systems and Industrial Engineering. She received her bachelor's degree in Mathematics from the University of Tehran and earned her Ph.D. in Industrial Engineering and Operations Research from Pennsylvania State University. Dr. Jalilzadeh's areas of expertise include designing, analyzing, and implementing stochastic approximation methods for solving stochastic optimization and variational inequality problems, with applications in machine learning, game theory, and power systems. Her research has received support from the National Science Foundation (NSF), the University of Arizona Research, Innovation & Impact (RII) Funding, and the Arizona Technology and Research Initiative Fund (TRIF) for Innovative Technologies for the Fourth Industrial Revolution initiatives.

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