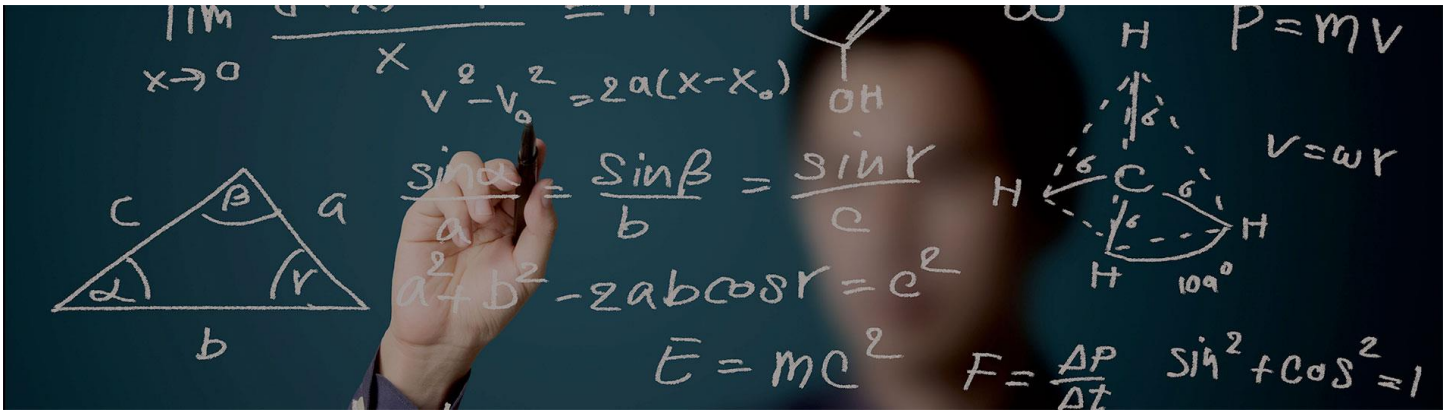

Spring 2019

RENSSELAER POLYTECHNIC INSTITUTE

DEPARTMENT OF MATHEMATICAL SCIENCES COLLOQUIUM

"Distributed Optimization and Resource Allocation: Algorithms and the Mirror Relation"

Abstract: In this talk, we concern the problems of consensus optimization and resource allocation, and how to solve them in a decentralized manner. These two problems are known to be closely related to empirical risk minimization in machine learning and management problems in operations research, respectively.

By saying “decentralized”, we mean that the tasks are to be completed over a set of networked agents in which each agent is able to communicate with adjacent agents. For both problems, every agent in the network wants to collaboratively minimize a function that involves global information, while only a piece of information is available to each of them.

Specifically, we will first introduce these two problems in the context of decentralized/distributed optimization, review the literatures for both problems, and then study the interesting “mirror relation” between them. Afterwards, we will enumerate a few state-of-the-art algorithms for solving the decentralized consensus optimization problem, and then correspondingly develop a few algorithms for solving the decentralized resource allocation problem based on the “mirror relationship”. Finally, we provide some numerical experiments to demonstrate the efficacy of the concerned algorithms and validate the methodology of using the “mirror relation”.

Wei Shi (Princeton University)

Monday, February 19, 2019

4-5pm

Amos Eaton 214

Host: Yangyang Xu

Refreshments served 3:30-4pm Amos Eaton 4th Floor Lounge

Short Bio:

Wei (Wilbur) Shi is currently a postdoc in the Electrical Engineering Department of the Princeton University, Princeton, NJ, USA. He obtained his Ph.D. in Control Science and Engineering from the University of Science and Technology of China, Hefei, Anhui, China. He was a postdoc in the Coordinated Science Laboratory of the University of Illinois at Urbana-Champaign, Urbana, IL, USA. His current research interest distributes in optimization, learning, and control, and applications in cyber physical systems and internet of things. He was a recipient of the 2017 Young Author Best Paper Award from IEEE Signal Processing Society. He also received the 2018 Best Paper Award from International Consortium of Chinese Mathematicians.