# Departmental Colloquium Announcement

Xiaoming Huo
Georgia Institute of Technology
at 11 am in Hume 321
November 8, 2019

### Title: Interface of statistics, computing, and data science

## Abstract

Inference (aka predictive modeling) is in the core of many data science problems. Traditional ap-proaches could be either statistically or computationally efficient, however not necessarily both. The existing principles in deriving these models – such as the maximal likelihood estimation prin-ciple - may have been developed decades ago, and do not take into account the new aspects of the data, such as their large volume, variety, velocity and veracity. On the other hand, many existing empirical algorithms are doing extremely well in a wide spectrum of applications, such as the deep learning framework; however they do not have the theoretical guarantee like these classical meth-ods. We aim to develop new algorithms that are both computationally efficient and statistically optimal. Such a work is fundamental in nature, however will have significant impacts in all data science problems that one may encounter in the society. Following the aforementioned spirit, I will describe a set of my past and current projects including L1-based relaxation, fast nonlinear corre-lation, optimality of detectability, and nonconvex regularization. All of them integrates statistical and computational considerations to develop data analysis tools.

## About the speaker

Xiaoming Huo is an A. Russell Chandler III Professor at the Stewart School of Industrial & Sys-tems Engineering at Georgia Tech. He has served as a program director for the National Science Foundation, a fellow of the American Statistical Association, and a senior member of the IEEE. He is the director of the Transdisciplinary Research Institute for Advancing Data Science at Georgia Institute of Technology  He holds a gold medal from the 30th International Mathematical Olympiad.