Extremescale Mathematics

Developing advanced stochastic and hybrid mathematical methods for Linear Algebra, Optimization, etc applied to variety of data and compute intensive problems at scale.

Summary

Extreme Computing group focus here is on designing robust mathematical methods enabling extreme scalability, in particular, the design and development of advanced stochastic and hybrid methods and algorithms for Linear Algebra, Optimization, etc applied to variety of practical problems which are representatives of such methods. This is particularly true in the case of Data and Compute intensive problems.

Objectives

- To develop efficient Monte Carlo, quasi-Monte Carlo and hybrid stochastic/deterministic mathematical methods for Linear Algebra
- To develop Monte Carlo, quasi-Monte Carlo and hybrid stochastic/deterministic mathematical methods for Optimizations
- To develop advanced mathematical methods for solving problems with uncertainties such as sensitivity analysis, dealing with data input, etc for problems in the area of Environmental Modelling, Social Media, etc.
• To develop advanced mathematical methods based on Network Science and optimization methods for discovering global properties on data for data and compute intensive problems.

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