Idaho State University | Mathematics and Statistics

Colloquium

Accelerating Eigenvalue Computation with Dynamic Momentum

Dr. Yunrong Zhu
Professor of Mathematics
Idaho State University

The Power Method stands as a cornerstone in numerical linear algebra, given its simplicity and ease of implementation in finding dominant eigenpairs of a given matrix, which is crucial in a variety of machine learning algorithms (principle component analysis, clustering, low-rank matrix approximations, etc), PageRank, and stability analysis of differential equations. In this colloquium talk, we will introduce a dynamic momentum method designed to accelerate the traditional power method at minimal extra computational cost. Like the standard power iteration, this method requires only a single matrix-vector multiplication per iteration. We will demonstrate the performance of the proposed method on a number of benchmark problems. We will also present and demonstrate the extension of this algorithm to the inverse power method.

Tuesday, March 26

4:00 pm

PS 307 or

Zoom: https://isu.zoom.us/j/83918530990

For colloquium guests, there will be refreshments beginning at 3:30