Math 288 - Probability and Statistics

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Spectral stability under random perturbations

Abstract:

Abstract: Consider an $n \times n$ deterministic matrix $A$ and a random matrix $M$ with independent standard Gaussian entries. In this talk I will discuss recent results that state that, if $\|A\| \leq 1$, for any $\delta > 0$, with high probability $A + \delta M$ has eigenvector condition number of order $\text{poly}(n/\delta)$ and eigenvalue gaps of order $\text{poly}(\delta/n)$, which implies that the randomly perturbed matrix has a stable spectrum. This has useful applications to numerical analysis and was used to obtain the fastest known provable algorithm for diagonalizing an arbitrary matrix.

This is joint work with Jess Banks, Archit Kulkarni and Nikhil Srivastava.

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11:00 AM
For zoom ID and password email: bau@ucsd.edu