

Kabir Chandrasekher: Convergence guarantees for iterative algorithms in a class of nonconvex empirical risk minimization problems

Fitting a model to data typically involves applying an iterative algorithm to minimize an empirical risk. However, given a particular empirical risk minimization problem, the process of algorithm selection is often performed via either expensive trial-and-error or appeal to (potentially) conservative worst case efficiency estimates and it is unclear how to compare and contrast algorithms in a principled and meaningful manner.

In this talk, we present one potential avenue to obtain principled comparisons between algorithms. We provide a framework—based on Gaussian comparison inequalities—to characterize the trajectory of an iterative algorithm run with sample-splitting on a set of nonconvex model-fitting problems with Gaussian data. We use this framework to demonstrate concrete separations in the convergence behavior of several algorithms as well as to reveal some nonstandard convergence phenomena.