THE UNIVERSITY OF CHICAGO | DEPARTMENT OF STATISTICS

Statistics Colloquium

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"How many parameters does your interpolator use? Revisiting degrees of freedom in the wake of overparametrized machine learning"

Monday October 2nd, 2023, at 11:30 AM
Jones 303, 5747 S. Ellis Avenue
Refreshments will be served before the seminar at 11:00 am in Jones 303.

Abstract

We revisit model complexity through the lens of model optimism and degrees of freedom, classically studied in the fixed-X prediction setting. By reinterpreting the definition of degrees of freedom in a new way, we are able to extend this concept to the random-X prediction setting. We then define a family of complexity measures, whose two extreme ends we call the emergent and intrinsic degrees of freedom of a prediction model. We examine our proposed measures by showing what complexity they assign to various example models, including interpolators (that exhibit "double descent" or even "multiple descent" when parameterized simply by the number of features they use).

This is joint work with Pratik Patil (UC Berkeley) and Jin-Hong Du (Carnegie Mellon University).

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