

Graduate Seminar



Calibration for the (computationally-identifiable) masses

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Thursday, March 29th

4:30 PM

DH A302

1:30 PM

B23 109/110

Abstract:

As algorithms increasingly inform and influence decisions made about individuals, it becomes increasingly important to address concerns that these algorithms might be discriminatory. The output of an algorithm can be discriminatory for many reasons, most notably: (1) the data used to train the algorithm might be biased (in various ways) to favor certain populations over others; (2) the analysis of this training data might inadvertently or maliciously introduce biases that are not borne out in the data. This work focuses on the latter concern.

We develop and study multicalibration as a new measure of algorithmic fairness that aims to mitigate concerns about discrimination that is introduced in the process of learning a predictor from data. Multicalibration guarantees accurate (calibrated) predictions for every subpopulation that can be identified within a specified class of computations. We think of the class as being quite rich, in particular it can contain many and overlapping subgroups of a protected group.

We show that in many settings this strong notion of protection from discrimination is both attainable and aligned with the goal of obtaining accurate predictions. Along the way, we present new algorithms for learning a multicalibrated predictor, study the computational complexity of this task, and draw new connections to computational learning models such as agnostic learning.

Joint work with Ursula Hebert-Johnson, Michael P. Kim and Guy Rothblum

Bio:

Omer Reingold is a Professor of Computer Science at Stanford University. Past positions include Samsung Research America, the Weizmann Institute of Science, Microsoft Research, the Institute for Advanced Study in Princeton, NJ and AT&T Labs. His research is in the Foundations of Computer Science and most notably in Computational Complexity and the Foundations of Cryptography with emphasis on randomness, derandomization and explicit combinatorial constructions. He has a keen interest in the societal impact of computation. He is an ACM Fellow and among his distinctions are the 2005 Grace Murray Hopper Award and the 2009 Gödel Prize.

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SEMINAR NOTES: (REFRESHMENTS SERVED AT 4:00 PM)