



# THE UNIVERSITY OF CHICAGO

Department of Statistics

STATISTICS COLLOQUIUM

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Algorithmic Aspects of Machine Teaching: Tractability,  
Interpretability, and Robustness

MONDAY, May 18, 2020 at 4:00 PM  
Via Zoom

## ABSTRACT

Machine teaching studies the interaction between a (machine) teacher and a learner, where the teacher's objective is to find an optimal training sequence to steer the learner towards a target concept. It provides a rigorous formalism for a number of real-world applications including personalized educational systems, adversarial attacks, and imitation learning. In this talk, I will discuss the algorithmic challenges in modeling and teaching realistic (typically human) learners. I will start by introducing the machine teaching problem under the well-studied "version space" learner's model, and show that finding the optimal set of training examples amounts to a combinatorial optimization problem which is NP-hard. I will then focus on more realistic learner's models, and discuss our recent work in teaching certain classes of limited capacity learners (e.g., learners with limited memory and/or limited computational/perceptual capability).

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For further information and inquiries about building access for persons with disabilities, please contact Jonathan Rodriguez at 773.702.8333 or send him an email at [jgrodriguez@galton.uchicago.edu](mailto:jgrodriguez@galton.uchicago.edu). If you wish to subscribe to our email list, please visit the following website:  
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