



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

STATISTICS COLLOQUIUM

*JOINT SEMINAR WITH THE DEPARTMENT OF COMPUTER SCIENCE*

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Cascade Processes in Machine Learning

MONDAY, January 25, 2021 at 4:00 PM

Via Zoom (session information will be e-mailed to subscribers)

### ABSTRACT

Cascade processes have been useful in modeling such diverse phenomena as epidemic spreading, signaling in biological networks, information propagation in social media, financial systemic risk, and the reorganization of international trade networks. In this talk, we will focus on two specific model classes and abstract them within a deep learning framework. We will leverage the fact that load redistribution models correspond one-to-one to the evaluation of deep neural networks. Based on analytic insights for random graph ensembles, we will derive successful initialization strategies that speed up deep learning and improve the generalization ability of the resulting models. We will further discuss how we can utilize these advancements for the inference of gene regulatory networks.

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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 [jgrodriquez@galton.uchicago.edu](mailto:jgrodriquez@galton.uchicago.edu). If you wish to subscribe to our email list, please visit the following website:  
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