



THE UNIVERSITY OF  
**CHICAGO**

Department of Statistics

STATISTICS COLLOQUIUM

*Joint seminar with the Committee on Computational and Applied  
Mathematics (CCAM)*

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Mathematics of Deep Neural Networks

MONDAY, January 6, 2020 at 4:00 PM  
Jones 303, 5747 S. Ellis Avenue

ABSTRACT

Neural networks are remarkable families of non-linear functions that form the backbone for state-of-the-art algorithms in tasks from computer vision (self-driving cars), natural language processing (Google Translate) and reinforcement learning (AlphaGo). After giving a precise definition of what neural networks are, I will explain how important practical questions about their complexity, stability, and optimization can be recast in mathematical terms. The problems that arise are typically statistical/probabilistic in nature. I will focus on several such questions I have studied recently involving the complexity of random hyperplane arrangements and the spectral theory of products of large random matrices.

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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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