



THE UNIVERSITY OF  
CHICAGO

Computational and Applied Mathematics  
&  
Statistics Student Seminar

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On The Role of Depth in Deep Learning

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12:30 PM

DSI, 5460 S University Ave,  
Room 105, Chicago, IL 60615

ABSTRACT

Deep learning has revolutionized our society. However, our understanding of how even the simplest neural networks leverage patterns in data remains limited. For instance, it is known that even single-hidden-layer ReLU neural networks can approximate any continuous function. Why, then, is depth necessary? What can deeper networks do that shallower networks cannot? My research reveals that even though shallow networks can approximate any continuous function, learning a good approximation from training data can be significantly easier using a deeper network. In this talk, I will describe a framework for understanding this phenomenon using ideas from function-space perspectives on neural networks and statistical learning theory.