



THE UNIVERSITY OF CHICAGO

COMPUTATIONAL AND APPLIED MATHEMATICS COLLOQUIUM

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A Few Thoughts on Deep Learning-Based Scientific Computing

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ABSTRACT

The remarkable success of deep learning in computer science has evinced potentially great applications of deep learning in computational and applied mathematics. Understanding the mathematical principles of deep learning is crucial to validating and advancing deep learning-based scientific computing. We present a few thoughts on the theoretical foundation of this topic and our methodology for designing efficient solutions of high-dimensional and highly nonlinear partial differential equations, mainly focusing on the approximation and optimization of deep neural networks.

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