



THE UNIVERSITY OF CHICAGO

COMPUTATIONAL AND APPLIED MATHEMATICS COLLOQUIUM STUDENT SEMINAR

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Computational and Applied Mathematics
The University of Chicago

Data Driven Techniques in Inverse Problems

TUESDAY, November 19, 2019, at 4:00 PM
Cobb 104, 5811 S. Ellis Avenue

ABSTRACT

The goal of inverse problems is to recover hidden model parameters from noisy observations. Knowledge-driven approaches, including functional analytic inversion and Bayesian inversion, aim to find approximating solutions for inverse problems directly from the forward model. However, in some cases it's challenging due to our limited understanding of the underlying physical laws, as well as high computational complexity. With the emergence of deep learning, we could instead design data-driven models that learn to solve inverse problems from data. In this talk we will briefly discuss the general setting of inverse problems in a knowledge-driven perspective, and introduce some data-driven techniques, including adversarial regularizer, unrolled optimization schemes, and deep Bayes inversion. Some deep generative models (e.g., GANs) will also be discussed.