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Inverse Problems Seminar

Accelerating Optimization Over Probability Measure Space

Prof. Qin LI
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Abstract

In the past decade, there has been a significant shift in the types of mathematical objects under investigation, moving from vectors and matrices in Euclidean spaces, to functions residing in Hilbert or Banach spaces, and ultimately extending to probability measures within the probability measure space. Many questions that were originally posed in the context of linear function spaces are now being revisited in the realm of probability measures. One such question is to efficiently find a probability measure that minimizes a given objective functional.

In Euclidean space, we devised optimization techniques like gradient descent and introduced momentum-based methods to accelerate the convergence. Now, the question arises: Can we employ analogous strategies to expedite convergence within the probability measure space?

We provide an affirmative answer to this question, and show that momentum based acceleration for Euclidean optimization now translates to Hamiltonian flow, and it can achieve arbitrary high-order of convergence. This opens the door of developing methods beyond standard gradient flow.

Date: 7 February, 2024 (Wednesday)
Time: 9:30am – 10:30am (Hong Kong Time)
ZOOM link: https://cuhk.zoom.us/j/98241093146
Meeting ID: 982 4109 3146

All are Welcome