

COMPUTATIONAL RESEARCH IN BOSTON AND BEYOND SEMINAR

Friday, December 6, 2024

12:00 PM – 1:00 PM

<https://mit.zoom.us/j/96155042770>



Score-based Generative Neural Networks for Large-Scale Optimal Transport

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Abstract:

I will present a scalable machine learning method for (approximately) sampling the optimal transport coupling between two high-dimensional distributions. Our method, which is called SCONES, can be used to 'register' or 'fuse' samples from two uncoupled datasets, and it can also be used downstream in trajectory inference tasks, where the goal is to reconstruct the trajectories of individual particles from snapshots in time. SCONES is based on two key ingredients: entropically regularized optimal transport and score-based neural network models for sampling. The result is a computationally practical approach to coupling high-dimensional data modalities like images or other voxel-based data. We demonstrate the efficacy of our approach in a variety of toy sampling problems and on gaussian optimal transport.

<https://math.mit.edu/crib/>