Linking the Theory and Practice of Optimal Transport

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Abstract

Optimal transport is a theory linking probability to geometry, with applications across computer graphics, machine learning, and scientific computing. While transport has long been recognised as a valuable theoretical tool, only recently have we developed the computational machinery needed to apply it to practical computational problems. In this talk, I will discuss efforts with my students to scale up transport and related computations, showing that the best algorithm and model for this task depends on details of the application scenario. In particular, we will consider settings in representation learning using entropically-regularised transport, Bayesian inference using semi-discrete transport, and graphics/PDE using dynamical Eulerian models.