

COMPUTATIONAL OPTIMAL TRANSPORT: RECENT SPEED-UPS AND APPLICATIONS

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Optimal transport generalizes sorting to spaces of dimension $D > 1$ and can be understood as a nearest neighbor projection under a constraint of bijectivity/incompressibility. Over the last 5 years, discrete optimal transport solvers have become significantly more scalable and versatile. Solving matching problems between millions of particles is now a matter of seconds, even when using non-uniform and anisotropic cost functions. I will present an overview of the key ingredients behind modern computational advances, and their consequences in three applied fields: medical imaging, metallurgy and the modelling of cell populations.