An Introduction to Wasserstein Distance

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Abstract

The aim of this talk is to introduce the notion of Wasserstein metric- a way to quantify the distance between probability measures.

We begin by looking at the motivation and then we shall discuss the terminologies necessary to make the notions mathematically precise. This shall be followed by the discussion of the Monge's and Kantorovich's formulation of optimal transport problem.

We shall then define the Wasserstein metric and verify that it is indeed a metric. The talk shall be concluded by touching upon the notion of convergence in Wasserstein sense and the topological properties of Wasserstein space, briefly.

This topic is a beautiful combination of Optimal Transport, Metric Geometry and Abstract Analysis.