A Pot-Pourri of Probability & Optimal Transport

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Abstract

The main goal of these notes is to present an introduction to the transport inequalities, which consist of methods of using Optimal Transport Theory to obtain concentration inequalities in high-dimensional probability. Along the way, as new concepts are presented, some side-lining will be done, with the aim to explore some of these new concepts, before diving back in the proof of the inequalities.

Notation

- $P(\mathcal{X})$ - S Most of the content regarding transportation inequality is from

1 Introduction

Gozlan and Léonard [2010]

Given two probability distributions $\mu, \nu \in P(\mathcal{X})$, there are many situations where one is interested in defining a metric between them. The Wasserstein distance is a metric that arises from the idea of optimal transport, and which has being gaining attention in Statistics and Machine Learning.

References

References

Nathael Gozlan and Christian Léonard. Transport inequalities. a survey. *arXiv preprint arXiv:1003.3852*, 2010.