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Optimal Transport on Graph Data : Barycenters and Dictionary Learning

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In recent years the Optimal Transport (OT) based Gromov-Wasserstein (GW) divergence has been investigated as a similarity measure between structured data expressed as distributions typically lying in different metric spaces, such as graphs with arbitrary sizes. In this talk, we will address the optimization problem inherent in the computation of GW and some of its recent extensions, namely the Entropic and the Fused GW divergences. Next we will illustrate how these OT problems can be used to model graph data in learning scenarios such as graph compression, clustering and classification. Finally we will present a novel approach performing linear dictionary learning on graphs datasets using GW as data fitting term which simultaneously provides convenient graphs modeling for the aforementioned applications and efficient approximations to the GW divergence.

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