correspondence problem

A general

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Data

Goal

Approaches

Assumptions

X

Y

$\mathscr{X}$

Y

$$Y = \{\mathbf{y}^{(j)}\}_{j=1}^{m}, \mathbf{y}^{(j)} \in \mathcal{Y} \subset \mathbb{R}^{d_y}$$

$$X = \{\mathbf{x}^{(i)}\}_{i=1}^{n}, \mathbf{x}^{(i)} \in \mathcal{X} \subset \mathbb{R}^{d_x}$$

Two collections of points:

No prior correspondences are known

Spaces and are "unregistered" (i.e., not globally aligned)

Learn correspondences between and

1. Optimal Transport with Global Invariances.

2. Using the Gromov-Wasserstein Distance.

A general correspondence problem

Data | Two collections of points: $X = \{\mathbf{x}^{(i)}\}_{i=1}^{n}, \mathbf{x}^{(i)} \in \mathcal{X} \subset \mathbb{R}^{d_x}$

$Y = \{\mathbf{y}^{(j)}\}_{j=1}^{m}, \mathbf{y}^{(j)} \in \mathcal{Y} \subset \mathbb{R}^{d_y}$

Assumptions | No prior correspondences are known

Spaces $\mathcal{X}$ and $\mathcal{Y}$ are "unregistered" (i.e., not globally aligned)

Goal | Learn correspondences between X and Y

Approaches |

1. Optimal Transport with Global Invariances.
2. Using the Gromov-Wasserstein Distance.

First Approach:
OT with Invariances

AM, Jegelka, Jaakkola. AISTATS 2019