## Optimization-Level

Riemannian meta-optimization

Automatically deploy efficient Riemannian optimizer

## Model-Level

Curvature generation for Classifier

Obtain Riemannian classifier to match the non-Euclidean structure of data

Curvature-adaptive mix-curvature network

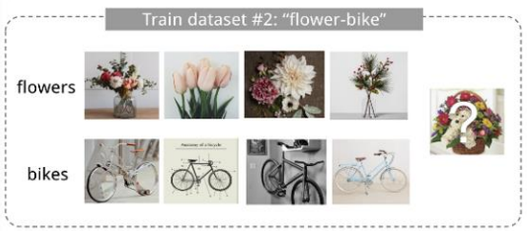
Obtain Riemannian backbone to match the non-Euclidean structure of data

## Data-Level

distributiuon estimation & feature augmentation

Generate much training data faithful to the non-Euclidean structure of real data

Know tasks


$$\min_{\theta_1 \in \mathcal{M}, \theta_2 \in \mathcal{M}} \mathcal{L}\left(\mathcal{C}_{\boldsymbol{g}_2,\theta_2}\left(\mathcal{N}_{\boldsymbol{g}_1,\theta_1}(\boldsymbol{x})\right)\right)$$

Riemannian optimizer

Riemannian classifier

Riemannian backbone

Riemannian data

Unknown tasks