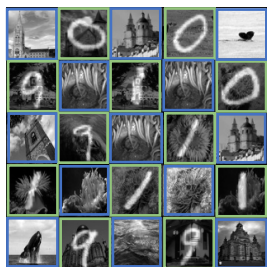# Contrastive learning of target-specific features

Input data: Background (BG) and Target (TG) images
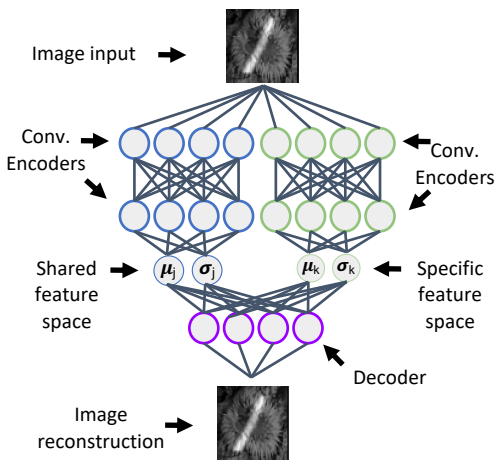
BG image (IMAGENET)
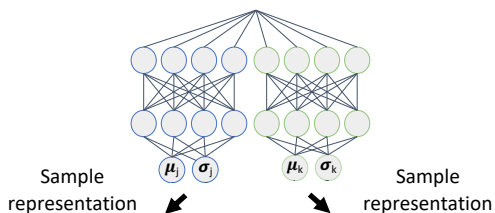
TG image (IMAGENET+MNIST)
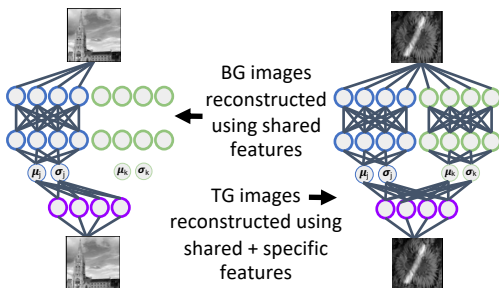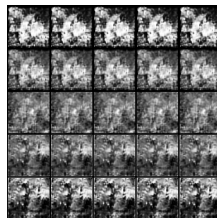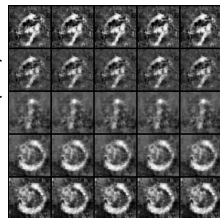
Network Architecture

Image input

Conv. Encoders

Conv. Encoders

Shared feature space

μ_j σ_j μ_k σ_k

Specific feature space

Decoder

Image reconstruction

Data flow

μ_j σ_j μ_k σ_k

BG images reconstructed using shared features

μ_j σ_j μ_k σ_k

TG images reconstructed using shared + specific features

Sample representation

μ_j σ_j μ_k σ_k

Sample representation

Shared-feature space

Axis 2 (a.u.)

Axis 1 (a.u.)

Specific-feature space

Axis 2 (a.u.)

Axis 1 (a.u.)

Dim. reduction (UMAP)

latend dim 2 (UAMP a.u.)

latend dim 1 (UAMP a.u.)

latend dim 2 (UAMP a.u.)

latend dim 1 (UAMP a.u.)

GMM clustering

latent dim. 2

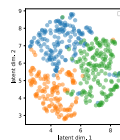latent dim. 1
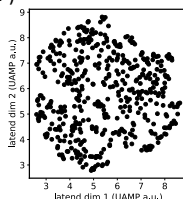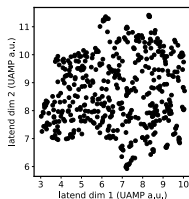
Specific features learned from overlapping (BG+TG) images

Cluster prototypes