

ProtoGMVAE: A Variational Auto-Encoder with True Gaussian Mixture Prior for Prototypical-based Self-Explainability

Supplementary Material

1. Additional prototype evaluation results for PanVAE

Here we report the results of the prototype evaluation we conducted for PanVAE, using one of the prototype pruning strategies they mentioned in their code. If for two consecutive epochs, starting from epoch 5, a prototype does not bear maximum similarity for any image, it is removed.

Dataset	MNIST	FMNIST	SVHN	CIFAR10
PanVAE	0.0058	0.0091	0.0032	0.0042

Table 1. Mean distance between an input image and the closest prototype in the visual space, using a prototype pruning strategy.

Dataset	MNIST	FMNIST	SVHN	CIFAR10
PanVAE	0.05440	0.06376	0.00108	0.00620

Table 2. Mean intra-class prototype variance in the visual space, using a prototype pruning strategy.

Table 1 and 2 do not show significant differences with the non pruned results.

2. Prototypes obtained by ProtoVAE

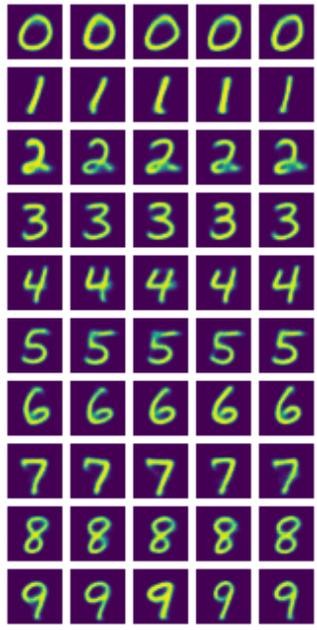


Figure 1. Prototypes on MNIST



Figure 3. Prototypes on SVHN

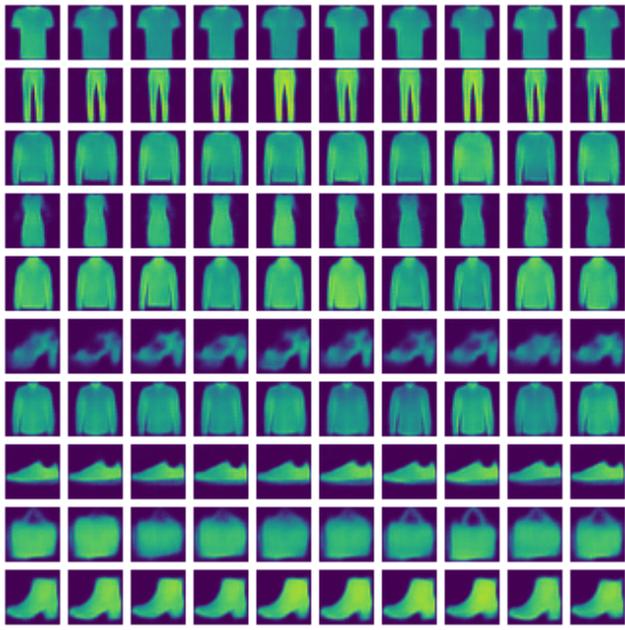


Figure 2. Prototypes on FashionMNIST

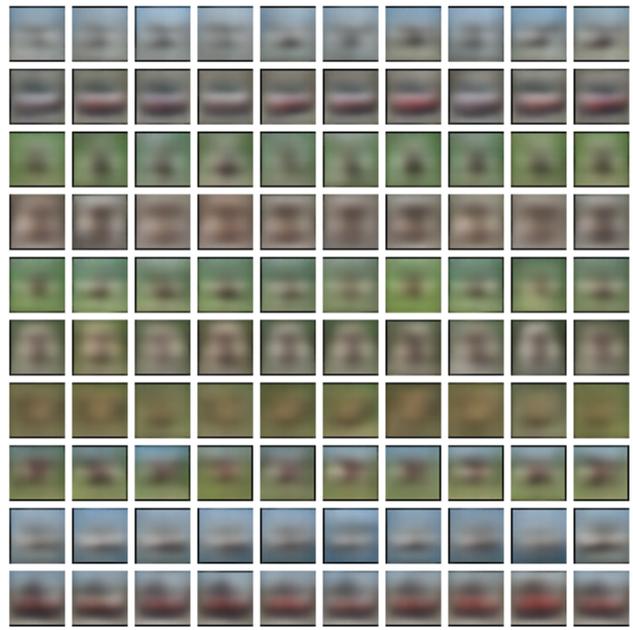


Figure 4. Prototypes on CIFAR10

3. Prototypes obtained by PanVAE

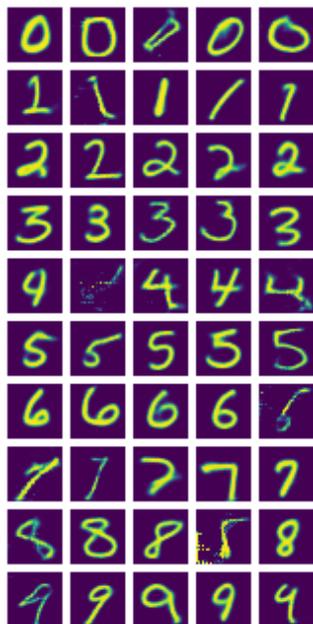


Figure 5. Prototypes on MNIST



Figure 7. Prototypes on SVHN

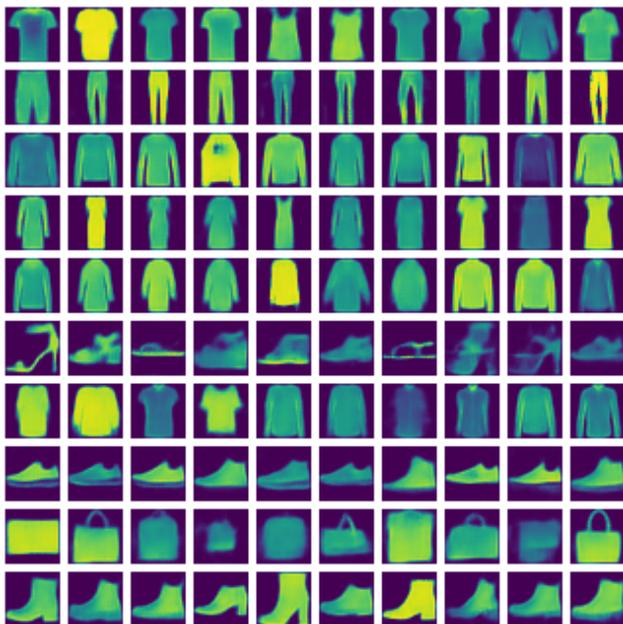


Figure 6. Prototypes on FashionMNIST

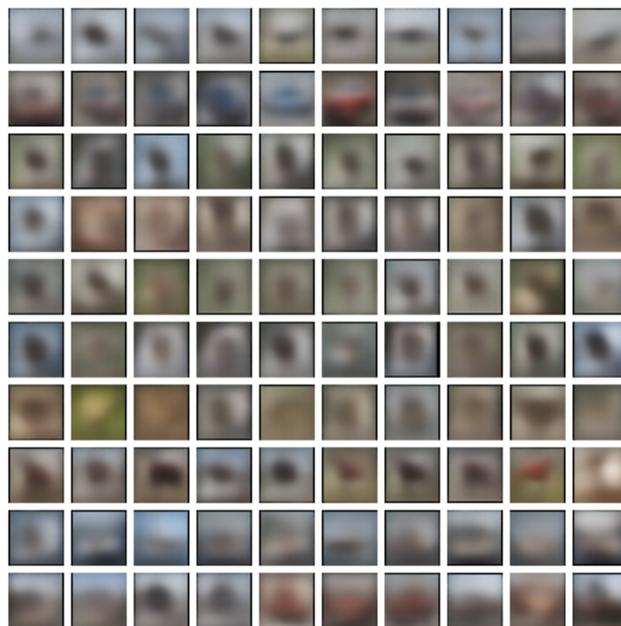


Figure 8. Prototypes on CIFAR10

4. Prototypes obtained by ProtoGMVAE

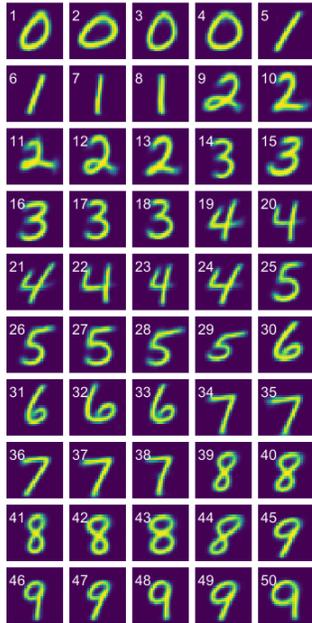


Figure 9. Prototypes on MNIST



Figure 11. Prototypes on SVHN

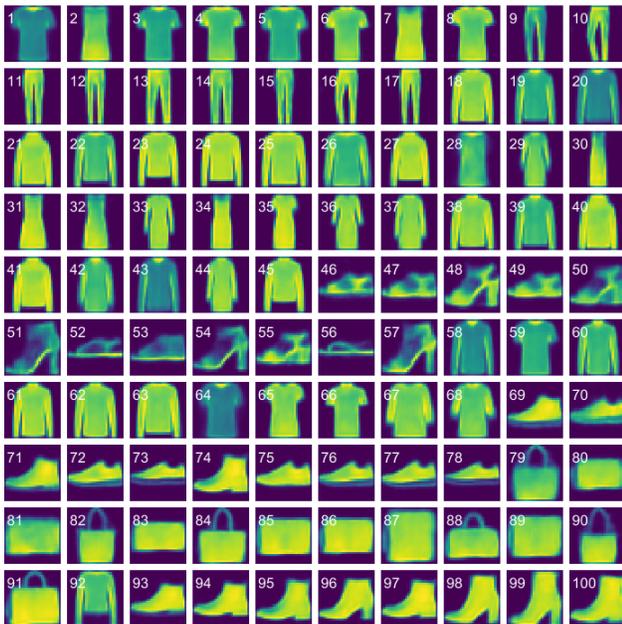


Figure 10. Prototypes on FashionMNIST

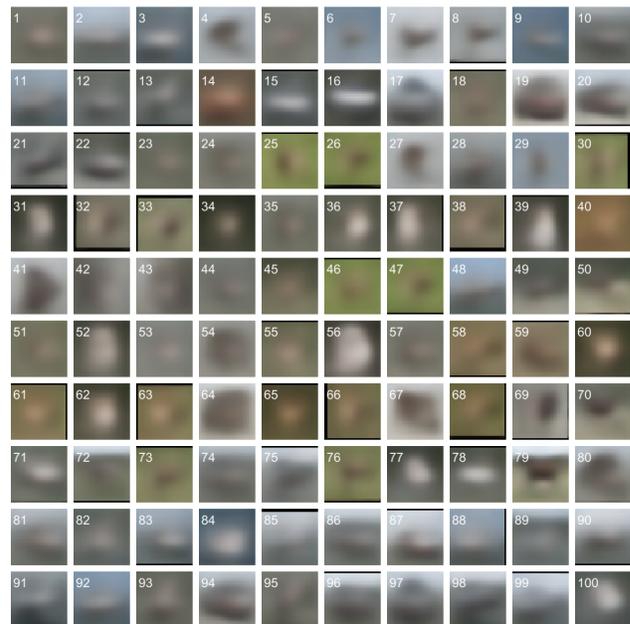


Figure 12. Prototypes on CIFAR10