

Supplementary materials

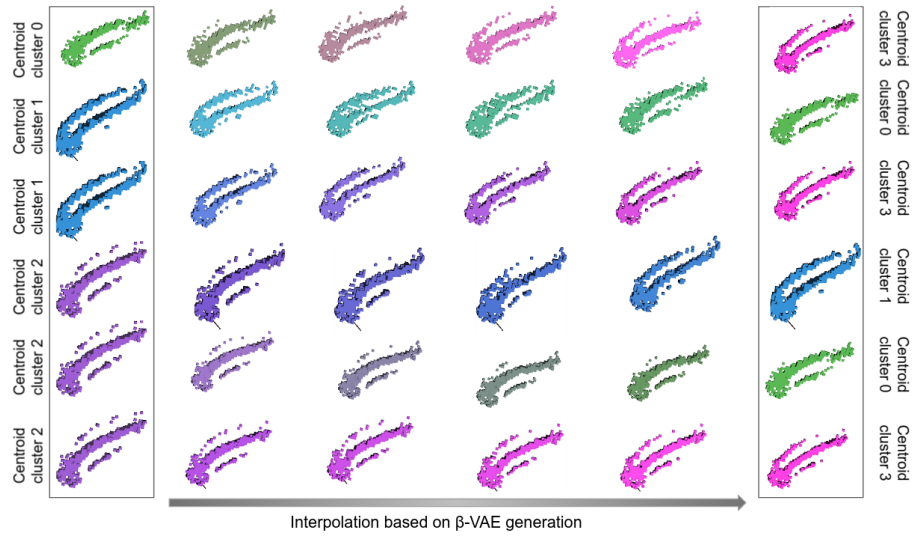


Fig. 1. Travelling through β -VAE latent space from one cluster to another. The extreme left and right columns represent patterns generated from the centroids latent codes, the colors refers to Fig.???. Between centroids patterns, new sampled obtained travelling through β -VAE latent space illustrate the variations from one cluster's particularities to another.

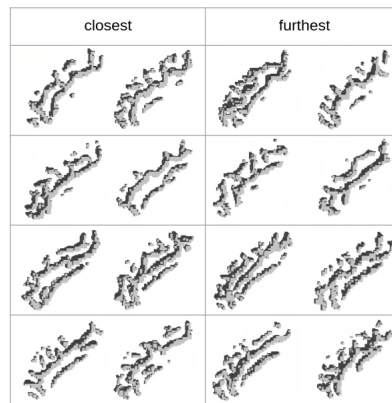


Fig. 2. Closest and furthest examples in the output of SimCLR model. The left column and right column represent respectively four pairs of closest examples and four pairs of furthest examples using as distance the similarity between output encodings of SimCLR model.

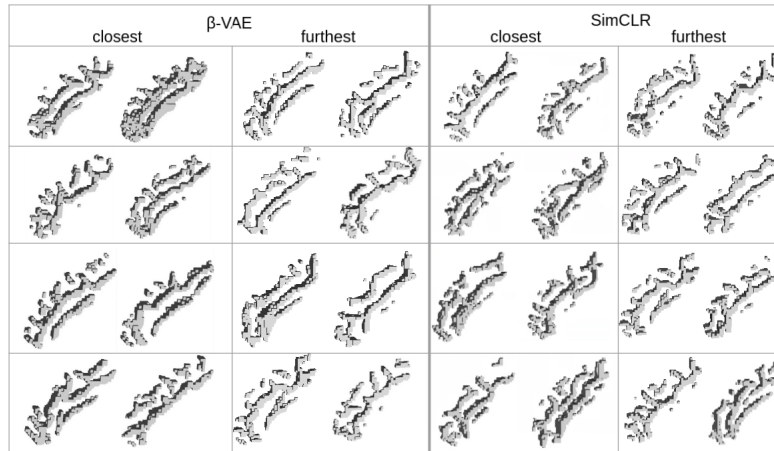


Fig. 3. Closest and furthest examples in latent space of both β -VAE and SimCLR. The two left columns represent closest and furthest examples for the β -VAE model. Similarly, the two right columns represent closest and furthest examples for the SimCLR model. In both models, the distance used to determine pair closeness is the Euclidean distance in the latent space.

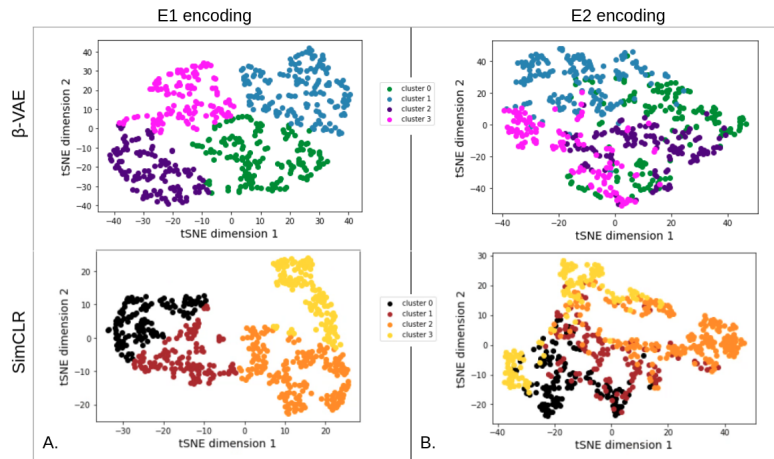


Fig. 4. Assessment of generalization abilities. We divide the HCP dataset in half and train both models (β -VAE and SimCLR) on the two halves HCP_1 and HCP_2. For both models, training is made on HCP_1 (model 1) and HCP_2 (model 2). Then, the inference on HCP_1 leads to the encodings E1 and E2, encodings of the latent space obtained respectively with model 1 and model 2. To visualize the generalization ability of the model and of its analysis, the t-SNE representation of model 1 is clustered (**A.**) and we report the labels on the t-SNE representation of model 2 (**B.**).