

Representation Learning

Neil Gong

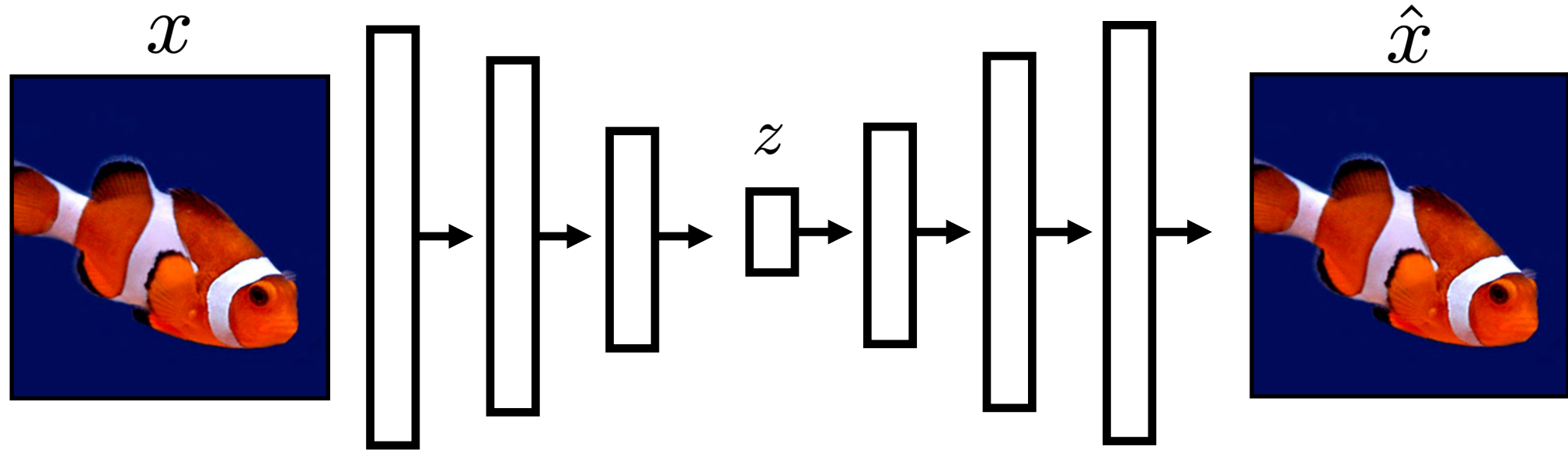
Representation/Feature/Embedding learning

- Key of deep learning
- Via unsupervised or self-supervised learning

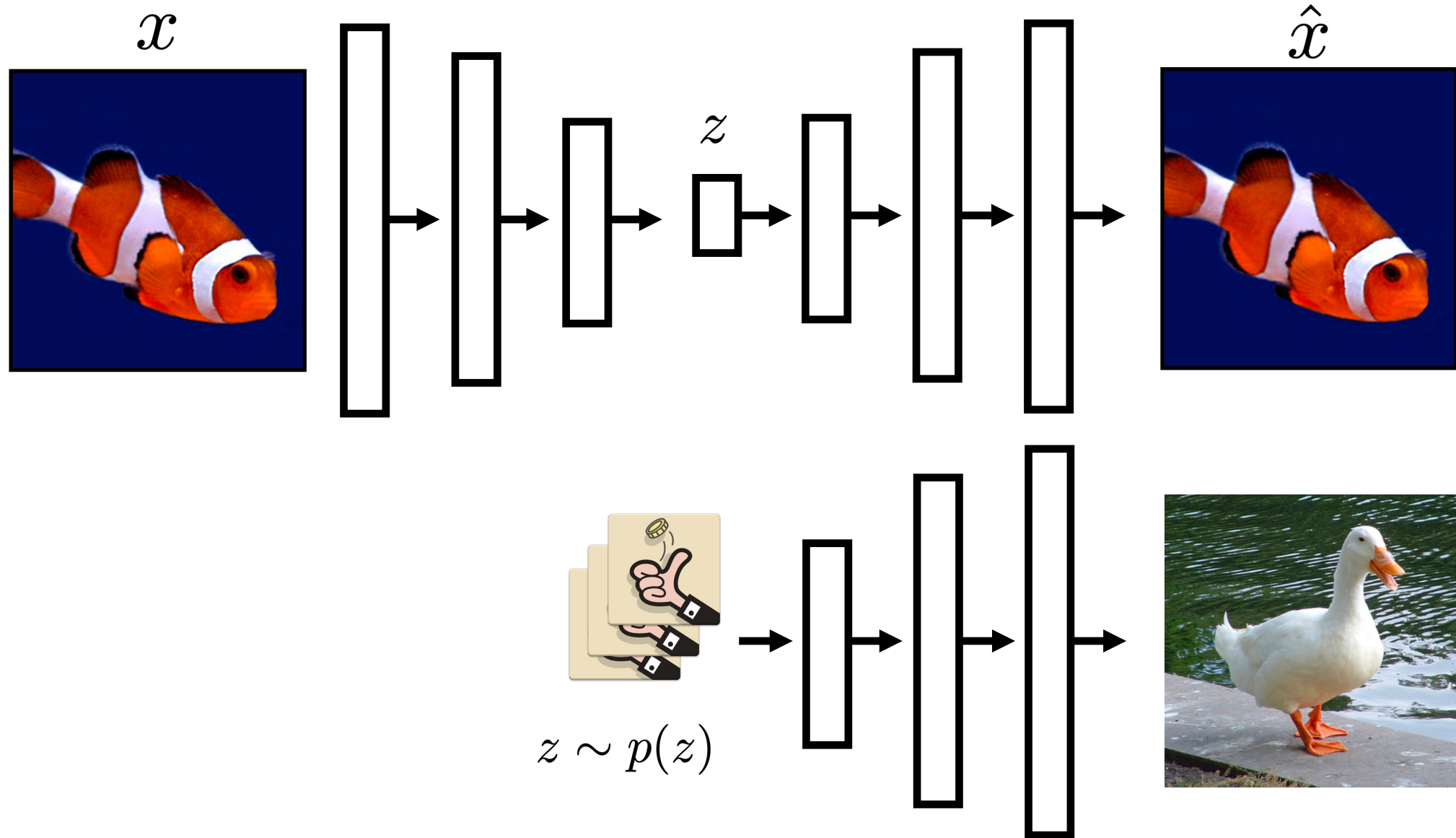
Image

- Autoencoder
- Variational autoencoder
- Contrastive learning

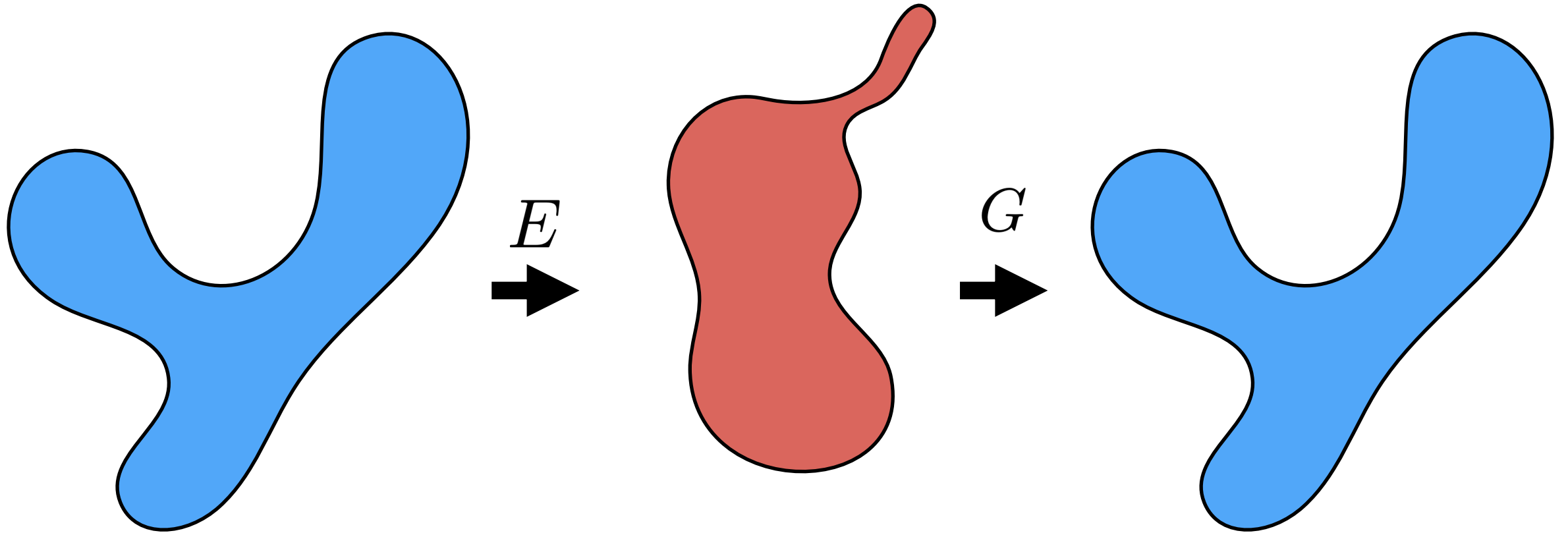
Autoencoder



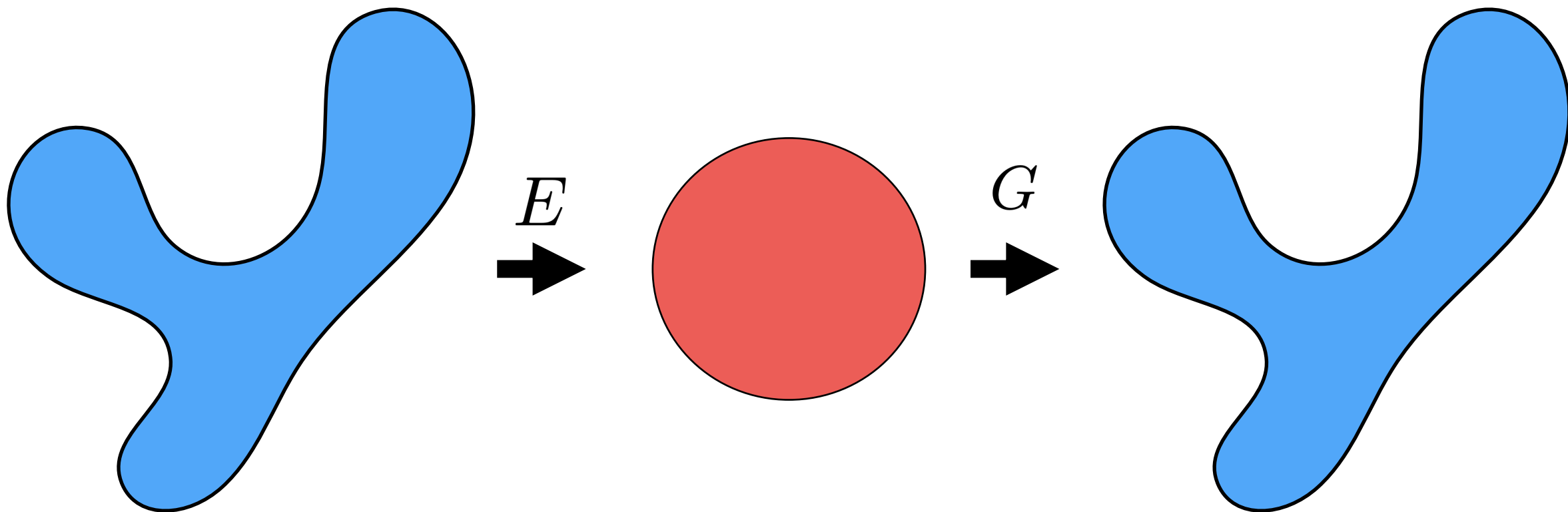
Autoencoder \longrightarrow Variational Autoencoder



Classical Autoencoder



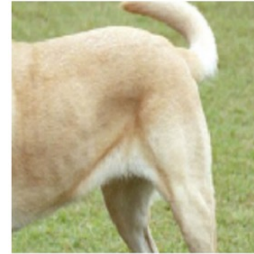
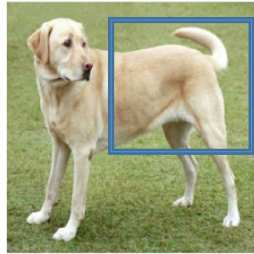
Variational Autoencoder



Data Augmentation

Augmented views

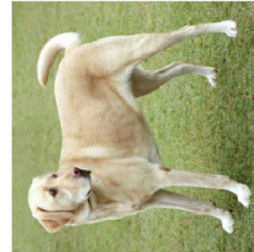
Image



Crop and resize

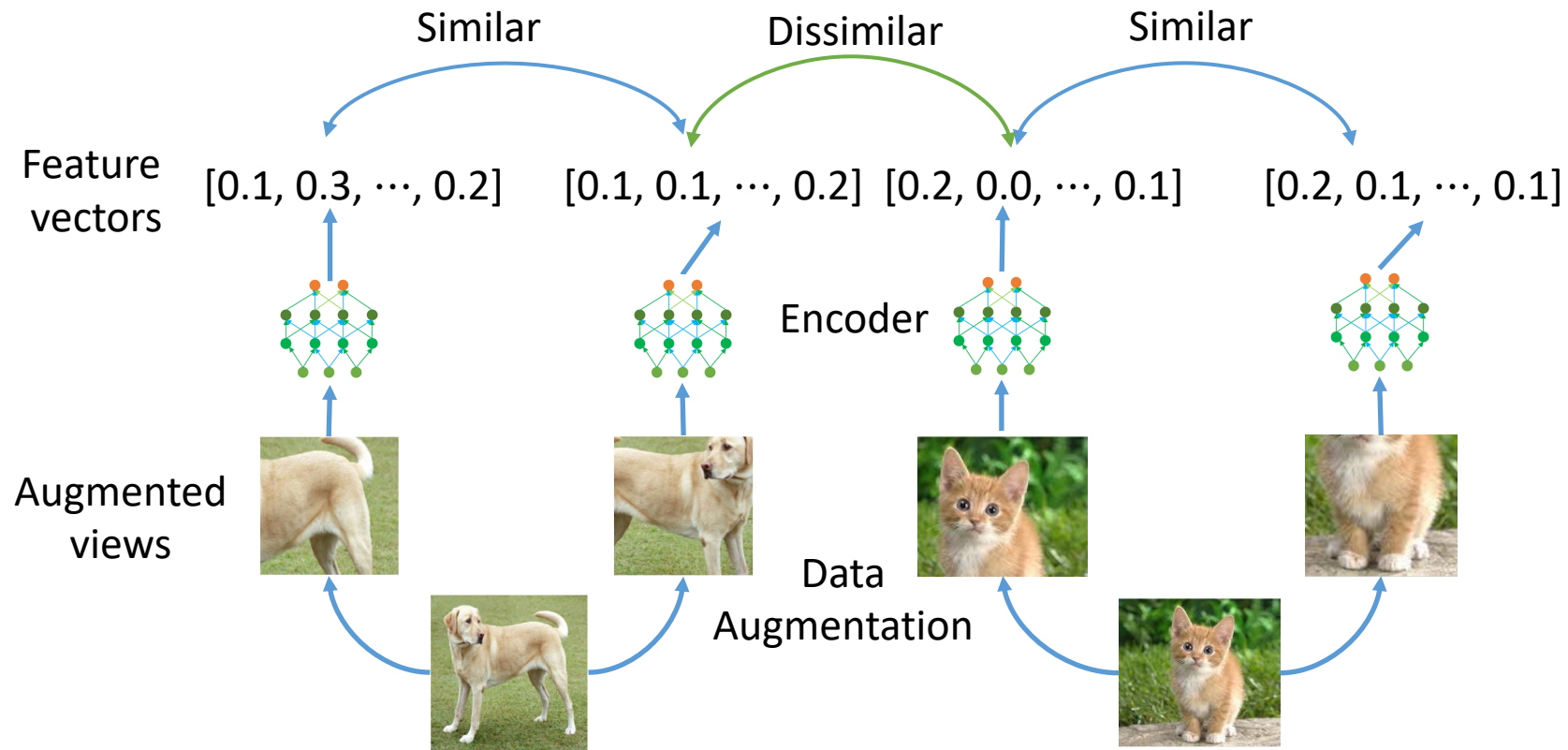


Horizontal flip



Rotation

Contrastive Learning— SimCLR [ICML'20]



Text

- Next-word prediction

Image-text pairs (CLIP)

