Autoencoders 101

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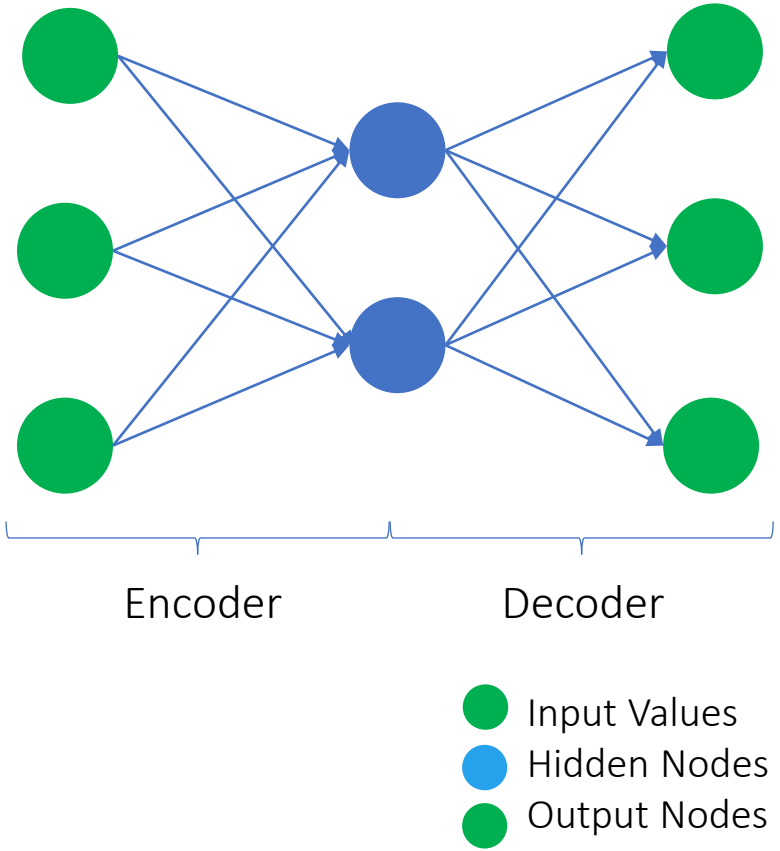
Autoencoders

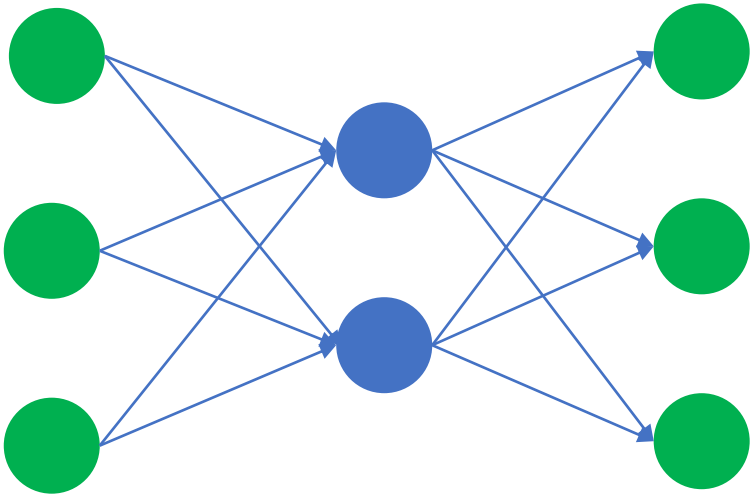
Introduction

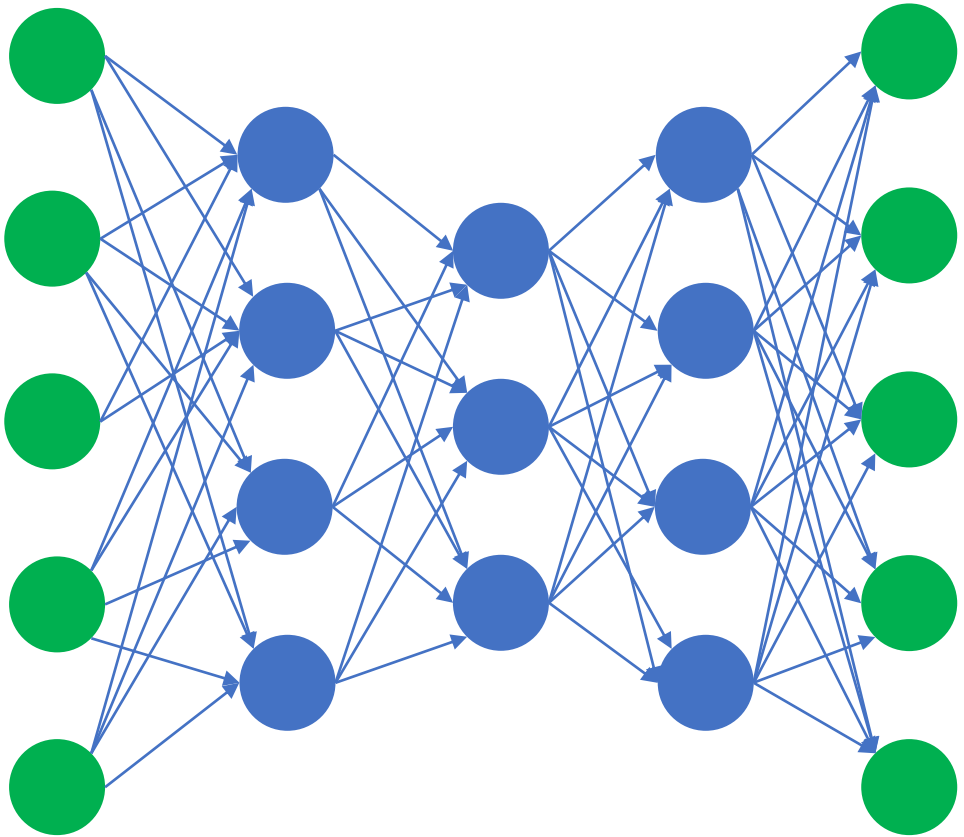
- learns representation of input data
- unsupervised technique
- used for
  - dimensionality reduction
  - noise reduction
- input neurons and output neurons are identical
- model training: hidden layer „learns“ representation of input layer
- model application: encoder used for getting lower dimensional representation of data



Autoencoders

Shallow and Deep Autoencoders





Autoencoders

Applications

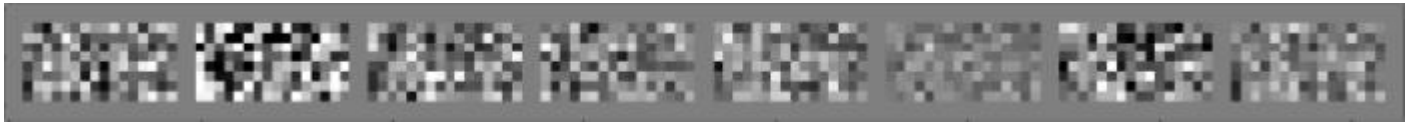
- Dimensionality Reduction / Compression
- Facial recognition
- Anomaly detection
- Denoising, e.g. images

Autoencoders

Coding

Original Images (64, 64, 1):

Latent Space (128):



Reconstructed Images (64, 64, 1):

96.9 % Compression