Lecture 21

Other generative modeling frameworks

- (Variational) Autoencoders

Totally different than GANs

- Idea here is to learn explicit encoding into latent space and decoding from it.

Train to map data back to itself!

\[
\text{loss} = \text{reconstruction error}
\]

E.g. \((\text{input} - \text{output})^2\) — MSE reconstruction error.

Ideas: AE will learn the most useful latent representation to describe data.
Applications of AEs
- generation (sample from latent space, run decoder)
- compression & feature learning & dimensionality reduction (run encoder)
- anomaly detection
- denoising

Pros:  
- very easy to train
- explicit map to latent space

Cons:  
- rarely state of art
- no optimality guarantee