DL Overview

Monday, January 13, 2025

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Projects

* Image classification from scratch (linear classifier)
* Convnet from scratch and efficient pytorch models
* Style transfer and gradient-based visualization
* Seq2Seq, Transformers, and Machine translation
* Final project (our choice) - image captioning

Topics

Linear classifiers and gradient descent. Neural networks. Deep NN optimization and problems. Convolution and pooling layers. CNN architectures. DNN visualization techniques. Training using pytorch at scale. Advanced CNN architectures. Language models, embeddings, attention mechanism, machine translation, ASR. Other types of DNNs such as unsupervised, semi-supervised, and self-supervised training schemes. Generative models like GNNs and variational autoencoders.