Machine Perception Cheatsheet

TODO: General tips.

Neural networks

Multi-layer perceptron:

Loss functions:

Backpropagation:

Universal approximation theorem:

Convolutional neural networks

Convolution:

CNN:

Fully convolutional neural networks

Upsampling methods:

U-net:

Recurrent neural networks

Elman RNN:

LSTM:

Gradient clipping:

Generative models

Taxonomy:

Autoencoders

Linear autoencoder:

Non-linear autoencoder:

VAE:

β-**VAE**:

Autoregressive models

FVSBN:

NADE:

MADE:

WaveNet:

VRNN:

C-VRNN:

Transformers:

Normalizing flow

Change of variables:

Coupling layer:

Composing transformations:

Training:

Inference:

NICE:

RealNVP:

GLOW:

Generative adversarial network

Problem with optimizing log-likelihood:

GAN:

Optimal discriminator:

Global optimality:

Convergence guarantee:

Training instability:

Problem with optimizing Jensen-Shannon divergence:

Gradient penalty:

Diffusion models

Diffusion:

Denoising:

Training:

Guidance:

Latent diffusion models:

Reinforcement learning

Markov decision process:

Policy:

Value function:

Value iteration:

Policy iteration:

Model-based and model-free:

On-policy and off-policy:

Monte Carlo:

TD learning:

SARSA:

Q-learning:

DQN:

Policy search:

REINFORCE:

Actor-critic:

Implicit surfaces and neural radiance fields

TODO

Parametric human body models

TODO