

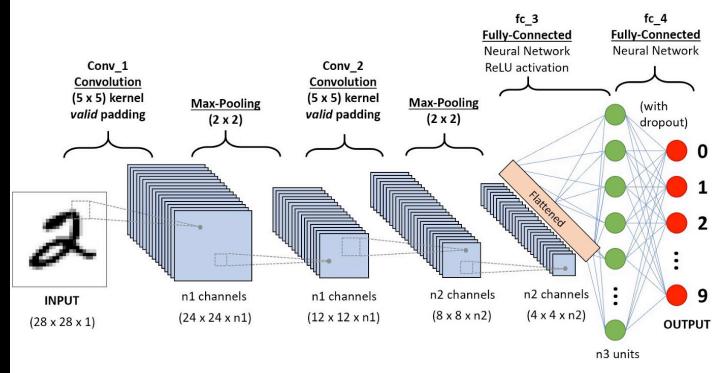
1. Why CNNs, not ANNs ?
2. Image Understanding

Link:- https://adamharley.com/nn_vis/

Problems in ANN

1. Loss of features
 $2D \rightarrow 1D$

Structural Inequity

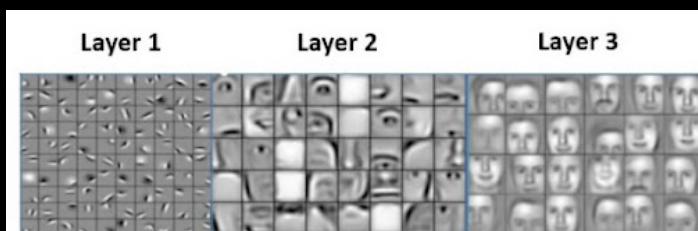
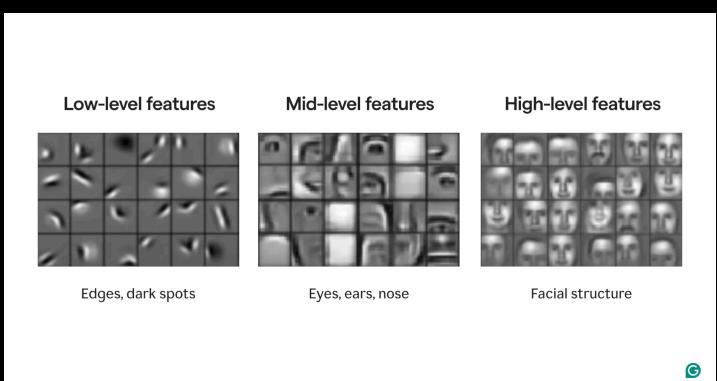


CNN Pros

1. Spatial Invariance :- Model's ability to recognize patterns and features.
2. Translation Invariance :- allows the NN to recognize objects in an image even if they are shifted or translated.

Image Understanding

Smallest unit \rightarrow pixel



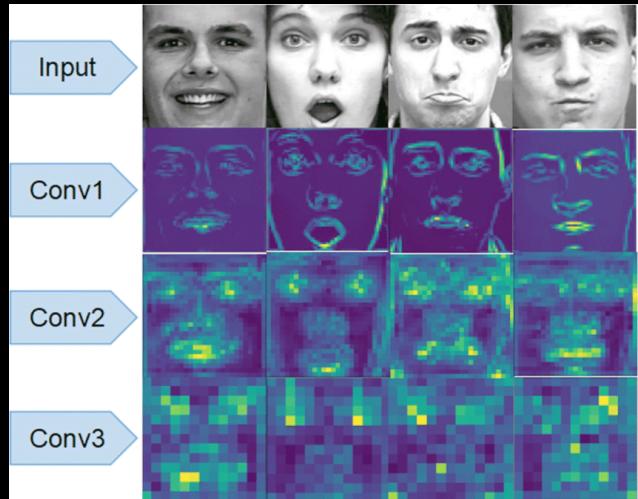
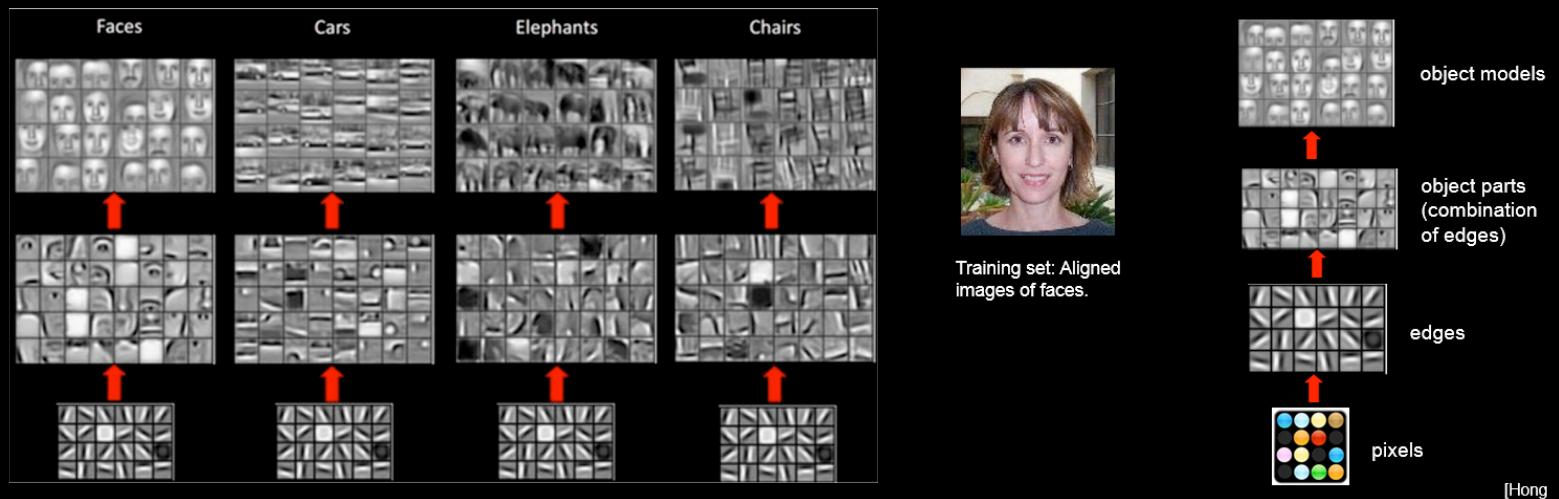


Image Understanding Rule

Pixels



Edges



Textures



Patterns

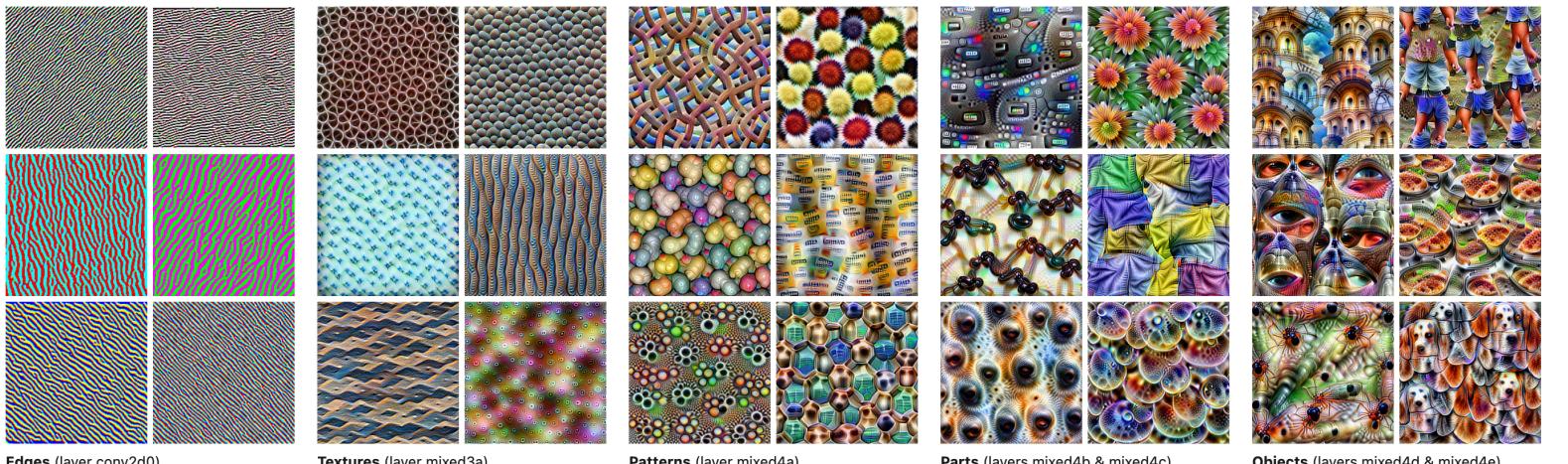
Scene



Object



Parts of Object



Edges (layer conv2d0)

Textures (layer mixed3a)

Patterns (layer mixed4a)

Parts (layers mixed4b & mixed4c)

Objects (layers mixed4d & mixed4e)