Agenda

1) Feature Visualization CNNs
2) LENET - 5

Recap

Input Dimension, $I_0 = 30 \times 30 \times 1$

$$\begin{cases} K = (3 \times 3) \\ O = 28 \times 28 \end{cases}$$

$$\begin{cases} K = 5 \times 5 \\ O = 26 \times 26 \end{cases}$$

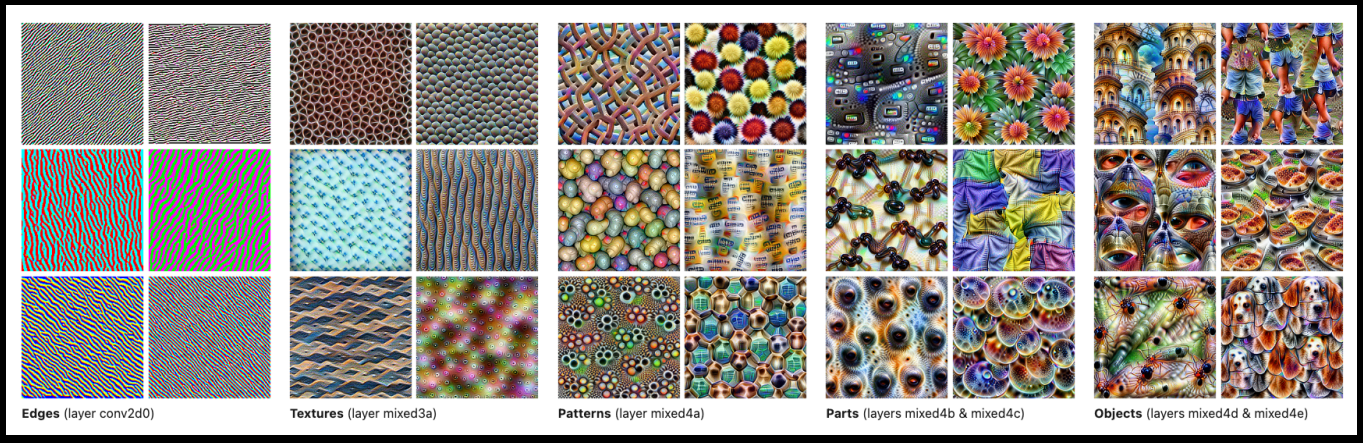
$$\begin{cases} K = 7 \times 7 \\ O = 24 \times 24 \end{cases}$$

$\{ 3 \times 3 \text{ or } 5 \times 5 \text{ or } 7 \times 7 \}$

$5 \times 5 \longrightarrow 2\,(3 \times 3)$

$7 \times 7 \longrightarrow 3\,(3 \times 3)$

Feature Visualization



Edges / Gradients → Textures → Patterns → Parts of Object → Object → Scene (Image) → Video

Small Level Features
↓
Mid level Features
↓
High level Features → Decision

Selection of No of Kernels

Low level → Less (16, 32, 64)

Mid level → more (64, 128, 256)

High level → More & more (256, 512, 1024)

Channels

$I_0 \rightarrow 70 \times 70 \times 3$ $\quad K = (5 \times 5)$ $\quad K_n = 64$

$O = 66 \times 66 \times 64$

No of filters = Depth

Parameter Sharing

w, b ⟶ shared across layer of CNN

↓

Multiple Filters