CNN

- CNN (convolutional neural networks) are type of Neural networks (NN) used for data that has a grid like topology (like images). They use convolutional layers to automatically and adaptively learn spacial hierachies of features from input data these layers use filters/kernals that slide across that side across input doing element wise multiplication and summation to detect patterns pooling layers are used to reduce spacial dimention of feature maps decreasing computation and model more robust.

- think of these filters like feature detectors detecting Edges, corners, textures, • the pooling is like simplifing the img, shrinking it by keeping important infor and ignoring tiny details. • these layers add up like first layer for line/edge detection second for eyes, wheels, ears third and final for detecting final obj: car, person, dog.

- final result is a prediction Ex: 90% cat 8.1% car 2.1% human

- Convolution: the math operation that involves sliding filter over img
- pooling: down sampling technique in CNN
- padding: in CNN refers to adding extra layers of pixels or values around the input img typically zero values (zero padding) by doing this we preserve the original dimention after pooling this stops into loss at edges
- stride: how many pixels filter shifts during convolution; Horizontally/vertically stride 1 is 97 more detailed and imporves performance stride 2-3 skips pixels = smaller Feature maps = less details + faster