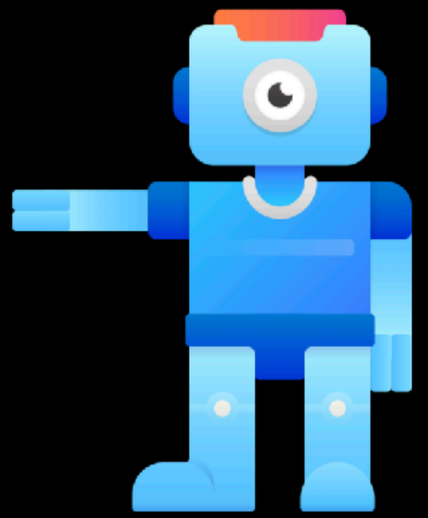


MODERN COMPUTER VISION

BY RAJEEV RATAN

Introduction to Convolutional Neural Networks

A Gentle Overview of CNNs

Understanding Images

Predicted to be a Cat

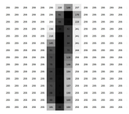
Predicted to be a Dog

What Do We See?

- Many things indicated it was a cat or dog
- Whiskers, shape, eyes, fur, colour etc.
- Can an Algorithm or Predictive Model do this?

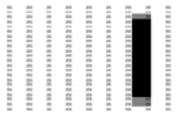
Convolutional Neural Networks

Building an Intuition for CNNs



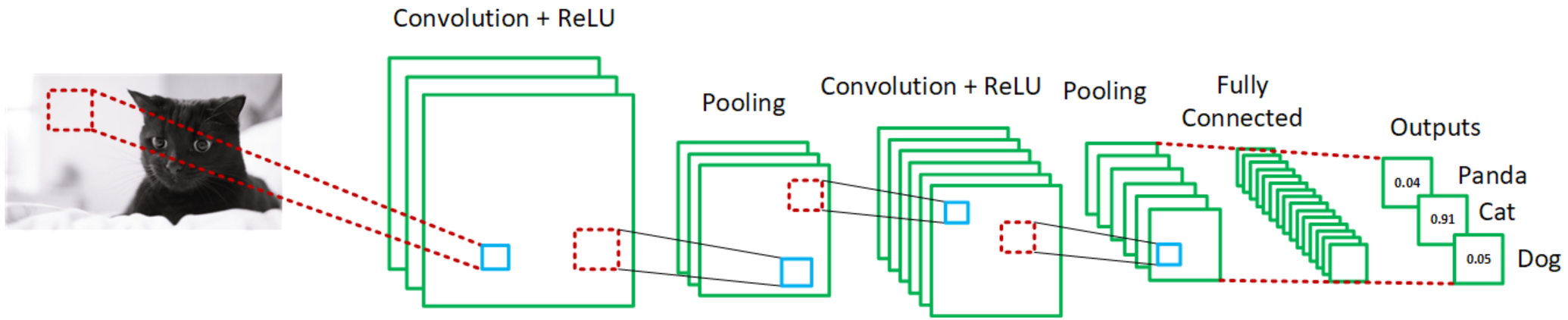
- What digit is this?
- How would we program a computer to know this?
  - Overall shape?

  - Maybe if something lies in this region only it's a one?



- But what if it's shifted?

What If We Had Filters that Could Scan All Parts of An Image?



Overview of our CNN Chapter

- Convolutions
- Feature Detectors
- 3D Conv Filters - Convolution on Color Images
- Kernel Size and Depth
- Padding
- Stride
- Activation Layer - ReLU
- Pooling
- Fully Connected Layer
- Softmax
- Building a CNN
- Parameter Counts in CNNs
- Why CNNs Work so Well For Images
- The Training Process Part 1 - Loss Functions
- The Training Process Part 2 - Back Propagation
- The Training Process Part 3 - Gradient Descent
- Optimisers and Learning Rate Schedules
- Summary of CNNs