AI Cheat sheet

* Different fields

SO, you guys are going to ask the question – how do I program in AI

* You can’t just say I want to program in AI because there are about 20 different field of AI and 20 more branches of each field
* Basic Libraries that will be used throughout the full process of AI
  + Pandas
    - dfply
  + NumPy
  + Os (operating system)
  + Mathplotlib.pyplot
* Let’s start with Computer Vision
  + Pretty much just using a webcam and detecting/recognizing/tracking what is in the frame
  + There are important libraries that you need to use
    - Main one is “OpenCV”
      * I won’t tell you to how to install it any of the libraries🡪 Just search it up
  + Main thing we used
    - Object Detection
      * 2 types
        + Video

Pretty much splits the video into frames and then process each frame as a photo

* + - * + Photo

Now there are different ways for the computer to learn what the object is so – different ways to learn

CNN 🡪 Easiest

ETC

Convolutional neural network

Feed in pictures of a specific object [see section about taking pictures]

Now

* + - Face Recognition
    - Object Tracking
    - Line Detection
    - Most basic – object detection from picture
* Taking pictures
  + Main things to watch out for
    - Light
      * Most of the times there will be some sort of reflection when taking the pictures so adjust accordioning to minimize
    - Background
      * Most of the times, when training a model one needs to have minimum background noise
        + What I mean by that is a one color background that is contrast to the object
        + Also the background shouldn’t be white (but can be) but that affects reflection
        + Black is the best color
      * Background needs to take up the entire frame (after cutting to dimensions of the model)
    - Frame size
      * Depends on what the model takes but often the model only takes in a specific dimension of photos with specific pixels
      * It is usually a square
  + Object
  + Face
    - Since every face has essentially the same shape, the model looks at the contours and then judges after that.
    - Most recognition models only take in black and white photos so the model looks at the contours of the face
    - For example
      * The size of the eyes
      * Distance from the nose to the mouth
    - Usually a square pic

CNN

* They first have

What is AI

* Process that a computer goes through to learn from past mistakes and then generates a formula that can be used

Programming in AI

* What do we use
  + Anaconda
    - Jupyter notebook
    - Easy to use because can program in different cells

Computer vision

* Library that is called OpenCV
  + We use different branches of this library
  + Biggest one is Computer Vision (Video Capture)

Machine Learning