**Next class**

**Data Structures**

Time Complexity

Stacks

Queues

Linked Lists

Binary Search Trees

Recursion

Hash Tables / Hashing

Sorting algorithms

-bubble sort

-binary insertion sort

-quick sort

-ect..

graphs

depth-first search

breadth-first search

Dijkstra's algorithm

A\*

**Side Projects with Libraries (Python)**

**(Computer Vision )**

**Image/Video Recognition**

opencv-pthon

**Web Scraping**

beautifulsoup4

selenium

**Ex:** A Python program that web scrapes Instagram. When you type in a username, the number of posts, and followers will appear.

**Photo Editing Software**

pillow

Ex: A gui where there are buttons to change the lighting, saturation, contrast ect..

**Automation Projects**

**Ex:** A Python program that automatically moves files on your computer.

A Program that opens YouTube when your favorite youtuber uploads a new video.

A Program that sends automatic emails and text messages.

**APIs**

Learn how to use APIs.

**Ex:** Make a program that gets weather data from a weather API and displays the current weather of any city the user inputs to the screen.

**Website**

Flask, Django, HTML, CSS

Make a simple website made in Python.

**Ex:** We could combine this with an API and make a website that displays weather data.

**GUI**

tkinter

Make a graphical interface for a new project

**Gaming**

pygame, processing

Ex: Make a graphical 2D game using the pygame library in Python, like pong, packman, space invaders and more.

**Machine Learning**

Numpy, Keras, Tensorflow

Learn advanced machine learning algorithms. We will be creating Neural Networks that utilize Linear Algebra and Calculus to make predictions.

**Ex:** A program that can differentiate between a humans and animals based on attributes it’s given.

A program that predicts how many iPhones Apple will sell in 2020

**Not Python**

**Unity**

C#

Unity is a game engine used to make 2d and 3d games. It uses C# to program in.

**Learn a new Programming language**

Ex: Java, C, C++, SQL ect..

**Project Ideas**

Password cracker

Hangman AI (solves words given by user)

Notes application

Text editor

Base converter

scrape Instagram

fractals

resume reader

discord bot

Sorting algorithm visualizer

face photo sorter

change desktop background based on time & date

Weather app

Photo editing

key logger

Face mask detection

Social distancing detection

More Here:

<https://cdn.discordapp.com/attachments/336642776609456130/478206746532511744/1533339804771.png>