

1. COVID-19 Cases Tracker, early 2020

Skills: Python, Pandas, OpenBlender

March'20

- Designed a COVID-19 Cases tracker in Python using the live open-source data from OpenBlender to visualize Confirmed Cases, Confirmed Deaths, Recovered Cases and varying prices of resources around the world in March, 2020.

[Github - <https://github.com/aniruddhasinha10/COVID-19-Tracker-Early-2020>]

2. Maritime Vehicle System Data Analysis

Skills: Python, OpenCV, Keras

- Developed a mechanism as a solution for automated docking and navigation of maritime vessels for a Buffalo based startup, using Deep Learning and classical Computer Vision techniques with stereoscopic cameras.
- Performed object detection by customizing YOLO v3 models for maritime objects. Depth was estimated for objects at distances up to 2 miles.

[Github - https://github.com/aniruddhasinha10/Maritime_Depth_Perception_Object_Detection]

3. Movie Recommendation System

Skills: Apache Spark, SQL, AWS EMR

- Generated the 15 most popular movies in the movieLens dataset of 1M movies from movie ratings and used Item-based Collaborative Filtering to suggest 10 most similar movies to the user.

[Github - <https://github.com/aniruddhasinha10/Find-Most-Similar-Movies>]

4. An IoT based Wearable Health Monitoring and Messaging System

Skills: C, Arduino Nano, Google Fusion Tables, MIT App Inventor 2

- Developed a wearable, Bluetooth prototype over a period of 16-20 weeks to monitor the real-time basic health parameters such as heartbeat, body temperature, and body impact values of the elderly and physically challenged people.
- Built an Android app to display health parameters, calculate present health conditions, and update relatives via text message with the GPS location of the patient.

[Github - <https://www.youtube.com/watch?v=impFMKH6EW4>]

5. User Preference Analysis on a Streaming Platform

Skills: Python3, PyTorch, Pandas

- Used a Restricted Boltzmann machine to analyse video-content ratings of a user and evaluate if they will prefer to watch a similar / dissimilar content.
- Implemented a stacked Auto Encoder to verify if the recommendation system can predict accurate future ratings for an unwatched content by a user, with a predicted rating difference of less than 1 star.

[Github - empty for now]

6. Big Data Analytics of US Politics, early 2019

Skills: R, Python, AWS (EMR & EC2), Hadoop HDFS, Tableau

- Preprocess and analysed scattered political data from Twitter, NY Times and Common Crawl APIs to find the trending political topics.
- Performed word count through Map Reduce on AWS EMR and generated a word-cloud on Tableau.

[Github - https://github.com/aniruddhasinha10/U.S.Politics_Trends2019_CSE587_DIC]

7. Image Quantization and Keypoint Detection using SIFT

Skills: Python, OpenCV

- Worked on digital image quantization using K-Means and Gaussian Mixture Models in digital color images.
- Key contributions included implementing a 2D-Scale Invariant Feature Transform to detect keypoints in digital images. Also performed noise removal and point detection in digital images using image morphology.

[Github - https://github.com/aniruddhasinha10/ImageQuantization_KMeans_ImageStitching]

8. Agent Navigation using Reinforcement Learning

Skills: Python, Scikit Learns, Keras

- Designed a deep Q-learning algorithm to teach an agent, Tom to catch Jerry, the goal, in the least number of steps in a Tom-and-Jerry chase game, in the background of reinforcement learning.

[Github - <https://github.com/aniruddhasinha10/Reinforcement-Learning---Tom-n-Jerry>]

9. Classifying Customer Behavior using Machine Learning

Skills: R

- Implemented Support Vector Machines, Decision Trees, Naive Bayes and Random Forest Classifier Models to classify customer behavior in a Social Network Ad dataset and predict the prospective buyers of the product advertised. Tuned the hyper-parameters using Grid Search and accuracies achieved were SVM - 94%, Decision Trees - 92%, Naive Bayes - 90%, Random Forest Classifier - 92%.
- Also tuned the Decision Tree Classifier with XGBoost to achieve accuracy of 96%.

[Github - empty for now]

Design -

