BHARATH SREENIVAS

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Education

Carnegie Mellon University
· B.S. Computer Science, Dec 2022
Concentration: Machine Learning
Dean's List High Honors
GPA: 4.0/4.0

Skills

PROGRAMMING LANGUAGES

Python
C
Java
Javascript
Angular JS
Standard ML
HTML/CSS
LaTeX
MATLAB

TOOLS

Pandas
ROS
Numpy
Flask
Unix Command Line
Git
PyTorch
AWS
Google Cloud Products

COURSEWORK

16-385: Computer Vision
11-485: Introduction to Deep Learning
10-315: Introduction to Machine Learning
15-281: Artificial Intelligence
15-440: Distributed Systems
15-122: Imperative Computation and Data Structures
15-210: Parallel and Seq. Data Structs and Algos
15-150: Principles of Functional Programming

Employment

Amazon Web Services — Seattle, WA
Software Development Engineer Intern — June 2021 to Current

- Designed and implemented new service in **Java** and **Ruby** to support voting on comments in code review software used by all Amazon engineers
- Deployed four new REST API endpoints to production and designed custom DynamoDB table to persist reaction data
- Leveraged DybamoDB Global Secondary Indices to implement novel data replication system that converts reaction data to relational DB for optimized table joins and fast voter statistic retrieval
- Extended UI using **Angular JS** to add reactions on comments, hitting new API endpoints on button click
- Released comment workflow documentation for official customer use

Argo AI Center for Autonomus Vehicle Research — Pittsburgh, PA
Research Assistant — June 2021 to Current

- Researching novel algorithms for image group caption generation using contrastive learning approaches
- Removing the need for human dataset annotation by training a network to learn embeddings from existing (Image, Caption) pairs available online
- Given a new dataset, model zero-shot transfers by taking in dataset output classes and using them as baseline for generated captions
- Leveraging gradient descent and NLP techniques in **PyTorch** to transform existing captions into self-created class descriptions

Carnegie Mellon Racing — Pittsburgh, PA
Driverless Car Engineer — Aug. 2020 to Current

- Developing localization, path planning, and motion control technologies for a fully autonomous racing car competing in Formula Student Driverless Championship
- Leveraging computer vision and robotics tools in **Python** and **ROS** to develop Rapidly-Exploring-Random-Tree algorithm for vehicle path planning

Relativity, Software Engineering Intern — Chicago, IL
Structured Analytics - Email Threading Team — May 2020 to Aug. 2020

- Used data analytics concepts to to optimize email review by arranging entire email conversations in sequence and identifying inclusive documents
- Used **C#** and **Angular JS** to implement API's that improved workflows on production software
- Enhanced UI for more streamlined customer experience
- Merged 19 pull requests to 2 repositories and 3 release branches
- Worked in Agile development environment for maximum productivity

Carnegie Mellon University Robotics Institute — Pittsburgh, PA
Research Assistant, Reliable Autonomous Systems Lab — Aug. 2020 to Jan. 2021

- Developed facial recognition and landmark detection web app with **Python** and **OpenCV**, leveraging libraries such as **OpenFace**
- Used image classification/object detection to automate video analysis and detect emotion to train automated robotic tutor (code here)

Projects

Lane and Yaw Rate Detection (Code Here) — June 2021

- Building computer vision model using **OpenCV** and **Python** to perform lane detection and yaw rate reporting
- Using Hough transforms for line identification, and other search techniques to find curvature in the road
- Leveraging feature detection and matching to identify direction of movement in relation to car heading to determine yaw

Battlecode 2021 (Code Here) — Jan. 2021

- Developed an AI player in **Java** to strategically manage a robot army to defeat enemy teams
- Leveraged pathfinding and distributed algorithms to increase player competitiveness
- Implemented custom libraries and bit-packing methods to optimize bytecode usage
- Qualified for finals tournament; finished top 10 out of 250+ teams internationally

Tartanhacks 2021: Spot Your Mood! (Code Here) — Feb. 2021

- Created a Spotify extension using **Python** and **Flask** that allows users to see the mood of their listening history and playlists
- Used Spotify, Google Cloud NLP, and Genius APIs to create a uniqe mood metric, combining lyric sentiment analysis with song metadata
- Generated mood graph for users to analyze their listening moods at various points in recent history
- Developed form for users to create an auto-generated playlist based on a specific mood they're feeling

CS and Game Theory Research, Northwestern University — Aug. 2017 to Aug. 2019

- Developed computational simulations in Python and MATLAB to determine optimal pricing strategies for wireless service providers
- Published Technical Paper "Duopoly Competition in Advertising-Sponsored Wi-Fi Provision" at W.I.T.S. Conference