

# 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

Software Development Engineer Intern

Seattle, WA  
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 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

Research Assistant

Pittsburgh, PA  
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

Driverless Car Engineer

Pittsburgh, PA  
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

Structured Analytics - Email Threading Team

Chicago, IL  
May 2020 to Aug. 2020

- Used data analytics concepts 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

Research Assistant, Reliable Autonomous Systems Lab

Pittsburgh, PA  
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 unique 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