

# Rishi Pathak

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## EDUCATION

### Georgia Institute of Technology

Bachelor of Science in Computer Science — GPA: 3.92

Atlanta, GA

Aug 2020 - May 2023

## EXPERIENCE

### Software Development Engineer Intern

Kinesis Data Streams @ Amazon Web Services

Dec 2021 – Present

Seattle, WA

## RESEARCH

### Aerial Robotics Researcher

Sonification Lab @ Georgia Institute of Technology

Dec 2021 – Present

Atlanta, GA

- Researching gaze and head-pose based methods for easier control of FPV camera drones.
- Constructed custom test-rig powered by a Navio2/Raspberry Pi flight controller based on Ardupilot.
- Writing drone control algorithms using C++ and MavRos. Testing in the Gazebo simulator environment.

### Computer Vision Researcher

Rehg Lab @ Georgia Institute of Technology

Aug 2021 – May 2022

Atlanta, GA

- Researched computer-vision models that understand non-verbal communication cues such as gaze, gestures, posture, and facial expressions.
- Adapted mobile neural network architectures to desktop computers with affine and rigid-euclidean transforms.
- Wrote neural-network architecture in PyTorch to generate saliency maps from video.

### Mathematics Research Assistant

Department of Mathematics @ Georgia Institute of Technology

May 2020 – May 2021

Atlanta, GA

- Worked under Dr. Heinrich Matzinger to determine the infection fatality rate of the first wave of COVID-19.
- Parsed mortality and infection data from 45+ local and international databases using the requests library.
- Visualized infection fatality rates through 30+ models stratified by age, sex, and location through matplotlib, numpy, and pandas.
- Extrapolated inferences about the COVID-19 mortality for 11+ countries across the world.

## PROJECTS

### Self Driving RC Car | Python, OpenCV, PySerial, Numpy, C, Linux

May 2021 – Aug 2021

- Converted a regular RC Car to an vision based self-driving car with a Raspberry Pi, Arduino, and piCamera.
- Diagrammed and implemented circuitry using Fritzing software and basic electronic components.
- Wrote C code for precise servo and dc motor control with an Arduino.
- Engineered a UART based protocol with the pySerial library for communication between the Pi and Arduino.
- Implemented Canny Lane Detection and Hough Line Transform algorithms for path calculation onboard the Pi.

### iHeard | Python, PyTorch, Flask, Jupyter Notebook, API, JavaScript, HTML, CSS

Dec 2020 – Jan 2021

- Lead the development of a web app to assist the hard of hearing navigate urban environments through automatic sound classification.
- Implemented and trained a CNN with over 68% accuracy on the UrbanSound Dataset which featured over 8,000 sounds belonging to 10 distinct classes.
- Integrated Google Cloud services for real-time speech-to-text translation.

### LikeMySong | Python, Pandas, Scikit-Learn, PyTorch, Spotify API

Nov 2020 – February 2021

- Leading the creation of a music recommender system with a team of eight other programmers.
- Scraped metadata for every known genre indexed by Spotify (three million+ songs in total) using the Spotify API.
- Implemented clustering algorithms (birch, agglomerative, k-means) using scikit-learn to generate song/genre similarity representations. Clustered 5000+ genres into 1000 automatically calculated similarity categories.

## TECHNICAL SKILLS

**Languages:** Python, C++, C, Java, Bash, Assembly, LaTeX

**Libraries:** OpenCV, Numpy, Pandas, Pytorch, Requests, Matplotlib, Sklearn, Pyserial

**Hardware:** Arduino, Raspberry Pi, piCamera, AVR MCU's, Fritzing, ESP32