

# RISHIK SARKAR

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## EDUCATION

### Rutgers University-New Brunswick

BS in Computer Science, Cognitive Science (GPA 3.83)

- SAS Honors Program
- SAS Dean's List (2020 – 2023)

New Brunswick, NJ

Sep. 2020 – (May 2024)

## EXPERIENCE

### SAT/ACT Tutor

The Princeton Review

- Designed and implemented customized study plans for high school students to improve their SAT/ACT scores
- Utilized innovative teaching technologies and instructional design principles to motivate students and promote academic excellence

Jan 2023 – Present

Princeton, NJ

### ML Research Intern

Abraira Lab

- Utilized MoSeq and other tools to preprocess video data for a supervised ML model in a Computational Neuroethology observation study
- Conducted annotation and analysis of videos of rodents with spinal cord injuries to generate high-quality training data for the model

May 2022 – June 2022

New Brunswick, NJ

## PROJECTS

### Tch.ai | Next.js, Tailwind, Flask, Keras, MySQL

- Created a full-stack web application that serves as a deployment of the **Mood Tunes** pipeline
- Implemented a Next.js and Tailwind frontend that provides a user-friendly interface for uploading images and receiving song recommendations
- Developed a Flask REST API backend that preprocesses image data and returns a personalized playlist from a CSV file of over 114,000 songs based on features such as genre, mode, and valence
- Integrated a database using MySQL to allow users to save and delete songs
- Currently incorporating Spotify API to enable users to stream songs, and an additional NLP model to recommend music from text inputs

Mar 2023 – Present

### UniDB | MySQL, Java, Python, JDBC, Beautiful Soup, Jupyter

- Generated data for 100 university students using various data structures and scraped course data from Rutgers University websites using Beautiful Soup and requests
- Created a MySQL database containing realistic data for 100 students and their majors, minors, total credits, and class schedules (generated from a list of more than 250 distinct scraped classes)
- Developed a Java application using the JDBC API to query data from the MySQL server

Mar 2023 – Apr 2023

### Mood Tunes | Python, Keras, OpenCV, Pandas, Matplotlib

- Developed a Keras model that classifies emotions from facial expressions and recommends songs based on the predicted mood
- Utilized OpenCV and a Haar Cascade classifier to preprocess input image data, improving the model's accuracy
- Conducted data analysis and created visualizations using Pandas and Matplotlib

Jan 2023 – Feb 2023

### ReChord | Python, JavaScript, TensorFlow, Jupyter, AWS, React

- Trained a TensorFlow object detection model to identify guitar chords from a video feed in real-time
- Integrated the model into my personal website using JavaScript, TensorFlow.js, and React
- Created a functional pipeline, enabling musicians to quickly and accurately identify chords using the model

Dec 2022 – Jan 2023

## TECHNICAL SKILLS

**Programming Languages:** Python, Java, C++, C, JavaScript, HTML, CSS, SQL, MATLAB

**Frameworks:** TensorFlow, PyTorch, OpenCV, Flask, Beautiful Soup, React, Node.js, Tailwind

**Tools:** Git, Jupyter, Pandas, NumPy, Matplotlib, Keras, SciPy, scikit-learn, AWS, JavaFX, JDBC

**Natural Languages:** English (Native), Bengali (Native), Hindi (Advanced), Japanese (Intermediate)

**Other Skills:** Teamwork, Problem-solving, Time Management, Communication, Leadership