Rishik Sarkar

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Education

Cornell University Aug 2024 – (May 2025)
Master of Engineering in Computer Science

Rutgers University-New Brunswick Sep 2020 – May 2024
Bachelor of Science in Computer Science (Honors), Cognitive Science *GPA: 3.9/4.0*

- Honors: Summa Cum Laude, SAS Honors Program, Phi Beta Kappa, Dean's List

Experience

Research Assistant Sep 2023 – Aug 2024
Princeton University (CCNP) *Hybrid*

- Created **Python** scripts to transform 800+ Excel, CSV, and JSON files from five clinical studies into a consolidated **SQLite** database, seamlessly integrating automated schema generation with key constraints
- Designed a streamlined **Tkinter**-based GUI to simplify database interactions for researchers without technical knowledge, incorporating advanced functionality for executing custom SQL queries through **Pandas**

Full-Stack Developer Intern Jun 2023 – Dec 2023
Provenir (Fintech) *Remote*

- Implemented Decision Trees, Random Forests, XGBoost, and RNNs into FLAML using **scikit-learn** and **TensorFlow** for automated model training and deployment with AutoML; tuned hyperparameters and added monotonic constraints to elevate average model accuracy up to 95%
- Integrated artifact, SHAP, and LIME plot generation capabilities, enabling deep insights into model behavior and resulting in an improved UX; improved API endpoints for log retrieval and model architecture PDF export
- Implemented over 100 unit tests using **MockMvc** and demoed deployment with **Minikube** to ensure robust performance and early issue detection

Projects

Invasion of the Bot-Grabbers | *Python, Jupyter, Pandas, PyTorch, Matplotlib* Sep 2023 – Dec 2023

- Implemented search algorithms including **A*** and **D* Lite** to develop an automatic crew rescue maze simulation for a graduate-level course
- Enhanced the bot's decision-making by integrating **Bayesian networks**; utilized sensors to determine optimal paths to crew members probabilistically while avoiding moving obstacle aliens
- Trained two **logistic regression** models to predict the bot's moves and win probabilities, incorporating features engineered from the probability matrices calculated earlier, enhancing efficiency
- Advanced the bot's performance by implementing an ACTOR-CRITIC RL framework with **PyTorch**

Tch.ai | *Next.js, Tailwind, Flask, Keras, OpenCV, Pandas, MySQL* Apr 2023 – Jul 2023

- Innovated a full-stack web application to deploy a **Keras** image classifier and tokenizer that recommend songs based on mood predictions from facial expressions or textual data
- Trained the classification model on the **FER-2013** dataset and utilized **OpenCV** and a Haar Cascade classifier to preprocess datasets, achieving a training accuracy of around 96% and a validation accuracy of over 70%
- Designed a **Next.js**/**Tailwind** frontend that supports three genre selection methods–image, text, and manual
- Crafted a **Flask** REST API backend for image data preprocessing, providing personalized playlists from a CSV of 114,000+ songs, fine-tuned using genre, mode, valence, and other features
- Integrated a remote **MySQL** database, allowing users to create accounts and manage liked songs

UniDB | *MySQL, Java, Python, JDBC, Beautiful Soup, Requests, Jupyter* Mar 2023 – Apr 2023

- Compiled data for 100 students by scraping course details from Rutgers University sites using **Beautiful Soup**
- Constructed a **MySQL** database with simulated student data, including majors, minors, credits, and schedules from 250+ scraped classes
- Developed a Java application using **JDBC** to offer users a selection of 10 preconfigured and custom queries

Technical Skills

Programming Languages: Python, Java, Kotlin, C++, Dart, C, Rust, JavaScript, SQL, MATLAB, Scheme
Frameworks: TensorFlow, PyTorch, Spring, Flask, Beautiful Soup, Docker, Kubernetes, OpenCV, Next.js, Tailwind CSS
Libraries/Platforms: Git, Jira, Jupyter, Pandas, Keras, scikit-learn, Tkinter, AWS, JDBC, Jenkins