

# Sahana Rajashekara

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## EDUCATION

### Northeastern University

Dec 2025

Master of Science in Computer Science

**Courses:** Machine Learning, Natural Language Processing, Building Scalable Distributed Systems, Mobile Application Development (iOS), Web Development, Programming Design Paradigm, Data Management and Processing, Algorithms

## WORK EXPERIENCE

### Teaching Assistant - Northeastern University (Fundamentals of Software Engineering)

Aug 2025 - Dec 2025

- Hosted office hours and guided students on full-stack development with React (TypeScript), Express, and MongoDB. Mentored student groups through sprint reviews and provided feedback on user stories and project deliverables.
- Developed starter code, and created database schema design and test suites with Jest and Cypress for assignments to ensure backend APIs and frontend components functioned consistently and reliably.

### Teaching Assistant - Northeastern University (Programming with C++)

May 2025 - June 2025

- Led hands-on session demonstrating OpenCV techniques for image classification and manipulation using C++; Mentored over 100 students in modern C++ features and best coding practices.
- Hosted office hours and guided students through advanced C++ concepts including pointers, STL, OOP, UML, and multithreading. Graded weekly programming assignments and exercises via Linux server and Replit.

### Software Engineer - Mphasis Limited

Sep 2021 – Dec 2023

- Engineered full-stack e-commerce web applications using Java, Svelte, Spring Boot, SOAP, and REST API.
- Led technology migration from Angular to Svelte, building the application from the ground up, ensuring seamless functionality, resulting in a 45% reduction in the build size of web components.
- Improved application performance by optimizing backend processing through the implementation of multithreading and caching, resulting in a 66% reduction in processing time.
- Developed UIaaS (User Interface as a Service) web components and supported backend REST APIs for full-tech product search with advanced functionalities including filtering, add-to-cart, pagination, and bulk document downloads for 500+ products.
- Implemented ESAPI (Enterprise Security API) library to mitigate XSS (Cross-Site Scripting), reducing identified vulnerabilities in web applications and enhancing cybersecurity resilience.

## PROJECTS

### Music Recommender System | Northeastern University | [\[Live Demo\]](#)

- Built a lyrics-based recommender using HuggingFace SBERT (Sentence Transformers) embeddings, artist metadata, and audio features; trained a Nearest Neighbors model achieving a mean similarity score of 0.878, and saved models/embeddings as pickle files.
- Developed a Flask REST API to perform inference with trained models for song recommendations, integrated the Spotify API for song metadata, and designed a React with TypeScript for interactive UI. Deployed backend on Heroku and frontend on Netlify, delivering a complete end-to-end ML + full-stack solution.

### AI Chatbot SaaS Platform | Personal Project

- Built a secure and scalable AI chatbot SaaS application using the MERN stack (MongoDB, Express, React, Node.js) and TypeScript.
- Integrated OpenAI's API for real-time chatbot interactions, storing user sessions and chats in MongoDB.
- Implemented JWT-based user authentication and authorization, securing API access with HTTP-only cookies.

### Credit Card Lead Prediction | Northeastern University

- Predicted potential credit card applicants to optimize marketing strategies and enhance customer acquisition.
- Conducted data pre-processing, modeling, validation and exploratory data analysis, and handled class imbalance using Synthetic Minority Oversampling Technique (SMOTE). Trained the Decision Tree, Random Forest, and XGBoost models, achieving an accuracy of 0.88 and a precision of 0.91 with the XGBoost model.

## SKILLS

**Programming Languages:** Python, Java, C++, JavaScript, TypeScript, C, R, HTML, CSS

**Frameworks:** ReactJS, SvelteJS, NodeJS, NextJS, AngularJS, Spring Boot, JUnit

**Libraries:** NumPy, Pandas, Seaborn, Transformers, TensorFlow, PyTorch, Scikit-learn, OpenCV

**Tools:** Git, GitHub, SoapUI, Eclipse, Visual Studio Code, IntelliJ, Postman

**Cloud & Operating Systems:** AWS Lambda, Amazon DynamoDB, AWS SAM, Unix, Linux

## LEADERSHIP & INTERESTS

• Graduate Student Mentor • Rewriting The Code Member • Graduate Leadership Institute Cohort • Skiing • Trekking  
• Canyoneering • Hiking