RAHUL SAXENA

Amherst, Massachusetts 01002

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EDUCATION

University of Massachusetts Amherst, *MS in Computer Science* GPA: 3.9 / 4.0 May 2025

Birla Institute of Technology & Science (BITS Pilani), *BS in Computer Engineering* GPA: 3.2 / 4.0 Jun 2019

SKILLS

Languages	Python, C++, Java, R, Kotlin, Rust, Go, TypeScript, SQL, LaTeX
Libraries	PyTorch, TensorFlow, Scikit-learn, NumPy, Pandas, Gensim, NLTK, SpaCy, Keras, OpenCV
Technologies/Frameworks	Flask, Spring, Django, React, Node.js, ExpressJS (MERN), Docker, Git, Talend, Tableau

WORK EXPERIENCE

Philips

Software Engineer II Apr 2021 - Jul 2023

- Deployed models for automating customer complaints classification using R and NLP, achieving **82%** automation coverage and reducing manual classification time from **2 days** to **10 minutes**.
- Developed the **translator microservice** using Flask to achieve retrieval times of **2 milliseconds** using **Redis** caching.

Software Engineer I Jul 2019 - Mar 2021

- Mastered functional programming language **Erlang** to lead the resolution of critical bugs in the Data Manager module, reducing system downtime by **40%** and enhancing reliability for **30+** healthcare facilities.
- Implemented the **bulk import feature** for the service tools application of the PerformanceBridge platform, enhancing data processing efficiency by **21%** and reducing manual entry errors by **78%**, impacting the workflow of **300+ users**.

PayPal

Software Engineer Intern Jul 2018 - Dec 2018

- Developed an auto-remediation software, Optimus, to resolve data operations failures using **Kafka** Queues to trigger workflows via in-house service integrations, reducing downtime by **35%** and saving **$200K** annually.
- Created a full-stack web application using **Spring** framework to monitor and resolve failures in Hadoop, RabbitMQ, and Spark systems, improving reliability of data processing workflows for **over 500,000** transactions daily.

RESEARCH EXPERIENCE

Spotify

Graduate Student Researcher Feb 2025 - May 2025

- Exploring the effectiveness of **supervised fine-tuning (SFT)** and alignment methods to enhance model performance in generating accurate SQL queries from natural language inputs, specifically utilizing the **BIRD** Benchmark for evaluation.

UMass BioNLP

Graduate Research Assistant Sep 2024 - Dec 2024

- Collaborated with faculty and PhD students to **fine-tune LLAMA 3.1-8B** using PEFT, QLoRA techniques, incorporating Proximal Policy Optimization (PPO) and reward models to focus on question difficulty.

PROJECTS

Advanced Camouflaged Object Detection in Limited Data Setting | May 2024

- Modified the SINet using ResNet-18 to reduce computational load while retaining **90.76%** of detection accuracy.
- Improved pixel accuracy of segmentation masks from **69.19%** to **79.22%** on COD10K by introducing balanced loss.

Prompt Score | Mar 2024

- Developed a prompt scoring system to evaluate the specificity of prompts used with Large Language Models (LLMs).
- Fine-tuned the **Llama model** with QLoRA to achieve a **20% improvement** in performance on specificity scoring.

Emotion-based Style Transfer | Nov 2023

- Leveraged a 21-layer CNN to achieve **77.5%** accuracy for emotion classification on the Expression-in-the-Wild dataset.
- Reduced training time to **5.5 hours per model** using perceptual loss functions and a pre-trained VGG16.