Rahul Barhate

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Education

New York University — New York, NY
Masters of Science in Computer Science; GPA: 3.77/4.0 — *Sept. 2020 – May 2022*

University of Pune — Pune, India
Bachelor of Engineering in Information Technology; GPA: 3.53/4.0 — *Aug. 2015 – May 2019*

Experience

New York University — Jan. 2021 – May 2021
Graduate Teaching Assistant - Operating Systems (Head), Artificial Intelligence, Cloud Computing — *New York, USA*

- Revamped the course structure; contributed to the development of lab assignments & exams directed towards delivery of the subjects at a graduate level (**OS:** systems & kernel programming in C/C++; **AI:** Python, PyTorch; **Cloud Computing:** Amazon AWS),
- Delivered a range of teaching, assessment & grading activities including labs and tutorials using a variety of techniques to ensure that the course content met learning objectives and provided appropriate learning feedback.

IBM — Sept. 2018 – May 2019
Research Software Engineer — *Pune, India*

- Authored a research paper that benchmarks the 3-D machine learning techniques for object, scene analysis, synthesis & regeneration,
- Developed an app using React that uses 3-D GAN as its core to generate 3-D object representations from single/multiple 2-D images,
- Programmed the neural network using PyTorch, CUDA, C & optimized it to synthesize object representations in real-time using arbitrary viewpoints and low-texture level images.

Tata Consultancy Services — June 2018 – Sept. 2018
Software Engineering Intern — *Pune, India*

- Developed a full-stack video-calling application using Spring Boot as a RESTful back-end, WebRTC, TURN protocols & AngularJS,
- Suggested the use of and set up the TURN server for enabling peer-to-peer communication; deployed the application on the server,
- Developed RESTful APIs for a company tool to manage user data & authorization; contributed 50K+ lines to an established code base.

Persistent Systems — Sept. 2017 – Apr. 2018
Software Engineering Intern — *Pune, India*

- Developed a full-stack application with Flask, Angular & SQLAlchemy to analyse videos and deliver search results based on user queries,
- Developed a Convolutional Neural Network using Keras with an accuracy $\sim$ 87% that extracts and stores essential features such as identity, emotion, objects, in a video frame,
- Developed a Java Swing tool for automatic data set generation and created a new data set of 11 Bollywood celebrities,
- Integrated features such as semantic analysis of query, automatic query suggestion, fuzzy search, subset pattern matching & scoring results.

Patent

A System and Method for Self-Adopting Virtual Structuring of Unstructured Parking in Real-Time - Indian Patent #201921051068, Dec. 2019.

Awards & Outreach

Singapore India Hackathon - Second Runner-Up | Media: [Business Standard], [Times of India], [Economic Times] — Nov. 2018

- Developed a mobile application that virtually imposes structured parking grids onto vacant spaces,
- Automated restructuring of grids to accommodate plurality and types of vehicles - eliminating the need of existing sensor-based systems,
- Used Audio QR to authenticate user credentials and monitor parked vehicles thereby nullifying cost and saving configuration & scanning-time over RFID based applications,
- Rewarded by the **Prime Minister of India, Mr. Narendra Modi** & the **Education Minister of Singapore, Mr. Ong Ye Kung.**

Smart India Hackathon - Winner — Apr. 2018

- Prototyped a first-of-its-kind platform (mobile & web application) equipped with a centralized database that can effectively put forward farmers' requirements & an authentication, resource allocation & management tool for officials to provide and track the status of redressal
- Project rewarded by the **PM - Narendra Modi**, and procured by - **Indian Ministry of Water Resources & Ganga Rejuvenation.**

Projects

Analysis of Data Manipulation Language (DML) Operations on NoSQL Databases for Streaming Data | [Research Paper]

- Developed a web application using Flask, Twitter Streaming API and Cassandra, Elasticsearch as databases to analyse sentiments from among 10K+ tweets in a batch,
- Built a dynamic and responsive UI using JavaScript to consume and visualize time elapsed by DML operations,
- Analysed the inherent components of the databases and proposed architectural improvements to reduce read, write & search time.

Dining Concierge Restaurant Recommendation Chatbot Application

- Developed a serverless, microservice-driven web application for restaurant recommendations based on user preferences using REST APIs, messaging technologies like SNS & SQS, and cloud services like AWS Lambda, API Gateway, AWS Lex.
- Performed data scraping on Yelp to store the data in the NoSQL database DynamoDB. Developed python scripts to push the useful data to AWS ElasticSearch, stored as JSON.

Technical Skills

Languages: Java, Python, C, C++, JavaScript, TypeScript, HTML, CSS, **Databases**: MySQL, Cassandra, Elasticsearch
Web Tools & Frameworks: Spring, Spring Boot, Flask, AngularJS, WebRTC, JSON, REST APIs
DevOps Tools: Docker, Postman, TCP/IP, HTTP, Kubernetes, Travis-Cl, Git, JIRA, Putty, WinSCP, Jenkins, Amazon Web Services, Linux