**Mohammed Hasanul Chowdhury Rafi**

**Nationality : US Citizen | AI Engineer | Full-Stack Software Engineer | Consultant**

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# Skills \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Programming: Python** · **Java 11** · **SpringBoot** · **SQL** · **NoSQL** · JS(React,Next/Node) · **Shell** · **PySpark** · Scala · **Hadoop**

**Software:** **AWS** · Docker · Kubernetes · Azure · GCP · Linux · Bash · Git · JupyterNotebook · TensorFlow · **Microservices**

# Experience \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**DHHS/ASPR | Sr. AI/ML Product and Strategy** New York, NY Dec 2023-current

* Used **state-of-the-art open-source** technology knowledge to develop and integrate **large-scale, distributed machine** learning system lifecycles and developed tools to assist in experimenting more frequently and choosing wisely what to investigate next.
* Built and led the AI/ML systems for HHS and ASPR with **policy** and **privacy-driven approach** in Generative AI applications for future-proof work for health Data applications and Data modernization process, using systems engineering knowledge.
* Created a **3** and **5 year** **roadmap and policy** for LLM applications at ASPR with a team of engineers from **MIT Lincoln Lab** and Palantir to build Data security focused systems.

**Florida Blue | Software Engineer** Jacksonville, FL Feb 2023 - Oct 2023

* Used **MLOps** and Algorithms to analyze data to get output results for different services for healthcare RX domain for patients.
* Maintained data pipeline **up-time of 99%** while ingesting streaming and transactional data across 5 data sources using PySpark.
* Created a **JSON object** by writing **Core JAVA** code to connect with DB and then fetch my **SQL data** to create a REST API.
* Completed backend server **debug, backend server setup,** debug, ICM server side, client, and simulator server API for CRMS.
* Used **Spring Boot** to contribute to a customer facing application which takes data using **Oracle SQL** and delivers updates.

**AT&T/Amdocs | Software Engineer** Dallas, TX Feb 2022 - Feb 2023

* Worked in the CRM **backend team** at Amdocs for AT&T, developed microservices, cloud apps, APIs by Python, Java, & **SQL**.
* Experienced in writing Spark Applications in Python, Analyzed the SQL scripts using **PySpark SQL** for faster performance.
* Created a **JSON object** by writing **Core JAVA** code to connect with DB and then fetch my data to create a REST API.
* Completed backend server **debug, backend server setup,** debug, ICM server side, client, and simulator server API for CRMS.
* Used **Spring Boot** to contribute to a customer facing application which takes data using **Oracle SQL** and delivers updates.

**University At Buffalo | AI Researcher** Buffalo, NY Sep 2021 - Sep 2022

* **Led an end-to-end software** teamfrom the ground up in data-driven development, **agile development**, and tests environments.
* Successfully used host or dig to get the IP address of any machine to test media & install **Oracle Linux** 8.4.0 and set the IP address, and Additional software for Selected Environment section select **Debugging Tools**, Legacy UNIX Compatibility, Development Tools, and **System Tools** all remotely from a different IP Address under the supervision of Dr. Ken Smith.
* Working on theory-based research to **implement RL, NLP and ML** for the management of real-world applications **in python**.
* Built a machine learning pipeline and training models using the end-to-end Bayesian segmentation set work. proficiency in training and deploying CNN, LSTM, and other Sequence models on Azure and AWS utilizing PyTorch, TensorFlow, and Keras.
* Worked with an engineering team to create a software application that automates machine learning model training and deployment, cutting down on the amount of time needed for model **development by 40%.**
* Developed a scalable software platform for Al model deployment in conjunction with a group of engineers; this led to a 50% decrease in deployment time and a 25% improvement in model performance.
* Enhanced distributed cloud **GPU training techniques**, such as data distribution modification, data quality enhancements, and representation learning with self-supervision, for deep learning models worked in conjunction with interdisciplinary product development teams to identify opportunities for enhancing performance and integrating trained models.
* A novel reinforcement learning algorithm was created and tested to optimize supply chain operations, leading to a 20% improvement in delivery times and a **30% decrease** in inventory costs.
* Delivered research findings at a prestigious Al conference and **CSE Demo Day**, leading to the publishing of a paper and identification as a thought leader in the area.

**The Headstarter | Software Engineer** New York, NY Apr 2020 - Aug 2021

* Created 3+ web app changes accepted to production using **React**, **Node**, **AWS**, **Rest APIs** to open-source projects.
* Built serverless APIs using **AWS Lambda** with 99% uptime and real-time **DynamoDB** data entry tables.
* Coached by Google, Amazon, Bloomberg, and Capital One engineers on **Agile**, **CI/CD**, **Git**, and microservice patterns.
* **Led a team of 5** dedicated computer science students to collaborate on projects to attend and win three Hackathons in MLH.

# ML, RL, AI & Projects\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Machine/AI & Deep Learning Projects**  May 2019 - June 2022

* Used **Langchain**, **Pinecone** and python to deploy agent workflow to answer questions for classified documents.
* Created workflow which included processing 5TB of Data into and deployed **RAG with LLMs**.
* Researched on **Generative Deep Learning AI** for **LLM** to create a chat for students and researchers in the University.
* Developed **ML Algorithms** to Incorporating multiple notions of fairness, under the supervision of Dr. Atri Rudra.
* Performed **Research** on ML Algorithms to Remove social and racial bias related to (Ethnicity, Color, Sex) in Google Search Engine **Analytics**, under the supervision of Dr. Atri Rudra and Dr. Kenny.
* Built a model for Heart Disease Detection Using **Kaggle Dataset** and 3 algorithms to determine the disease prediction.
* Diabetes Detection using Deep Learning techniques - **Neural Network Classification**, Single layer Neural Network and Multi layer Neural Network for CSE 474 course, under the supervision of Instructor Nitin Kulkarni.
* Built AWS DeepRacer algorithm and simulated virtual competition for autonomous vehicles using **RL algorithms**.
* Implemented Q Learning and **Deep Q Learning** algorithms for Lunar landing applications using Multiagent RL.
* Defining and solving Reinforcement Learning Environment using tabular method and **implemented using python**.
* Implemented data driven methods to find computational results for the **publicly traded companies** and predicting growth and risk tolerance **using python**.Detected heart patients from looking at their age, BMI, smoking habit, sex and created linear regression models for SGD, Ridge, and simple linear **regression**.
* Created a Mayfly **model to predict** population in different districts in NYC and implemented using python libraries.

**AWS Full Stack Application**  Jun - Sep 2021

● Set up a web service using **EC2** to host a secure, resizable compute capacity on the cloud for the application.

● Developed a **React** application for frontend and used **API Gateway** to route frontend requests to **Lambda.**

● Utilized **Lambda** to create a function to send data from clicking a button to **DynamoDB** for storing data.

**Meals on Wheels ERC20 Token on Ethereum Blockchain**  Sep - Dec 2021

● Implemented **complete backend** of the Node.Js web project as part of a team based project for the blockchain project.

● Demonstrated **data-structure skills** to create the modifier and the constructor functions using the use case diagram.

● Created the ERC20 Token on the web based IDE named **Remix.Ethereum and uses solidity** as the primary language.

# Awards & Leadership Experience \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

● Board of Directors at UB Undergraduate Student Association, Helping with the Clubs funding and social media.

● Won First Place at Buffalo Startup Bootcamp for the LeakProof Project and 1st Place for Early Invest Hackathon Project.

● Blackstone Launchpad at University at Buffalo Summer Startup Accelerator Fellow and TechBuffalo Fellow.

• Connecting with a broader range of Tech Entrepreneurs in the Buffalo Area and getting insights into their Tech business and collecting data points to effectively implement them in Buffalo based AI projects.

• Finding resources through the vast number of connections in the Buffalo Community to raise capital for tech ventures capital firms.

# Education \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## University At Buffalo, The State University of New York

* **Major:​** B.S./M.S. in Computer Science & B.A. in Mathematics Address: 12 Capen Hall, Buffalo, NY 14260