Saiham Rahman

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Summary

*Experienced **Machine Learning Engineer** developing efficient **MLOps** infrastructure, **automating** end-to-end CI/CD for model training, deployment, and monitoring. Adept in **Robotics** and **Reinforcement Learning Research** and Development. Proficient in **formulating custom wrappers and libraries** with **5+ years'** experience working in **cross-functional** roles of **Software Engineering**. Skilled in **architecting MLOps platforms**, collaborating across teams, and driving **innovative solutions**. Eager to learn, contribute to **open-source**, and grow in emerging tech.*

Education

MSC ARTIFICIAL INTELLIGENCE **2021 – 2022**

Queen Mary University of London | Grade: **First Class (Distinction)**

Relevant Coursework: **Reinforcement Learning,** NLP in **Information Retrieval**, Deep Learning, **Computer Vision** and **Robotics**

BSC COMPUTER SCIENCE AND ELECTRONICS ENGINEERING **2017 – 2021**

BRAC University | Grade: CGPA 3.31, Honour: **Vice Chancellor's List**

Relevant Coursework: **Reinforcement Learning, Database** Systems, **Systems Design**, OOP Design, Algorithms, **Neural Networks**

Projects (Reinforcement Learning)

Empirical Analysis of Posterior Sampling in MCTS and DeepMind MuZero Policy Selection Strategies

- Improved MuZero performance in **policy selection strategies** by introducing **Bayesian Posterior Sampling** in-place of **UCT**(Upper Confidence Trees) for MCTS(Monte Carlo Tree Search).
- Developed POC's using MCTS with **Bernoulli and Gaussian** posterior sampling strategies in **custom benchmark environments** in **Open-AI Gym** and integrated it the MuZero codebase.
- Delivered a **65% increase in training speed** by leveraging IaC configuration for **modern on-premises HPC hardware** using **Docker** images. Utilised Makefile and Jenkins for CI/CD of the project.
- Utilised **MLOps best practises** for **distributed training**, model auditing, registry, **evaluation tracking**, deploying, and monitoring for efficient prototyping of **hyper-parameter tuning**.
- Conducted extensive research in **Deep Reinforcement Learning** and presented **research paper** to panel.
- Worked with **PyTorch,** JAX, Open-AI Gym, Ray and RLLib and created **custom wrappers** to implement complex statistical algorithms and represented **empirical results using TensorBoard**.

Improving the Performance of MCTS and Evolutionary Algorithms in a Multi-Agent Adversarial game

- Engineered **reinforcement learning agents** in **JAVA** for a complex **multi-agent adversarial** game environment using.
- Created **custom reward functions** and **action spaces** to enhance training stability and speed.
- Awarded **semi-finalist** for optimising the model's **performance by 12%**, resulting in a more engaging and challenging game experience. Used **graphics libraries in Python** to present **visual analytics** of the performance.
- Leveraged **multi-threading/processing** for concurrent distributed training/testing.

Self-Driving Vehicle in WeBots Simulation (ROS)

- Developed **Object Detection and Avoidance Autonomous** driving agents in diverse environments and scenarios.
- Experimented with **Deep Q Networks** for reinforcement learning agents for **custom maze environments**.
- Engineered 4-wheeled vehicles and worked with **ROS family of software** for prototyping **self-driving vehicles**.
- Worked with **Self-Propelled Drones** and engineering scripts in **Python** for stability and mobility.

Hyper-Parameter Optimisation in Atari Breakout for Deep RL and Classical RL Algorithms

- **Implemented** and experimented with **hyper-parameters** for the algorithms **Deep Q Network, TD3, Q Network, SARSA Control** for Atari Breakout **(Open-AI Gym).**
- Utilised **open-source** codebase for experimenting with the algorithms and formulating a **research paper** for review.
- Experimented with CNN, **ResNet Neural Network Architectures** in Deep RL networks for effective model training.
- Worked **collaboratively with a team** of 4 people to research and development of the project.

Work Experience (Software Engineering)

MACHINE LEARNING ENGINEER | DEEP TECHNOLOGY LTD. | LONDON, UK **JUN 2023 – PRESENT**

- Built end-to-end POC's on **Computer Vision** and **Natural Language Processing** by expanding on available algorithms using **industry standard machine learning frameworks**, tools, and libraries.
- Developed **cloud infrastructure** for Data Pre-Processing and ML Model Management by **versioning** data and ML models on S3 buckets, model training, deployment and monitoring using **MLFlow**, ensuring scalability and reliability.
- Implemented **MLOps** best practices for **API Development** and **Deployment Pipelines** for ML models in **inference**, reducing deployment time for data science solutions by 50%.
- Streamlined Machine Learning platforms by engineering **reproduceable environments** for **CI/CD** in development and production of **AI SaaS solutions** on **AWS and GCP** cloud utilising **open-source frameworks**, contributing to its design and functionality.
- Collaborated with 4+ developers and stakeholders as a **product manager** for requirements analysis, setting up **sprint boards**, timely delivering projects and **demonstrating POC's** in shareholder meetings.

MACHINE LEARNING ENGINEER | FREELANCE **SEPT 2021 – PRESENT**

- Provided **consultation to clients** for ML infrastructure, **data science**, and computer vision. **Architected serverless ML systems** for cost-effectiveness by integrating **MLOps** CI/CD best practices.
- Increased **API effectiveness** by 20% by building **custom Docker containers** for inference in AWS Lamda. Generated **MLOps pipeline** templates for notebooks in **SageMaker** which used EC2 compute, and S3 for storage registry.
- Stayed current with advancements in MLOps and provided **technical guidance** facilitating effective utilisation of the AI Solutions.

DATA SCIENCE CONSULTANT | ACADEMIC EDUCATION UK LTD. **SEPT 2022 – FEB 2023**

- Ensured compliance with ethical and legal aspects of **GPDR data management** by administering and auditing running instances, SharePoint sites, and Azure active directory, resulting in mitigation of data privacy risks.
- Developed DAGs in **Apache Airflow** to automate and orchestrate **data workflows**, reducing manual intervention by 80%, and used **AutoML** in Azure ML Studio for **predicting sales** effectiveness and deployed the model as a **real-time API** inference endpoint.
- Conducted data analysis, **communicated complex technical processes** to stakeholders, effectively **presented key findings** and potential solutions, resulting in a 40% increase in client engagement and project success.
- Enriched **visualisation reporting system** by retrieving data using **SQL** from AWS RDS and presented **analytical insights** to non-technical audiences and senior stakeholders using **PowerBI and Seaborn**.

PROJECT MANAGER | PLAYENSE GAME STUDIO LTD. **MAR 2021 – AUG 2021**

- Pioneered **Agile** methodology, **led 3+ cross-functional teams** and sprint-based development cycle, adhering to Scrum, enabling timely project delivery, and ensuring a 95% on-time completion rate for projects.
- Shipped **critical** updates as a **release manager** and cross-functionally facilitated the development using **object-oriented C#** language and automated testing of games.
- Translated **technical requirements** into actionable project plans, contributing to a **30% increase** in **successful project bids** and improved client satisfaction to achieve **5M+ and 100K+ downloads**.

DEVOPS CONSULTANT | FREELANCE **MAR 2020 – APR 2021**

- Demonstrated proficiency in **UNIX/Linux** systems administration, including Debian/Ubuntu, and implemented **system monitoring** strategies, reducing critical incidents by 30%.
- Utilised networking knowledge, including security protocols, **load balancers, and API Gateways**, to ensure secure data transfer.

SOFTWARE QUALITY ASSURANCE ENGINEER | YODA TECHNOLOGIES LTD. **FEB 2019 – MAR 2020**

- Created and executed **test plans**, test cases, and test scripts, modelled data in **Mongo DB**, which led to a 40% reduction in post-release issues and a 60% improvement in product reliability.
- Efficiently managed **SDLC using JIRA** and facilitated code review, **open-source** frameworks, **requirement analysis**, prototyping, bug tracking, and **reporting,** resulting in a successful and streamlined development process.

DEVOPS ENGINEER INTERN | ICT DIVISION LTD. **MAR 2018 – FEB 2019**

- Developed **3+ iOS app POC's**, tested on different iPhones and packaged for delivery using DevOps practises.
- Engineered scalable, reproduceable, and maintainable **micro-services** following design patterns using **Docker and Kubernetes** by implementing DevOps practises in a team of 10 people for a **real-world business problem**.

Technical Skills

- Programming Languages**: *Python, JAX,*** *bash, C++, C#, SQL,* ***Java***
- Libraries: ***PyTorch, TensorFlow, Ray, Open-AI Gym****, Pandas,* ***Flask API****, YOLOV8, Spacy,* ***StreamLit***
- Data Management and Pre-processing: *Apache Spark,* ***Airflow****, PostgreSQL*
- MLOps Tools: ***SageMaker****, Azure ML Studio, AutoML*, ***MLflow****, W&B, Azure DevOps pipelines*
- Source and Version Control: ***GitHub,*** *AWS Code Commit, SourceTree,* ***DVC***
- Cloud Computing, Automation and Monitoring**: *Linux, Docker****, AWS, Databricks, Terraform, Prometheus*
- Performance Optimisation: **Multi-threading/Multi-Processing**, HPC, **Distributed computing**

Additional Credentials

- **Volunteer Experience**: *Assistant Director of Computer Club (BRAC University), British Heart Foundation Sales Floor Worker*
- **Certifications and Training:** Associate Cloud Engineer (GCP), Solutions Architect Associate (AWS), PMEC, SAFC, ***Mathematics*** *for Machine Learning, (Imperial College London – Coursera), End-to-end machine learning operations [****MLOps****] (Microsoft Azure Learning),* ***Deep Learning*** *Specialisation (DeepLearning.ai – Coursera Audit)*