

# ASIF IQBAL RAHAMAN

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## SKILLS

**Programming:** Python, Rust, Javascript, TypeScript, SQL, Bash, Shell Script, HTML, CSS, C++, Java, GoLang, VueJS, ReactJS  
**Frameworks:** Flask, FastAPI, RestAPI, Pandas, Numpy, AWS-CDK, PyTorch, TensorFlow, Matplotlib, Kubernetes, Django, Pillow  
**Tools:** Git, Jenkins, Docker, Unix, Linux, Nginx, Supervisor, MySQL, MongoDB, AWS, Azure, GCP, Apache Airflow, Expo

## EDUCATION

**Virginia Polytechnic Institute and State University (Virginia Tech) – Blacksburg, US** **Aug 2022 – May 2024**  
**Master of Engineering in Computer Science Applications** CGPA: 3.9/4.0  
• **Courses:** AI Tools for Software Delivery, Natural Language Processing, Data Analytics, Applications of Machine Learning, Computer Vision  
**VIT University – Vellore, IN** **Aug 2015 – May 2019**  
**Bachelor of Technology in Computer Science** CGPA: 8.0/10.0  
• **Courses:** Data Structures & Algorithms, Database Management, Software Development, Data Mining, Cyber Security, Network Architecture

## EXPERIENCE

**Department of Computational System Biology, Virginia Tech – Blacksburg, US** **Oct 2022 – Present**  
**Student Software Developer/ Research Assistant**  
• Pioneered a novel simulation of cell cycle perturbation with boolean model of protein interactions with 5 times better efficiency and accuracy.  
• Devised a comprehensive approach to data validation using SIGNOR 3.0 **database APIs**, and Python libraries like **dataclass**, **pandas** and **numpy**, that supported analysis of **1M+** data points, leading to a significant enhancement in decision-making capabilities across the project.  
• Achieved **5 times** increase in simulation speed for perturbation analysis by implementing **parallel processing**, **algorithm optimization** on the ARC@VT supercomputer for programmed improvement of exponentially growing (approx **1.6M** interactions) cell interaction models.  
• Resulted in a research publication available at [journals.plos.org/plosone/article?id=10.1371/journal.pone.0306523](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0306523) in **PLOS One**.  
**Seclore Technologies Pvt Ltd. – Mumbai, IN** **Dec 2021 – Jul 2022**  
**Product Engineer**  
• Conceived a comprehensive **DevOps** automation strategy that reduced customer onboarding time from 5 days to 4 hours; integrated **AWS** services like **CloudFormation**, **DynamoDB** and **CloudWatch** using **AWS-CDK**, now utilized by 15+ team members for improved efficiency.  
• Designed a robust **CI/CD pipeline** and **IaC** using **Docker** and **Jenkins** that increased customer deployment efficiency by over **500%**.  
• Employed test-driven development with complete **integration test** and **unit testing** using **PyTest**, and maintained version-control system.  
• Fostered teamwork and **agile** development, delivering the initial framework in 4 months utilizing **CI/CD** principles in a team of 3.  
**Ericsson Global India Pvt Ltd. – Bangalore, IN** **Jan 2019 – Jul 2021**  
**Software Engineer**  
• Developed a rule-based recommendation engine using **Pandas** and **Numpy** for network performance and root cause analysis (RCA), achieving **36%** automation gain for telecom clients through **data processing** and **analysis**, and optimizing with **parallel computing**.  
• Constructed an **automated API** system for daily processing of ~30GB data from **datalakes**, improving data handling efficiency by cleaning, categorizing, and storing data as **parquet** files using **Pandas** and **requests** library, facilitating faster access for the recommendation engine.  
• Engineered an **RPA framework** to streamline network management operations, securing **35%** boost in automation efficiency by utilizing **OpenCV**, **Selenium**, **win32** for targeted actions, **NoSQL** and **MySQL** for data integration and **backend** implemented with **Flask (Rest API)**.  
• Integrated the custom RPA framework with Ericsson's BotStore platform, streamlining the process and increasing usage by 50%.

## PROJECTS

**Personal Website with FastAPI, AWS and Nginx** **Jan 2024**  
• Embraced hands-on learning approach for **front-end** by designing a website using **FastAPI**, **SQLAlchemy**, **Jinja2** in **Python**, **docker-compose** for containerization, **PyTest** for automated test, and deployed in **AWS EC2** with **Nginx** proxy server for efficient routing.  
• Planned the website with a forward-thinking structure to potentially support **multiple user profiles** similar to LinkedIn, employing backend database instead of a static website, which can potentially enhance scalability and engagement significantly using very less effort.  
**EEG Signal to Text Extraction** **Nov 2023**  
• Reproduced pioneering research to convert EEG signal to text by **fine-tuning BART** with custom data that achieved over **25.9 F1 Score**.  
• Implemented **zero-shot** algo using **PyTorch** to classify the generated texts for sentiment analysis of EEG signals with over 80% accuracy.  
**Multiple Object Tracking using FairMOT and GAN** **Dec 2023**  
• Constructed a novel architecture for **multiple object tracking**, integrating **FairMOT** with **GAN**, resulting in **50%** reduction in false positives.  
• Demonstrated that isolating the generator in a separate layer in the architecture diminishes the tracking performance by over **70%**, as the discriminator readily distinguishes between fake and real data based on layer origin, highlighting the importance of architecture design.  
**Football (Soccer) Commentary Generation with Assistant-based GPT API** **May 2024**  
• Enhanced AI-generated commentary and game summary by 70% using **GPT-Assistant API** with real data through **prompt engineering**.  
• Leveraged **text-to-speech** and **translation API** to emulate Peter Drury's voice for multilingual commentary and better accessibility.

## CERTIFICATIONS & AWARDS

• **Python for Data Science and Machine Learning Bootcamp** **Udemy Certificate - May 2021**  
• **Improving Deep Network: Hyperparameter Tuning, Regularization & Optimization** **Coursera Certificate - Jul 2020**  
• **Neural Networks and Deep Learning** **Coursera Certificate - Jan 2020**  
Bi-annual **Galactic Award from Ericsson (2020)** for achieving outstanding business excellence with data automation framework.