

Asif Iqbal Rahaman

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PhD fellow working with Phylo-Oncology and ML in Genomics in Suvorov Lab at Virginia Tech. Computational Biologist and Software Engineer with expertise in bioinformatics, machine learning, and cloud infrastructure. Research interests include integrating machine learning and optimization methods into genomic data analysis and algorithm development.

Key Skills

Python, R, Rust, Pytest, Docker, PyTorch, Matplotlib, AWS, Azure, Linux, Spark, Pandas, ReactJS, Bash, SQL, NoSQL, Git, GitHub Actions, Tableau, C++, FastAPI, Flask, Microservices, OpenCV, TensorFlow, Jenkins, Kubernetes, Terraform

Education

Virginia Tech, Blacksburg, VA Aug 2025 – Present

Doctor of Philosophy (PhD) in Biological Science (Bioinformatics)

Virginia Tech, Blacksburg, VA Aug 2022 – May 2024

Master of Engineering in Computer Science (Data Science and AI)

Vellore Institute of Technology, Vellore Aug 2015 – May 2019

Bachelor of Technology in Computer Science (Bioinformatics)

Experience

Software Developer, Department of Systems Biology, Virginia Tech Oct 2022 – Jul 2025

- Formulated **novel algorithm** for cell cycle perturbation with large-scale network, enabling accurate pathway predictions and data analysis for targeting **cancerous cells**; published as **joint first-author** (computational lead) in **PLOS One**.
- Implemented **stochastic simulation** with **vectorization**, **CPU** and **GPU parallelization** for 5x performance gain.
- Developed **modular system** with **CLI parameter** support to be executed in **ARC HPC cluster** for 50% efficiency gain.
- Improved reliability by 30% using **data validation** pipeline from SIGNOR database and **visualization** using **networkx**.

Skills: Python, Pandas, Numpy, JAX, PySpark, Machine Learning, Parallel Processing, Linux, Database, Distributed Systems

Product Engineer, Seclore Technology Pvt Ltd Dec 2021 – Jul 2022

- Automated customer onboarding for security tool (90% speedup) using **AWS CDK**, collaborating with **DevOps** and **QA**.
- Orchestrated integration of **AWS services** to build **IaC** with Agile **SDLC**, contributed to features with 70% improvement.
- Built **CI/CD pipelines** for containerized layered architecture; applied **test-driven development** with 80% coverage.

Skills: Python, AWS CDK, Docker, Boto3, APIs, Jenkins, RDS, DynamoDB, Lambda, CloudFormation, CloudWatch, ECS, EC2, S3, GoLang, Java, Kubernetes, Terraform, Pytest, Linux, Redis, Active Directory, Distributed Systems, Scrum, Agile Development

Software Engineer, Ericsson Global Services Pvt Ltd Jan 2019 – Jul 2021

- Developed **backend** for custom **RPA framework** automating network tasks with 35%+ efficiency and 80%+ reliability.
- Built rule-based **recommendation engine** for big data manipulation and transformation with 50% automation gain.
- Prototyped **predictive ML** alternative, further improving accuracy by 20% via **feature engineering** and **model tuning**.
- Programmed scalable **ETL pipeline** for large-scale processing (50GB daily) from data warehouse with 3x reliability.
- Processed data as serialized **Parquet** for 2x faster **SQL** queries; automated **CI/CD** data pipeline with **Airflow** and **cron**.

Skills: Python, PySpark, Flask, OpenCV, Linux, MySQL, PostgreSQL, MongoDB, TensorFlow, PyTorch, SQLAlchemy, Azure

Projects

Real-time Sentiment and Subjectivity Trend Analysis for Social Media Feb 2025

- Automated post ingestion (**APIs**, **GitHub Actions**, **CI/CD**); processed sentiment via **PySpark** on **Databricks** in **Azure**.
- Set up interactive **Streamlit** dashboard in **Azure** (via **GitHub Actions**) with real-time monitoring and visualization.

Soccer commentary/summary generation with Assistant-based GPT APIs May 2024

- Built AI pipeline via **GPT APIs**, **prompt engineering** for event-driven, multilingual summary for real-time adaptation.
- Engineered frontend with **ReactJS**, integrating text, audio (**TTS**), and images (**DALL·E**) for multimodal experience.

DNA Sequence Alignment CLI Tool Dec 2017

- Built a **CLI tool** implementing Smith-Waterman and Needleman-Wunsch algorithms for genetic sequence comparison.
- Featured modular design, multi-format I/O, CLI/GUI visualizations with **Matplotlib**, ensuring 80%+ **pytest** coverage.

For more details and other projects, please visit my [website](#) or [GitHub](#).

Certifications and Awards

Python for Data Science and Machine Learning Bootcamp Udemy (May 2021)

Improving Deep Neural Networks: Hyperparameter Tuning, Regularization Coursera (Jul 2020)

Neural Networks and Deep Learning Coursera (Jan 2020)

Biannual **Galactic Award** for developing data automation framework Ericsson (Oct 2020)