SAHIL BODKE

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EDUCATION

Northeastern University (Khoury College of Computer Sciences), Boston, MA — **Sept 2022 – Dec 2024**
Master of Science in Robotics (Concentration: Computer Science) — GPA 3.96/4.0

National Institute of Technology Silchar, Assam, India — **July 2018 – May 2022**
Bachelor of Technology – Mechanical Engineering — GPA 8.98/10.0

TECHNICAL SKILLS

Programming Languages: Python, R, C++, JavaScript, Java, MATLAB, Groovy
Frameworks: PyTorch, TensorFlow, Keras, OpenCV, NumPy, Pandas, Docker, **Nextflow,** Dash, Figma, ROS
Web Technologies: FastAPI, React, Node.js, Express.js, Mongoose, Nginx, REST API, HTML, CSS, Bootstrap, Postman
Databases: MySQL, MongoDB, PostgreSQL, Athena, RDS, DynamoDB, DuckDB
Cloud Technologies: AWS, Bedrock, Sagemaker, Lambda, Batch, ECS, Fargate, Load Balancer, EC2, S3, EFS, FsX, EBS, ECR, Serverless
Tools and Skills: **Git**, **GitHub**, **GitLab**, **CodeCommit**, Tableau**,** Linux, VS Code, Computer Vision, Machine Learning, Deep Learning

EXPERIENCE

Ampersand Biomedicines, Boston, USA (AI/Data Engineering Co-op) — **Jan 2024 – Aug 2024**

- Engineered a scalable cloud infrastructure on AWS for single-cell RNA sequencing, using **Nextflow** and **Docker** containers to efficiently process public and in-house data enabling, faster and more accurate insights for research teams
- Automated pipeline execution by integrating an AWS Lambda trigger with EC2 launch templates, optimizing **EC2 mounting** and dependency management. Enhanced pipeline performance, reducing I/O operations and lowering data processing costs by **80%**
- Architected an AWS Batch workflow for high-throughput tasks, reduced run time and **optimized image size** by using pre-installed dependencies for large libraries (e.g. Rosetta) from mounted FSx and EFS reducing processing times by **30%**
- Developed and deployed an internal Tableau dashboard to analyze gene expression across various cell types, diseases, etc. enhancing data-driven decision-making
- Developed a user-friendly QSP modeling webapp integrating python visualization tools (Dash), with a custom-built API in **Plumber** and R as backend to integrate various models enabling seamless simulations for a broad user base
- **Streamlined** antibody sequence analysis by developing a Dash-based webapp, containerized with **Docker** for consistent deployment, enabling CDR and liability identification process and providing valuable support to teams across multiple regions

Nugenix Robotics, India (Robotics Intern) — **Apr 2021 – Sept 2021**

- Optimized the reliability of Robotnik's SUMMIT XL-Gen mobile manipulator by fine-tuning and testing both the robot and the Kinova manipulator using ROS and MoveIt
- Identified and resolved stability issues and implemented bug fixes in the ROS software packages, reducing troubleshooting time preventing project delays
- Successfully delivered the tested robot to the end client meeting all their requirements, ensuring a smooth deployment

PROJECTS

API Development Using Python (FastAPI, PostgreSQL, Docker, NGINX, JWT, Github Actions, Ubuntu) — **July 2023 – Sept 2023**

- Developed an API for facilitating user-generated content sharing and interactions using FastAPI
- Designed and implemented a comprehensive API system, integrated PostgreSQL, implemented user authentication with JWT, and performed unit testing using pytest. Set up NGNIX as a proxy server for request optimization and SSL termination
- Set up a UFW firewall to allow only necessary traffic. Dockerized the application and its services. Explored deployment options like Heroku and Ubuntu VM - Digital Ocean. Established a CI/CD pipeline using GitHub Actions

Food Delivery App using MERN Stack (MongoDB Atlas, Express.js, React, Node.js, JavaScript, JWT) — **May 2023**

- Designed a food delivery web application using MERN stack for ensuring a secure and interactive food ordering experience
- Leveraged React and Bootstrap for frontend, MongoDB Atlas as a database and Node.js and Express.js for backend
- Secured user credentials using bcrypt.js for encryption and performed user authentication using JWT

Recognition Using Deep Networks (Python, Pytorch) — **April 2023**

- Developed a neural network model trained on MNIST, achieving **97%** accuracy on test data
- Conducted automated experimentation with hyperparameters, evaluating 72 model variations for the FashionMNIST dataset
- Utilized transfer learning to achieve **45%** accuracy in classifying Greek letters with a pre-trained MNIST model
- Improved accuracy from **70%** to **85%** on a custom MNIST like dataset

ACHIEVEMENTS & CONTRIBUTIONS

- A Fish Robot: It's Modeling and Pose Estimation: Presented at the 2021 International Symposium of Asian Control Association on Intelligent Robotics and Industrial Automation (IRIA)
- **Teaching Assistant** for 'Programming with Data' course for 2 semesters assisting students with assignments and labs
- Recipient of 'Assistance to Meritorious Students Scholarship – Junior Level' for outstanding academic performance

COURSES

Algorithms | Neural Networks and Deep Learning | Natural Language Processing | Pattern Recognition and Computer Vision