Anurup Atul Salokhe

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SKILLS

- **Programming Languages & Technologies:** Python, R, Scala, C, C++, AWS, Microsoft Azure, RESTful APIs, Flask, Django, Power BI, Tableau, MATLAB, Hadoop, ETL process, Data Engineering
- **Database Management:** MySQL, MongoDB, Neo4J, Redis, Firebase, Google Cloud
- **Machine Learning & AI Frameworks:** Scikit-learn, SciPy, NumPy, Pandas, TensorFlow, Keras, Pyspark, PyTorch, Transformer Models (BERT, GPT-4, LLAMA2),
- **Generative AI & LLMs:** Azure OpenAI, Generative AI Chatbots, Text Summarization
- **Computer Vision:** CNNs (ResNet, AlexNet, Darknet), Image Classification, Object Detection
- **Web Development:** HTML, CSS, web hosting
- **Tools & IDEs:** Anaconda, Docker, Kubernetes, Jupyter Notebook, GitHub, JIRA, CI/CD (Git)
- **Operating Systems:** Windows, Ubuntu, Linux, Unix

EXPERIENCE

Data Scientist – Part Time **March 2024 – June 2024**

ESRC Business and Local Government Data Research Centre **Colchester, UK**

- Spearheaded an AI-powered project to optimize waste management strategies for Essex City Council by deploying Natural Language Processing (NLP) techniques like topic modeling (LDA, LSI) and sentiment analysis to extract actionable insights from vast textual data sources, such as city records, citizen feedback, and survey responses.
- Engineered data pipelines using Pandas and PySpark to preprocess and clean large, unstructured datasets, enabling smooth integration into machine learning models and reducing processing time by 40%.
- Implemented deep learning-based NLP models with transformers and pre-trained language models (BERT, GPT), achieving high accuracy and F1 score in text classification tasks critical for categorizing waste management issues.
- Deployed machine learning models in production environments through containerization with Docker and managed orchestration with Kubernetes, achieving scalable model deployment.
- Presented data visualizations and insights in Power BI and Tableau, translating complex findings into strategic insights for senior leadership, directly influencing council policy decisions.

State Coordinator (Information Technology) **July 2023 – December 2023**

State Management Planning Department, Government of Maharashtra **Navi Mumbai, India**

- Developed a scalable and secure web platform for the department using Python Django and integrated it with MySQL databases, enhancing digital presence and accessibility, particularly for data-intensive tasks related to citizen engagement.
- Ensured secure data operations by implementing SSL/TLS encryption, role-based access control (RBAC), and backend database sanitization techniques, safeguarding sensitive public and operational data.
- Led cloud migration efforts using Microsoft Azure and AWS Lambda functions to enable on-demand data processing, reducing operational overhead by 25% and improving response times for citizen queries.
- Collaborated with cross-functional teams to create RESTful APIs for data interoperability across government platforms, enabling seamless data exchange and integration with other state IT systems.
- Provided technical training on CI/CD best practices and Git workflows, enhancing team efficiency in managing codebases and deploying iterative updates.

Assistant System Engineer **July 2021 – June 2023**
Tata Consultancy Services **Pune, India**

- Contributed to an autonomous driving project by designing and implementing convolutional neural networks (CNNs) and recurrent neural networks (RNNs) for real-time obstacle detection, enhancing vehicle navigation and safety.
- Conducted hyperparameter tuning and model optimization (using techniques such as dropout, batch normalization, and early stopping) to enhance the model's accuracy and reduce computational load, improving model performance by over 20%.
- Collaborated with Ford Motors and Nvidia to integrate AI-driven functionalities, using TensorFlow Extended (TFX) for model lifecycle management, which streamlined deployment from development to production.
- Developed and managed a data preprocessing and feature engineering pipeline for massive, high-dimensional sensor data (LiDAR, radar, and image data) using PySpark and NumPy, significantly improving data processing efficiency.
- Utilized Docker and Kubernetes for containerizing and deploying models, ensuring scalability and consistency across environments. Implemented continuous monitoring using Grafana and Prometheus to track model performance in real-time.

Research Intern **September 2020 – May 2021**
Defence Research & Development Organization (DRDO R&D Pune) **Pune, India**

- Developed a reinforcement learning framework for controlling a quadrupedal robotic system using OpenAI Gym and Gazebo, simulating complex environmental interactions and refining robotic navigation.
- Built and optimized reinforcement learning models (PPO, SARSA, MDP, DDPG) using PyTorch, enhancing the robot's adaptive response to uneven terrain, achieving a 30% improvement in stability and obstacle avoidance.
- Processed simulation data using NumPy and scikit-learn for feature extraction, dimensionality reduction (PCA), and clustering (K-means) to analyze robot movement patterns and fine-tune control algorithms.
- Integrated Gazebo with ROS (Robot Operating System) for testing and validating the robotic model in virtual environments, contributing to the research and development of military-grade AI robotics.
- Authored technical documentation and published research findings, which contributed to expanding DRDO's knowledge base on robotic locomotion and reinforcement learning in rugged terrains.

EDUCATION

University of Essex **January 2024 – January 2025**
Master of Science (MSc), Artificial Intelligence **Colchester, UK**

Vellore Institute of Technology (VIT) **July 2019 – May 2021**
Master of Technology (MTech), Computer Science Engineering **Vellore, India**

University of Mumbai **July 2013 – May 2017**
Bachelor of Engineering (BE), Biomedical Engineering **Mumbai, India**

PROJECTS

- Artificial Intelligence in Heart Modelling: Developed AI model to automatic predict heart disease and improve accuracy in diagnosis of heart condition.

- Enhancing video streaming quality with a Smart DASH Client Implementation: Implemented a Smart DASH Client to optimize streaming services using ABR algorithm.
- Reinforcement Learning Based Legged Locomotion of Quadrupedal in a complex Environment: Applied reinforcement learning for complex environment navigation of 4-legged robot using OpenAI gym tool.
- IoT Based Personal Device for Diabetic Treatment & Management: Designed a personal IoT device for diabetes management, integrating multiple sensors and data analytics.
- Gesture Recognition System Using Microcontroller: Developed a microcontroller-based system for gesture recognition for disabled people.
- Bluetooth Controlled Robotic Arm: Engineered a robotic arm controlled via Bluetooth for precise operations.

PUBLICATIONS

- **"Gesture Recognition System Using Microcontroller"** - Volume. 5 Issue. 1, - 2020, International Journal of Innovative Science and Research Technology (IJISRT), www.ijisrt.com. ISSN - 2456-2165, PP: - 638-642. https://goo.gl/DF9R4u
- **"IoT Based Personal Device for Diabetic Treatment & Management"** - The International Journal of Hyperconnectivity and the Internet of Things (IJHIoT), www.igi-global.com. ISSN - 2473-4365, PP: - 1-12. https://www.igi-global.com/article/internet-of-things-based-personal-devicefor-diabetes-mellitus-treatment and management/304441
- **"Reinforcement Learning Based Legged Locomotion of Quadrupedal in a complex Environment"** - Solid State Technology (SST), ISSN - 0038-111X, PP: -6276-6283. http://solidstatetechnology.us/index.php/JSST/article/view/10715

CERTIFICATIONS

- Salesforce AI Associate
- Machine Learning by Stanford University
- A-Z Python Programming Fundamentals
- Raspberry Pi Platform and Python Programming
- SDN Crash Course (OpenFlow, Mininet, RYU)
- An Introduction to Programming the Internet of Things (IoT) Specialization

ACHIEVEMENTS

- 2nd Prize - Project EXPO 2017, Thadomal Shahani Engineering College
- 3rd Prize - Biogenesis 2016, Department of Bioscience and Bioengineering, IIT Bombay
- Volunteered at ISAAC 2014, organized by IEEE Committee
- Participated in Robotic Workshops and Philips Healthcare seminars