Greshma Shaji

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EDUCATION

Masters in Data Science 10/2022 | Erlangen, Germany

Friedrich-Alexander-Universität Erlangen-Nürnberg

Specialization: Machine Learning and Artificial Intelligence

Type of credits: 80/120

Bachelor of Technology in Computer Science and Engineering(Honours) 08/2017 – 06/2021 | Trivandrum, India

APJ Abdul Kalam Technological University

Final grade: 1.6

Higher Secondary Education (12th grade) 06/2015 – 03/2017 | Pathanamthitta, India

Catholicate Higher Secondary School

PROFESSIONAL EXPERIENCE

BMW 09/2024 – 02/2025 | Munich, Germany

Software Engineering Intern

- Contributed to the development of the QUARK framework for BMW-specific quantum and classical hardware applications.
- Collaborated with cross-functional teams to model, evaluate, and optimize quantum applications for automotive use.
- Resolved dependency issues, improved code quality, and ensured adherence to PEP8 standards.
- Enhanced architectural models connecting quantum computing theory to real-world automotive applications.
- Led efforts to improve unit testing for better robustness and coverage.
- Contributed to AI Agent Workflow project, focusing on planning agent optimization and prompt refinement for multi-agent systems.
- Managed technical documentation and Jira tasks to streamline project workflow and tracking.

SAP 02/2024 – 07/2024 | Walldorf, Germany

Machine Learning Operations Engineer (MLOps) Working Student

- Error Handling Improvement: Developed an HTML report generator using Go in Azure pipelines, reducing pipeline error identification time by 30% and enhancing operational efficiency.
- API Integration: Integrated a REST API to facilitate error communication with an LLM, increasing error resolution speed by 25%.
- Data Manipulation: Utilized Excel for data tasks, improving data analysis accuracy by 20%.
- Resource Optimization: Designed and implemented a Go-based resource cleanup module, reducing manual workload by 50% and preventing resource wastage.
- Voice-enabled Chatbot Development: Created a voice-enabled chatbot using pyttsx3, SentenceTransformer, and SAP BTP's GPT-4-32k, reducing pipeline query resolution time by 40%.
- Backend Development: Developed a Flask backend to handle voice queries, streamlining chatbot interface operations.

Fraunhofer IIS 06/2023 – 12/2023 | Nürnberg, Germany

Student Research Assistant

- Recommendation System Development: Contributed to advanced recommendation system, improving patient treatment planning precision by 20%.
- Data Analysis Enhancement: Enhanced data analysis capabilities using Python, increasing analytical efficiency by 30%.

- Prediction Accuracy: Improved prediction accuracy and reliability by implementing and fine-tuning a Random Forest Classifier, achieving a 15% boost in model performance.
- Model Transparency: Integrated mlflow for model transparency and reproducibility, ensuring consistent workflow documentation.
- Team Collaboration: Fostered teamwork by establishing a well-maintained GitLab code repository, improving collaboration and code quality by 25%.

Retorio 10/2022 – 04/2023 | Munich, Germany

Working Student in Quality Assurance

- Test Automation Framework Development: Designed and developed test automation frameworks using Puppeteer and Jest, reducing test execution time by 40%.
- CI Integration: Integrated automation frameworks with GitLab CI, enhancing testing efficiency by 35%.
- Bug Identification: Conducted manual testing to identify bugs and issues, improving platform stability by 25%.
- Comprehensive Test Coverage: Scripted test cases in JavaScript, ensuring 95% test coverage.
- Performance Reporting: Reported daily performance metrics to the development team lead, ensuring timely delivery of high-quality scripts.
- Documentation: Documented test procedures and results, facilitating future reference and ensuring reproducibility.

IBM 08/2021 – 09/2022 | Bangalore, India

Software developer

- Automation Testing and DevOps: Conducted UI automation testing and DevOps using Puppeteer, JavaScript, and Ansible, reducing manual testing efforts by 60%.
- Automated Test Scripts: Developed automated test scripts using Puppeteer, JavaScript, Jest, Allure, and Python, increasing test coverage by 50%.
- Framework Development: Built a new automation framework for IBM Cloud Pak for Data, improving test efficiency by 45%.
- Test Result Analysis: Analyzed test results daily, improving defect detection rate by 30%.
- Mentoring and Code Reviews: Mentored team members and participated in code reviews, enhancing code quality by 25%.
- Use Case and Specification Development: Developed use cases, user interface specifications, and user requirement documents, ensuring clear and precise project documentation.
- Reporting: Generated reports using Allure framework, improving transparency and communication with stakeholders.
- Agile Participation: Attended daily scrum meetings, actively sharing risks and roadblocks, and ensuring smooth project progress.

LANGUAGES

English (C2) **German** (A2) **Malayalam** (C2)

PUBLICATIONS

Detecting COVID-19 from Chest X-Ray Images using Deep Learning 2021

IEEE

2021 5th International Conference on Information Systems and Computer Networks (ISCON), 2021, pp. 1-4

SKILLS

Programming Languages:
JavaScript, Python, GO

Databases:
SQL (MySQL), MongoDB

DevOps & Test Automation:
Jenkins, Ansible, Azure DevOps, Puppeteer, Jest, Jasmine, POSTMAN, SOAP UI

AI and Machine Learning
TensorFlow, Keras, Pandas, NumPy, Matplotlib, Scikit-Learn, Reinforcement Learning, AI Agent Systems, Prompt Optimization

Technical Documentation:
Confluence, Markdown, LaTeX

Agile Methodology:
Agile daily scrum, Jira for project tracking and management

Software Development
HTML5, CSS , REST API creation and integration

Development Tools:
Visual Studio Code (VS Code) , Git , Figma

Containerization:
Docker, Kubernetes

Natural Language Processing:
SentenceTransformer, GPT-4, Meta llama

Problem Solving:
Strong analytical and problem-solving skills

Operating system:
Windows, MacOS, Linux

PROJECTS

Detecting COVID-19 from Chest X-Ray Images using Deep Learning 08/2020 – 03/2021

This project aimed to identify COVID-19 in chest X-rays using deep learning models. Given the impact of COVID-19 on respiratory epithelial cells, X-rays can determine the condition of a patient's lungs. The goal was to use pre-trained models to develop an image classification model that predicts COVID-19 in chest X-ray scans with high accuracy.

- **Models Used:** Employed four pre-trained models for comparison.
- **Best Model:** DenseNet201 achieved the highest accuracy of 96.54% in detecting COVID-19 from chest X-rays.
- **Implementation:** Used TensorFlow and Keras as neural network frameworks.
- **Data Source:** Images collected from the Kaggle repository.
- **Impact**: The model can be used by medical professionals to quickly identify COVID-19 positive patients using chest X-ray scans on any system

3D Dendritic Spine Analysis using Deep Learning 04/2023 – 08/2023

Designed and executed a research project focused on analyzing dendritic spines, critical structures in brain function associated with learning, memory, and plasticity.

- **Neural Networks**: Utilized pre-trained neural networks within DeepD3, annotated and validated across diverse datasets.
- **Training**: Trained the DeepD3 model using microscopy data, achieving outstanding results with Mean Squared Error (MSE) loss for both dendritic spines and dendrites.
- **Predictions**: Generated predictions based on benchmark 3D image stacks, creating 3D regions of interest (ROIs) for dendritic spines.
- **Comparison**: Conducted a thorough comparison between the generated ROI results and human-annotated data, calculating recall and precision metrics to evaluate the model's performance.
- **Impact**: Successfully applied deep learning techniques to automate the quantification of dendritic spines, advancing the understanding of neural structures crucial for learning and memory.

OsmXchange: Online Marketplace for Power Voltage Services 10/2023 – 03/2024

Led the "Starting Business Ideas @ FAU" project at FAU's Innovation Lab as Chief Marketing Officer (CMO) and Backend Developer, focusing on Wearable and Ubiquitous Computing.

- **Requirement Collection**: Played a pivotal role in collecting requirements for the OsmXchange platform from Omicron and contributing to the initial Figma design.

- **User Interviews**: Conducted user interviews to refine project requirements and iteratively improved the design.
- **Backend Development**: Utilized backend development skills in Node.js, Express.js, and MongoDB to create a robust prototype.
- **Project Presentation:** Presented a compelling pitch in the final round, culminating in the successful completion of the startup idea.
- **Impact:** Showcased effective integration of marketing strategies and technical development expertise, leading to the project's success.

INTERESTS

- Tech Blogging
- Reading Science Fiction
- Hiking and Outdoor Adventures
- Puzzles and Problem Solving