AGASTHYANATH GS

PYTHON | AI | DATA SCIENCE | ML

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PROFESSIONAL SUMMARY

- Extensive technical expertise as a senior software engineer in AI/ML with 5 years of experience in developing and optimizing deep learning solutions for edge, embedded, and cloud-based environments.
- Skilled in transfer learning, model development, retraining, pruning, optimization, and deployment across TensorFlow, Keras, and PyTorch-based architectures.
- Proficient in Python-based Jupyter Notebook pipeline creations and application creation for AI models.
- Demonstrates in-depth knowledge of Python programming, including libraries such as Scikit-learn, TensorFlow, NumPy, Pandas, Matplotlib, Seaborn, OpenCV, and Flask.
- Experienced in ONNX model porting and conducting standardized benchmarking of AI solutions from leading semiconductor companies and strong background in building scalable, production-ready systems using Flask, Docker, and AWS, with a focus on efficient deployment for MPUs, MCUs, and edge devices.
- Recognized for providing effective solutions and on-schedule project delivery, earning praise from clients.
- Strong commitment to superior communication and teamwork, consistently driving collaboration and optimal results in diverse project environments.

WORK EXPERIENCE

QUEST-GLOBAL, Kochi

Sr Software Engineer - AI/ML | Mar 2023 – Present

- Created python based Jupyter pipelines for AI models like MobilenetV2, BYOM, segformer for TAO-TLT project.

- Pipeline consist of model training, pruning, retraining, evaluation, inference and deployment to boards like rzv2h, rzv2l, ra8d1 etc.
- Created a RAG-Based QA chatbot for client. Used open AI model, semantic chunking and FAISS.
- Integrated RHUMI compiler and tflite quantization part with the python backend code for transfer learning toolkit.
- Done structured pruning and model optimization for transfer learning models and done porting models for rzv2l and rzv2h boards.
- Worked in Benchmarking for AI solutions offered by top semi-conductor firms.
- Used the Matplotlib and Seaborn libraries to create charts depending on the model's performance across various boards.
- Compared the effectiveness of several AI technologies developed by the companies.
- Created python based application for BMS project using PyQt and PyQt designer which mimics the hardware and stimulates data.

MEMSTECH, Coimbatore

Data Scientist | Jan 2021 – Mar 2023

Project: Decision Support System (DSS)

- Streamline vendor selection with DSS, leveraging previous customer data stored in client database to make informed predictions, all within the integrated Order Management System.
- Actively involved in daily standup calls and task assigned on Jira.
- Collecting and analyzing data from client database using MySQL.
- Conducted Data Wrangling, Data Optimization and Pre Processing before building a classification model.
- Performed Feature Engineering on Data using python libraries like Numpy, Pandas, Matplotlib, seaborn.
- Data was balanced by using the SMOTE oversampling technique.
- Constructed and trained the model using Keras (TCN), and Naive Bayes Ensemble algorithm.
- Analyzed model prediction accuracy using accuracy score, classification report and confusion metrics.

- Created the Api for the model using Python Flask, JSON, Joblib, OS, Pickle, Sklearn, mysql.connector.
- Built a Docker image, deployed it to an AWS EC2 instance, ran it inside a container, linked EC2 to a DNS and Application Load Balancer.

Project: Fault Motor Detection (IOT)

- The objective of motor fault detection is to accurately predict the status of motor bearings while in operation.
- This is achieved through the use of Nordic Thingy 52 sensors that collect crucial data and the BLED112-V1 Bluetooth module, which facilitates seamless data transfer and monitoring the health of motor bearings.
- Collected data from motor bearing using Nordic Thingy 52 sensors and divided into 30 batches, with each batch consisting of a minimum of 250 points, Further divided each batch into multiple continuous sequences of 25 points each.
- Performed Feature Engineering and Data Cleaning using Python libraries such as Numpy, Pandas, and Seaborn.
- Calculated the net acceleration from the axial acceleration for input data.
- Built and trained a model using Random Forest and SVM algorithms.
- Analyzed the model performance using binary classification metrics such as accuracy, confusion metrics, classification report, and ROC.
- Uploaded the live predictions to a database using MySQL Connector.
- Visualized and monitored the results using Grafana and sent alerts to clients if the model consistently predicts a faulty motor for 5 consecutive predictions.

Project: Mask Detection

- The Mask Detection system is implemented in an organization to ensure that employees are wearing masks properly.
- The camera captures and processes the images, then sends the live output to a monitor and stores the faces of employees who are not wearing masks correctly in a database.
- Conducted data augmentation and preprocessing on image data. Used SSD MobileNet v2 as the model for detection and classification.
- Utilized metrics such as average precision, mAP, and IoU for model evaluation and developed a Python API for uploading images to the database using Python Flask.

INFOLKS, Palakkad

Python Developer | Aug 2020 – Jan 2021

- As a Python developer, I created APIs based on the client requirements using both Flask and Django frameworks.
- For working with image data, I utilized the JSON, OS, and OpenCV packages in Python.

TECHNICAL SKILLS

- **AI/Data Science:** Python, Machine Learning, deep learning, Data Analysis, Statistics, Computer Vision, Data Mining, Feature Engineering, Transformers, Gen-AI, RAG, Open Al, Hugging Face.
- **Libraries/Frameworks:** NumPy, Pandas, scikit-learn, Keras, TensorFlow, PyTorch, OpenCV, langchain, RNN, LSTM.
- **Data Visualization Tools:** Grafana, Tableau, Matplotlib, Seaborn, Amazon Quick Sight.
- **API Development & Backend Tools:** Django, Flask, JSON, PyQt, Qt Designer.
- **Databases & Tools:** FAISS, Pinecone, MySQL, MySQL Workbench.
- **Deployment, Cloud Platforms & Tools:** Docker, AWS (EC2, RDS, Sage Maker, IAM, Route 53, Load Balancer), Azure, Heroku.
- **Boards Worked:** RZV2L, RZV2H, VK-RA8D1, EK-RA8D1, EK-RA8M1, i.MX RT600.

EDUCATION & CERTIFICATIONS

- **Bachelor of Technology in Electronics and Communication** | 2014-2018 | Jawaharlal College of Engineering and Technology - Palakkad, Kerala.
- **Certified Data Scientist (IABAC):** Data mites, Bangalore.
- **Embedded Systems:** Emertxe, Bangalore.