AGASTHYANATH GS

PYTHON | AI | DATA SCIENCE | ML

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KOCHI, KERALA

agasthyanath-gs

English, Malayalam, Tamil

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- 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

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.

SKILL

- **AI/Data Science :** Python, Machine Learning, deep learning, Data Analysis, Statistics, Computer Vision, Data Mining, Feature Engineering, Transformers, Gen-AI, RAG,Open AI, 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.

1. actively involved in daily standup calls and task assigned on **Jira**.
2. collecting and analyzing data from client database using **MySQL**.
3. Conducted **Data Wrangling**, Data Optimization and **Pre Processing** before building a classification model.
4. Performed **Feature Engineering** on Data using **python** libraries like Numpy, **Pandas**, Matplotlib, **seaborn.**
5. Data was balanced by using the **SMOTE oversampling** technique.
6. Constructed and trained the model using **Keras (TCN)** , and **Naive Bayes Ensemble** algorithm.
7. analyzed model prediction accuracy using accuracy score, classification report and confusion metrics.
8. created the Api for the model using Python **Flask**, JSON , Joblib, OS, Pickle, **Sklearn, mysql.connector**.
9. 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**.

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.

1. 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.
2. 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.
3. Built and trained a model using **Random Forest** and **SVM** algorithms.
4. Analyzed the model performance using **binary classification metrics** such as **accuracy, confusion metrics, classification report, and ROC**.
5. 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.

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.

EDUCATION

Bachelor of Technology
Electronics and Communication
2014-2018
Jawaharlal College of Engineering and Technology - Palakkad, Kerala

CERTIFICATION

Certified Data Scientist (IABAC)
Data mites, Bangalore

Embedded Systems
Emertxe, Bangalore

PARTICIPATIONS

- In-plant Training at **KELTRON**, Trivandrum
- Participated in zonal round of NRC conducted by ARK Techno solutions Mumbai Pvt. Ltd and Robocart.com

SOFT SKILLS

- Problem solving & Critical Thinking
- Excellent communication skills.
- Thrives in a team environment.