KALI KOUSIK THANABALAN

AI Engineer and Researcher

MSc in Artificial Intelligence, University of Surrey

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PROFILE

Proven ability to thrive in lean, fast-paced teams where ownership, speed, and innovation are core values. I possess expertise in computer vision and NLP, using tools like OpenCV, TensorFlow, PyTorch, and LLM APIs. My experience spans deep learning for image processing, hyperspectral imaging, textual analysis, and leveraging large language models (LLMs) for various applications.

EDUCATION

MSc - Artificial Intelligence – *Apr 2024*
[University of Surrey](#)
Guildford, Surrey, United Kingdom

BE - Computer Science and Engineering – *Oct 2020*
[PSNACET](#) affiliated to Anna University
Dindigul, Tamil Nadu, India

EXPERIENCE

INDUSTRIAL IMAGING SOFTWARE ENGINEER(Full-time) – *Apr 2024 - present*
[PyrOptik Instruments](#) / Sheffield
Working in the development of softwares to capture and process multispectral and hyperspectral camera data. Involved in multiple projects and stages of projects such as Hyperspectral smartphone camera and IR Medical Imaging.

- Built and optimized hyperspectral image processor that has 3D data (datacube) from 400-1000 nm and used deep learning to segment objects.
- Assisted in building the Kotlin app to capture the hyperspectral images through smartphone.
- Using YOLOV8 built a model to identify objects in IR images and segment them.

AI SOFTWARE ENGINEER (Part-time) – *Jan 2024 – Mar 2024*
[Eco-Shaper](#) / Guildford
Employed as the only AI Engineer for a Carbon Footprint Calculator Product. Proposed an innovative idea to integrate the LLM to the previous pipeline and also implemented the pipeline for them.

- Integrated an LLM to a Carbon Footprint calculator using Azure AI Studio.
- Added vector database to query calculations and provide suggestions for reducing carbon footprint.
- Created a ML model to provide predictions for the next 5 quarters of Carbon Footprint.

CHATBOT DEVELOPER (Part-time) – *Aug 2023 - Oct 2023*
[University of Surrey](#) / Guildford
Acted as a student developer to refine the chatbot which was developed previously and had primitive responses. The aim of the chatbot is to provide answers for queries on accommodation by the students.

- Received basic training in Microsoft AI technology
- Co-Developed an AI powered chatbot for servicing enquiries from students.
- Hands on experience with Azure AI studio to integrate the bot

COMPUTER VISION ENGINEER (Full-time) – *Jul 2021 – Dec 2022*
Tango IT Solutions / Chennai
Worked as a computer vision Developer in Retail analysis software. Adapted to the startup environment and took up many responsibilities for the team like IT admin and was a critical resource. The product was used by many retailers like Lenskart, L'Occitane, etc.
● Implemented Instance Segmentation with mask-RCNN on custom data.
● Rapidly learnt CUDA and QT and took ownership for both in the firm.

MEMBER OF TECHNICAL STAFF (Full-time) – *Jul 2020 – Jun 2021*
Zoho Corporation / Chennai
Team member in the development of Exchange Reporter Plus, a product that helps in the analysis of exchange servers and its users/groups. A major product used by many governments and corporations. Handled full-stack development of the product.
● Developed a filter for the reports generated, created a new report section.
● Optimized powershells scripts to reduce the time to retrieve data from the server.
● Collaborated with the testing team to fix issues raised in the KANBAN board.

SOFTWARE ENGINEERING INTERN (Full-time) – *Jan 2019 – Feb 2019*
HCL Technologies / Madurai
Interned at the only automation team of the whole organization. Learned the tools used for automation and orchestration and the projects under development for automation.
● Developed scripts to automate IT services with powershell and ML.
● Automated a script to receive and analyze types of tickets and elevate tickets.

PROJECTS

Public Transport Rerouting - Public bus routing system to optimize bus routes. Using YOLO V3 and MultiLinear Regression for processing the routes the bus routes are identified and routed based on demand and supply concept.

Emotion Classification - From the dataset provided by Hugging face, emotions expressed in the comments section of reddit are collected and classified using multiple class classification. Experimented the data on SVM, LSTM, GRU and Bidirectional GRU. Also deployed a flask app with docker and orchestration.

Music Genre Classification - Experimental project on classifying music based on its genre. 100 songs are used for training and testing and experimented over Efficient Net, Audio Signal Transformer (AST) and Self Supervised AST.

Vehicle Re-Identification - Academic project on Vehicle Re identification, with the data collected and provided by the university, experimented the data on algorithms like resnet50, resnet101 and swin transform.

NeRF with Helmholtz Stereopsis - Using the NeRF and PS-NeRF as a basement for the reconstruction of 3D scenes and images, created a new loss function on the idea of Helmholtz stereo to refine the reconstruction and reduce the input data.

SKILLS

PROGRAMMING LANGUAGES	Java, JavaScript, Python, Kotlin and C/C++ .
FRAMEWORKS	ReactJS, Android, EmberJS, Struts and QT.
CLOUD TECHNOLOGIES	AWS S3 storage, servers and Azure AI Studio
ML / DL LIBRARIES	Pytorch, OpenCV, Numpy, Pandas and Matplotlib.
OTHERS	Git, CUDA, Powershell and Linux Shell.