KAVINTHA WIJESINGHE

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AI ENGINEER

Results-driven AI/ML Engineer with a strong foundation in electronic engineering and a proven ability to design, develop, and deploy innovative AI solutions. Skilled in machine learning, deep learning, computer vision, and cloud deployment, with hands-on experience optimizing models that reduced processing times by 40% and improved forecast accuracy by 25%. Motivated by continuous learning and problem-solving, with a passion for applying AI to real-world challenges and mentoring teams to deliver scalable, impactful solutions.

PROFESSIONAL EXPERIENCE

Polymer Products Impex (PVT) Ltd   *July 2025 -Present*
Freelance AI Engineer (Outsourced Project)

Outsourced project focused on applying Large Language Models (LLMs) to automate production workflows, employee logging processes, and order placement, while delivering real-time reporting and analytics for management.

- Fine-tuned LLaMA LLM with Unsloth to automate workflows and employee logging.
- Built backend with Python, Flask, LangChain, and LungGraph for automation and reporting.
- Developed dashboards: Streamlit (prototype) and React.js (enterprise deployment).
- Automated report and graph generation to support management decisions.
- Delivered AI pipelines that improved accuracy and reporting timelines.

South Eastern University of Sri Lanka   *Aug 2024 - March 2025*
Temporary Instructor

- Assisted in teaching undergraduate courses in Networking, Electronics, and Data Structures & Algorithms.
- Conducted tutorials, lab sessions, and practical demonstrations, supporting students' technical learning.
- Provided academic guidance and mentoring, helping students strengthen problem solving and project skills.
- Supported faculty in grading, evaluations, and curriculum delivery.

Dockyard Total Solution (Colombo, Sri Lanka)   *Sep 2022 - Feb 2023*
Software & Network Engineer - Intern

- Developed web and mobile apps using React, React Native, Angular, Node.js, and Express.js.
- Built part of the company's internal Employee Management System using .NET.
- Created Power BI dashboards for operational insights and reporting.
- Supported networking as a Junior Network Engineer, assisting with:
- LAN/WAN configuration and network device setup (routers, switches, firewalls).
- Troubleshooting connectivity issues and ensuring secure communication.
- Monitoring system performance and implementing basic network security measures.

TECHNICAL SKILLS

- **Programming Languages:** Python, C++, Java, SQL, HTML/CSS
- **Artificial Intelligence:** Machine Learning, Deep Learning, Natural Language Processing, Computer vision, Generative AI & LLMs (including GPT, Gemini, LLaMA , Falcon LLM)
- **Core AI Concepts:** Neural Network Architectures, Algorithm Optimization, Statistical Analysis, Data Structures and Algorithms, Model Evaluation and Validation
- **Technologies & Frameworks:** TensorFlow, Keras, PyTorch, scikit-learn, Hugging Face, LangChain, OpenCV, CNN, RNN, Transformer Networks, RAG techniques, YOLO, Deep SORT, ByteTrack, FairMOT, Ollama, React, React Native, Anguler
- **MLOps & Deployment:** MLflow, Kubeflow, Docker, AWS, CI/CD, FastAPI, Flask, AWS SageMaker
- **Tools & Platforms:** Linux/Ubuntu, Git & GitHub, Jira, Streamlit, Faiss, Pinecone, ChromaDB, Midjourney

ACADEMIC QUALIFICATION

University of Moratuwa
MSc in Data Science & AI Engineering

Aug 2025
PRESENT

South Eastern University of Sri Lanka
B.Sc. (Hons) in Electronic & Electrical Engineering

2019- 2024

University of Colombo
Bachelor of Information Technology

2023- 2025

PROJECT EXPERIENCE

AI Voice Agent for Order Placement via Phone Call - *Python, Twilio, Deepgram API, Asyncio, LangChain LangGraph, WebSockets.*

July 2025

Developed a BCI system that enables individuals with disabilities to type by looking at a virtual keyboard. Brain signals are captured using electrodes, sent through a signal acquisition device, and processed by a neural network to classify the focused key,

- Integrated Twilio for phone call handling and media streaming.
- Used Deepgram's speech recognition (ASR) and text-to-speech (TTS) for natural conversations.
- Enabled the AI to execute order placement and business logic through function calls.
- Created a seamless user experience with real-time voice interaction and order confirmation.
- Prototyped and tested the AI agent for phone-based order placement.

AI-Powered Web Scraping Agent for Travel Planning - *Python, Streamlit, BrightData, BeautifulSoup, Selenium, DuckDuckGo API, LangChain, Ollama/Claude (LLMs).*

May 2025

This project developed an AI-powered agent that helps users plan their trips by scraping travel-related data from the web. The system uses natural language instructions to find flight options, hotel suggestions, restaurant recommendations, and local insights, making trip planning easier and more personalized.

- Users input their travel details in natural language.
- The AI scrapes data and provides flight options, hotel suggestions, and local recommendations.
- The agent also offers personalized insights and travel tips through a chat interface.

Brain-Computer Interface (BCI) for Disabled Communication - *Python, TensorFlow, Keras, MATLAB, Altium (PCB Design), LTsPice (EEG Circuit Design), Arduino IDE.*

Oct 2024

Developed a BCI system that enables individuals with disabilities to type by looking at a virtual keyboard. Brain signals are captured using electrodes, sent through a signal acquisition device, and processed by a neural network to classify the focused key,

- BCI: Enabled communication by detecting brain signals when users focus on virtual keyboard keys.
- Signal Acquisition Device and Headware: Designed a system to capture and transmit brain signals to a PC.
- Signal Classification and Neural Network: Developed signal classification algorithms and a neural network to accurately identify the focused key from brain signals.
- Virtual Keyboard: Built a virtual keyboard that types based on brain activity.
- Click here to watch the prototype project video

Security Gate Automation with ALPR - *Python, OpenCV, YOLO, Computer Vision,TensorFlow, Flask*

Feb 2024

Developed an automated security gate system using Automatic License Plate Recognition (ALPR). The system detects and recognizes license plates using YOLO and CNN, replacing manual gate operations with an automated solution, and includes a Flask web app for user interaction.

- YOLO and CNN used for license plate detection and recognition.
- Built a small-scale prototype to simulate the gate automation.
- Developed a Flask web app for system interaction, hosted on Heroku.
- Click here to watch the prototype project video

Real-Time Face Mask Detection & Monitoring - *Python, YOLOv4-tiny, Darknet, OpenCV, Google Colab, Computer Vision*

Oct 2021

Developed a real-time system to detect and classify face mask usage using YOLOv4-tiny. The system monitors individuals via webcam, ensuring compliance with mask-wearing guidelines during the COVID-19 pandemic.

- Real-time face mask detection using YOLOv4-tiny.
- Trained on labeled datasets via Google Colab.
- Live detection and monitoring through a webcam.
- Click here to watch the project video

CERTIFICATIONS

Machine Learning Specialization (Coursera) - ↗
- Supervised Machine Learning: Regression and Classification
- Advanced Learning Algorithms.
- Unsupervised Learning, Recommenders, Reinforcement Learning

Google Project Management: Professional Certificate (Coursera) - ↗
- Foundations of Project Management
- Project Initiation: Starting a Successful Project
- Project Planning: Putting It All Togethe

IBM AI Engineering Professional Certificate (Coursera) (Reading) - ↗
- Machine Learning with Python
- Introduction to Deep Learning & Neural Networks with Keras
- Introduction to Neural Networks and PyTorch

Deep Learning Specialization (Coursera) (Reading) - ↗
- Neural Networks and Deep Learning
- Improving Deep Neural Networks
- Structuring Machine Learning Projects
- Convolutional Neural Networks
- Sequence Models

REFERENCES

Mr. Dishan Udayanga

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