DILANGA GALAPITA MUDIYANSELAGE

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OBJECTIVE

Dynamic and results-oriented professional with 7+ years of experience in the field of AI/ML and Data Science. Adept at developing innovative algorithms and solutions to address complex challenges in diverse industries. Ready to bring creativity, expertise, and a passion for innovation.

EDUCATION

Ph.D. in Information Technology at the University of Nebraska at Omaha, NE. *Aug 2024*
Concentration: Artificial Intelligence, GPA 3.81
Dissertation: Self-Supervised Representation Learning on Multi-Label Classification

Master of Computer Science at the University of Nebraska at Omaha, NE. *Dec 2018*
Concentration: Database and Knowledge Engineering, GPA 3.70
Thesis: Multi-Label Classification Using Higher-Order Label Clusters

Bachelor of Computer Science Honors at University of Peradeniya, Sri Lanka. *Jan 2014*
Major: Computer Science, Statistics and Mathematics, GPA 3.75
Thesis: Performance Comparison of Emerging HEVC Standard with H.264/AVC and frame interpolation based Error Correction Technique for HEVC decoder.

SKILLS

Programming languages	Python, Java, C#.NET, C++, PHP
DevOps and Cloud	CI/CD, AWS, Docker, MLFlow, Falsk/FastAPI, Gunicorn, Git/GitHub
Frameworks	LangChain/FAISS, OpenCV, PyTorch, TensorFlow, Scikit-image, SKLearn
Database	MySQL, MSSQL server, Microsoft Access, MongoDB
Web technologies	RESTful/SOAP, JavaScript, XML, JSON, Dash

EXPERIENCE

AI Developer May 2022 – Aug 2022
AI Developer Intern - GUARDIAN RFID® *MapleGrove, MN*

- Contributed to the correction officers, by machine learning model building, testing, and deployment tasks using PyTorch, Flask/FastAPIs, Dockers, CI/CD testing, and maintenance.

Graduate Research Assistant Aug 2016 - Now
University of Nebraska at Omaha *Omaha, NE*

- Building ML models to accommodate pattern recognition and prediction tasks on medical images (Toxoplasmosis fundus images, OCT images, Adaptive Optics) in collaboration with the Byers Eye Institute, Stanford University.
- Building deep segmentation models for bacteria cell segmentation on metal material SEM images, in collaboration with the South Dakota School of Mines and Technology.
- Unsupervised (Cover Coefficient-based Clustering) and supervised machine learning approach to enhance generic high dimensional Multi-label classification performance.

Software Engineer Jan 2013 – Jan 2015
hSenid Mobiles Solution (Pvt) Ltd *Sri Lanka*

- Contributed to the e-Local Government project, by developing Android RESTful Client mobile application and Server-side RESTful web services. Country-wide tax collection application system in Sri Lanka.

PROJECTS

- **Adaptive course syllabus design with LLMs**: Developed a customizable course syllabus and content generator using LLMs. Leveraged multiple LLM agents to evaluate and enhance course outlines and lesson plans by refining the prompts. (Langchain, Huggingface, ChatGPT API, MongoDB)
- **Bio-material info crawler**: Developed a web API utilizing custom LLMs to effectively retrieve relevant information from unstructured text collections of bio-material research articles and implemented Retrieval-Augmented Generation (RAG) techniques to enhance accuracy and reduce hallucinations.(Langchain, Huggingface, ChatGPT API, Docker, Flask)
- **HelloGaze**: A distortion correction App for Age-Related Macular Degeneration (AMD) patients, designed for Windows operating systems. (C#.NET, Tobii Eye Tracking Pro SDK, MSSQL)
- **Customer Churn Prediction**: built an ensemble classification model (with ∼90% accuracy) to predict the churn probability of a customer accounts. Processed over 25k employee data records from multiple data sources (sponsored by Buildertrend). (R, GGally, dplyr, tidyverse)
- **Semi-Join simulation**: Windows-based GUI application to illustrate the process of Semi-Join SQL for large data in in-memory using C#.NET.

SELECTED PUBLICATIONS

- **D. Abeyrathna** et al, "An AI-Based Approach for Detecting Cells and Microbial Byproducts in Low Volume Scanning Electron Microscope Images of Biofilms", Frontiers in Microbiology, Systems Microbiology, 2022.
- **D. Abeyrathna** et al, "Segmentation of Bacterial Cells in Biofilms Using an Overlapped Ellipse Fitting Technique" IEEE International Conference-BIBM, 2021.
- **D. Abeyrathna** et al, "Directed Fine Tuning Using Feature Clustering for Instance Segmentation of Toxoplasmosis Fundus Images," IEEE International Conference-BIBM, 2021.
- **D. Abeyrathna** et al, "Anomaly Proposal-Based Fire Detection for Cyber-Physical Systems" International Conference on Computational Science and Computational Intelligence, 2019.
- **D. Abeyrathna** et al, "Analyzing and predicting player performance in a quantum cryptography serious game." International Conference on Games and Learning Alliance, Springer, 2018.

BOOK CHAPTERS / PATENTS

- **D. Abeyrathna** et al, book chapter "An Overview of Machine Learning" in "Machine Learning in 2D Materials, CRC Press, 2023 (ISBN 9780367678203)
- Contributed to a U.S. Provisional Patent titled "Artificial Intelligence-Based Methods to Objectively Identify the Foveal Center in Adaptive Optics Retinal Imaging," Application No. US 63/497,679.