Dilanga, Galapita Mudiyanselage

Artificial Intelligence | Data Science | Research

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EDUCATION

PH.D. CANDIDATE, IT

Artificial Intelligence,
UNO, GPA 3.81
Jan 2019 - Aug 2024

MASTER OF SCIENCE

Computer Science,
UNO, GPA 3.70
Aug 2016 - Dec 2018

SKILLS

LANGUAGES

• Python • R • Java • Javascript
• C#.NET • C++

TOOLS & FRAMEWORKS

• SKLearn • OpenCV
• PyTorch • TensorFlow
• SKImage • SQL • Matplotlib
• Seaborn • Tableau
• HuggingFace • LangChain/FAISS
• RESTful/SOAP

DATABASE

• MySQL • MSSQL • MongoDB

DEVOPS AND CLOUD

• Docker • MLFlow • Git
• Falsk/FastAPI • CI/CD
• Gunicorn • DVC
• AWS • SageMaker

COURSEWORK

GRADUATE

• Machine Learning
• Statistics
• Data Structures and Algorithms
• Mathematics
• Quantitative Analytics
• Data Visualization & Storytelling
• DBMS & Data Mining
• Time Series Analysis

AWARDS

• Best Presentation, Hackathon, CSG international, 2020
• Best Visualization, Datapalooza, Mutual of Omaha, 2019
• Advantage Scholarship, UNO, 2016

WORK EXPERIENCE

AI Developer – Intern - GUARDIAN RFID® MapleGrove, MN

May 2022 - Dec 2022

- Contributed to the correction officers, by building ML models, testing, and deployment tasks, for face/gait recognition and staggering scheduling
- PyTorch, Flask/FastAPIs, Dockers, CI/CD, DVC

AI Researcher & Developer – University of Nebraska (UNO)

Aug 2016 - Present

- Foundational ML models for pattern recognition, prediction on medical images (Toxoplasmosis fundus images, OCT images, Adaptive Optics), Collaboration : (Byers Eye Institute, Stanford University) (Video Link)
- Deep segmentation models for bacteria cell segmentation on material SEM images, Collaboration : (South Dakota School of Mines and Technology)
- Cover Coefficient Clustering approach for high dimensional multi-label data classification, (MS Thesis)

Software Engineer – hSenid Mobiles Solution (Pvt) Ltd

Jan 2013 - Jan 2015

- Android RESTful Client mobile application and Server-side web services for Country-wide tax collection application (e-Local Government, Sri Lanka)

SELECTED PROJECTS

Adaptive course syllabus design with LLMs

Langchain | Huggingface | ChatGPT API | MongoDB | StreamLit

- Developed a customizable course syllabus and content generator using LLMs and heterogeneous data sources (course curriculums, and surveys)
- Leveraged multiple LLM agents to evaluate & enhance course outlines, and lesson plans using prompt engineering, dynamic content modification

Bio-material info crawler

NLP | Langchain | Huggingface | ChatGPT API | Docker | Flask | StreamLit

- Developed a web API utilizing custom LLMs to effectively retrieve relevant information (figures, Tables) from unstructured text collections of bio-material research articles (∼1000)
- Implemented Retrieval Augmented Generation (RAG) to enhance content retrieval accuracy

Customer Churn Prediction

R | GGally | dplyr | tidyverse

- Built an ensemble classification model with over 90% prediction accuracy to predict customer churn probability.(Best modal performance slides)
- Processed over 25,000 real customer data records and an additional ∼15,000 records from multiple open data sources
- Sponsored by West Corporation-Omaha (GitHub Link)

Kaggle - HealthCare Data Analysis and Visualization

Python | StreamLit | Plotly | SQL | Pandas

- Performed data cleaning, transformations, feature selection, exploratory data analysis (EDA), and Visualization on Kaggle tabular dataset (∼10,000)
- Created descriptive dashboard visualizations for the data and deployed on StreamLit (Dashboard Link)

RELATED PUBLICATION

- **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.
- **D. Abeyrathna** et al, ”Super resolution-based methodology for self-supervised segmentation of microscopy images.” Frontiers in Microbiology, Systems Microbiology, 2024.
- **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,”, 2023, Application No. US 63/497,679.