Aathman Tharmasanthiran

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EDUCATION

Master of Science in Computer Science Aug 2023
Purdue University, West Lafayette, IN

B.Sc. Engineering (Hons) in Computer Science and Engineering Oct 2016 - Mar 2021
University of Moratuwa, Sri Lanka

- **GPA 3.87/4.2 First Class Honors**

G.C.E. Advanced Level - Physical Science Stream 2015
St. John's College, Jaffna

- Distinctions in Combined Mathematics, Physics, Chemistry, and General English

INDUSTRIAL EXPERIENCE

Software Engineer - Machine Learning Apr 2021 - Jul 2023
| Research & AI Team, WSO2 LLC, Sri Lanka

- Responsible for conducting research on different preprocessing techniques to extract features from Ballerina Syntax Trees and used LLMs to provide code suggestion and code generation features for the users.
- Experimented with various prompt designs for different Large Language models to translate Natural language user commands to API calls and execute them.

Research Intern June 2019 - Dec 2019
| Research & AI Team, WSO2 LLC, Sri Lanka

- Worked on the automatic tuning of Ballerina microservice thread pool size based on real-time load configurations, using Gaussian Process and Bayesian optimization and conducted research on the automatic tuning of Database server parameters and tried to utilize literary works in that area.

RESEARCH EXPERIENCE

AI based motion planning for multi-agent rearrangement Ongoing

- Researching on developing a novel motion planning algorithm that can improve the decision making capabilities of mobile robots that are working on picking and moving objects to a required target location.

Threat detection in Consumer Video Surveillance | Final Year Project 2020-2021

- A novel approach to incorporate multiple aspects, such as human behaviors and facial emotions found in videos, to improve the accuracy of Consumer video surveillance
- Responsible for developing the Multi-Aspect Learning GSOM algorithm

Anomaly detection in Industrial IoT settings | Final Year Project 2020-2021

- This research focuses on Anomaly detection in Industrial IoT environments using a modified version Geometric SMOTE algorithm and a novel GSOM classifier.
- Responsible for developing GSOM classifier and running experiments using various Machine Learning models.

PUBLICATIONS

Peer-reviewed journal:

- V. Christopher*, **T. Aathman***, K. Mahendrakumaran*, R. Nawaratne, D. De Silva, V. Nanayakkara, and D. Alahakoon, “Minority Resampling Boosted Unsupervised Learning with Hyperdimensional Computing for Threat Detection at the Edge of Internet of Things” IEEE Access, vol. 9, pp. 126646–126657, 2021. (Sep 2021) [pdf]

Manuscript under internal review:

- **T. Aathman*,** K. Mahendrakumaran*, V. Christopher*, R. Nawaratne, D. De Silva, V. Nanayakkara, and D. Alahakoon, “Human affect and behavior based Threat prediction”

* - Equal contributions by authors

MENTORING AND SUPERVISING EXPERIENCE

Mentor, WSO2 | University of Moratuwa - Faculty of IT Aug 2022 - Jun 2023

- Volunteered to guide student groups in their Software Engineering Industry project and also prepared and reviewed supporting materials required for those eight students.

Co-supervisor, WSO2 | University of Moratuwa - Department of Computer Science & Engineering Aug 2022 - Jun 2023

- Volunteered to supervise a three member Research project team, guiding them about problem formulation, research, etc., on the topic “AI-based anomaly detection of microservice graphs”.

PRESENTATIONS

Machine Learning Observability Presentations to Research & AI team members 2022
I WSO2

- Conducted a total of six sessions on ML Observability, introducing the concepts and exploring how they can be adopted into WSO2 Machine Learning pipelines.
- During these sessions, I emphasized the importance of monitoring the model's performance, data bias, fairness and interpretability of the models during the training and inference process to improve the overall performance of the models.
- Responsible for the successful adoption of Machine Learning Observability for the WSO2 Performance Analyzer.

HONORS AND AWARDS

- **Mahapola Higher Education Merit Scholarship** 2016-2021

  This scholarship is awarded to undergraduate students who demonstrate outstanding academic performance in the G.C.E Advanced Level examination and become top 10% in the country.
- **Winner** (Team Leader) in **HackX** 2018

  Inter-university hackathon organized by the University of Kelaniya
- **Winner** (Team Leader) in **IEEE SS12 Pilot Competition** 2018

  Hackathon organized by the IEEE Student Branch, University of Moratuwa
- **Southeast Asian level Finalist Representing Sri Lanka**
  (Team Leader) in **IEEE SS12** 2018

  Hackathon organized by IEEE Education Society Madras Section
- **Finalist** (Team Leader) in **Yarl Geek Challenge** 2018

  Hackathon organized by Yarl IT Hub

CERTIFICATIONS

- Udacity Deep Reinforcement Learning Nano Degree, 2021 [view]
- Mathematics for Machine Learning: Multivariate Calculus, 2022 [view]
- Machine Learning Engineering for Production (MLOps) Specialization, 2022 [view]
- Deploying Machine Learning Models in Production, 2022 [view]
- Machine Learning Data Lifecycle in Production, 2022 [view]
- Machine Learning Modeling Pipelines in Production, 2022 [view]
- Introduction to Machine Learning in Production, 2022 [view]

VOLUNTEER EXPERIENCE

Conference Proceedings Reviewer Apr 2022

| 15th IEEE International Conference on Human System Interaction held in Melbourne, Australia, July 2022

- Reviewed several research papers and provided feedback.

Volunteer contributor Jun 2022 - Jun 2023

| Lanka Software Foundation

- Reviewed and collaborated with members of the General Information Graph project, providing feedback and suggestions to improve the project.

Volunteer member 2016 - 2021

| Tamil Literary Association, University of Moratuwa

- Responsible for conducting a G.C.E Advanced Level Pilot examination, "Mora Exam", including volunteer proofreading, paper correction, and student answer marking.

OTHER EXPERIENCE

ArthroCure | Hackathon 2018

An exercise video game for arthritis patients using a Kinect sensor and Unity game engine that motivates the users to perform useful exercises, relieving them from the severe effects of arthritis.

TECHNICAL SKILLS

Programming languages and Data Science packages:

Python, PyTorch, TensorFlow, Keras, pandas, NumPy, sci-kit learn, Java

Databases: MySQL, MongoDB

Other: Docker, Unity

OS: Ubuntu, Windows