

Aathman Tharmasanthiran

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EDUCATION

Purdue University, West Lafayette, IN

Aug 2023-May 2025

M.Sc. in Computer Science (*Specializing in Machine Learning*)

(expected)

University of Moratuwa, Sri Lanka

Oct 2016-Mar 2021

B.Sc. Engineering (Hons) in Computer Science and Engineering

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

WORK EXPERIENCE [\[link\]](#)

Software Engineer-Machine Learning

Apr 2021-Jul 2023

| Research & AI Team, WSO2 LLC, Sri Lanka (Branch of WSO2, Santa Clara, CA, USA)

LLM Copilot for WSO2 Mobile app

- Developed a GPT-3.5 powered Copilot or AI agent that can understand users' natural language commands and invoke WSO2 internal APIs to perform users' intent and respond with outcomes providing a seamless chat experience with potential applications ranging from booking meeting rooms via chat to getting email summaries.

Low code suggestion feature

- Led the design and development of the Low code suggestion feature that can suggest useful Low code elements that the user might use next, speeding up development time up to 3.5 times.
- Experimented with different preprocessing techniques to clean and extract features and researched various Deep Learning models ranging from LSTMs to LLMs such as GPT-3 to provide accurate Low code suggestion and code generation features for the users.

MLOps pipeline for Low code suggestion

- Co-developed a fully automated MLOps pipeline for Low code suggestions, that includes preprocessing, model training, evaluation, and serving capabilities driving the periodic ML update cycle from several days to 1 hour.

Research Intern

Jun 2019-Dec 2019

| Research & AI Team, WSO2 LLC, Sri Lanka (Branch of WSO2, Santa Clara, CA, USA)

- Optimized the performance of Ballerina microservices by implementing an automatic thread pool size tuner. This system utilized real-time load configurations and a Gaussian Process Bayesian optimization model, resulting in a significant improvement in 99th percentile latencies by up to 26%.

AI RESEARCH EXPERIENCE [\[link\]](#)

Graduate Student Researcher

Sep 2023-Present

| CoRAL Lab, Purdue University

- Conduct research on multi-robot long horizon planning using the Monte Carlo Tree Search (MCTS) algorithm to efficiently rearrange objects into complex desired goal locations.
- Ensured collision-free navigation for the multiple mobile robots all the while aiming to achieve a highly efficient plan that can produce interesting emerging behaviors for the robots reducing the overall distance traveled.

TECHNICAL SKILLS

- Python | Java | C# | C | Flask | MySQL | Weaviate | MongoDB | Git | Version Control | Docker | Unity
- TensorFlow | Keras | PyTorch | pandas | NumPy | sci-kit learn | Computer Vision | Natural Language Processing | LLMs | Vector Databases | Machine Learning | Deep Learning | Reinforcement Learning | Robotics Motion Planning
- Azure services (Eventhubs, Functions, Virtual Machines, MSSQL, Storage, Queues, Azure OpenAI) | Cloud Computing | Unit Testing | Integration Testing | Game Development
- Object Oriented Programming | Event-Driven architecture | Microservice architecture | Serverless | RESTful APIs | OAuth2 | Containerization | Agile | Ubuntu | Windows | macOS

Computer Vision based Threat Detection in Consumer Video Surveillance [\[link\]](#)

Mar 2021-Feb 2022

| Undergraduate Research

- Developed a novel Computer Vision approach that incorporates multiple aspects in a video, such as human behaviors and facial emotions, to achieve a 5% improvement in accuracy in identifying threatening behaviors compared to state-of-the-art consumer video surveillance algorithms.

Unsupervised Anomaly Detection in Industrial IoT settings [\[link\]](#)

Jan 2020-Mar 2021

| Undergraduate Research

- Experimented on Anomaly detection in Industrial IoT environments using a modified version of the Geometric SMOTE algorithm and a novel GSOM classifier which performs on par with the state-of-the-art models while still not requiring labels for training.

Multi-Adversarial Agent Pathfinding with Obstacles

Oct 2023-Dec 2023

- Developed a planning algorithm that can help an agent to navigate the environment, which has randomly moving obstacles to reach a goal position while avoiding the adversarial agents trying to prevent it from reaching the goal.
- This problem has several practical applications including in autonomous driving, games, and military operations where a single agent has to avoid adversaries and reach a particular destination.

Ride Fare Estimation for a Ride Hailing Company

Sep 2020-Nov 2020

- Experimented with various Data Science techniques and Machine Learning models to predict the ride fare given a set of information about the ride such as GPS coordinates, time of the day, weather, etc.

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

CERTIFICATIONS

- 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 [\[view\]](#)
- Udacity Deep Reinforcement Learning Nano Degree, 2021 [\[view\]](#)

AWARDS

Mahapola Higher Education Merit Scholarship

Jan 2017

| Issued by University Grants Commission, Sri Lanka

- 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.

Southeast Asian level Finalist Representing Sri Lanka

Sep 2018

| (Team Leader) in IEEE SS12 2018

- We presented a video game concept for Arthritis patients, that helps them to perform the prescribed exercises entertainingly. The game is developed using Unity3D and uses a Kinect Sensor to capture the body movements of the user and this will let them collect points if they perform the exercises correctly.