Yasith Jayawardana, Ph.D.

https://yasith.dev | yasith.j@outlook.com

RESEARCH INTERESTS

Deep Learning, Computational Science, HCI, Research Software

EDUCATION

Ph.D. in Computer Science, Old Dominion University, Norfolk VA (4.00 GPA)
(2019 – 2024)

- Dissertation - "StreamingHub, A Realtime Biosignal Processing Framework for Lab Scale Experimentation" (Advisor – Sampath Jayarathna)
- Awards – Dominion Graduate Scholar (2019)

B.Sc. in Computer Science Engineering, University of Moratuwa, Sri Lanka (3.84 GPA)
(2015 – 2018)

- Capstone - "MSStack, A Full Stack Microservice Framework with Business Modeling"
- Awards – First Class Honors, Dean's List (6 of 8 Semesters)

PROFESSIONAL

Research Scientist II, Center for AI in Science and Engineering, Georgia Tech, Atlanta GA
(2025 – Present)

- Building Cybershuttle — a secure platform to connect research compute, code, and data, so researchers can run experiments of any scale and track results from anywhere.

Researcher (Contract), Center for AI in Science and Engineering, Georgia Tech, Atlanta GA
(2024 – 2025)

- Built a system to easily switch between local and HPC runtimes on JupyterLab.

Co-Founder, Marketrix Inc, San Francisco, CA
(2024 – Present)

- Building autonomous AI agents for software self-support. These agents continuously battle-test their knowledge through real use. SaaS companies can use them to automate QA, onboarding, troubleshooting, and documentation workflows within minutes.

Postgraduate Research Fellow, Center for Advanced Imaging at Harvard, Cambridge MA
(2022)

- Explored methods to interpret the outcome of single-cell bacteria image classifiers.
- Trained Neural ODEs to approximate the dynamics of multimode fibers.

Summer Research Intern, Los Alamos National Laboratory, Los Alamos NM
(2021, 2022)

- Built a platform to extract URLs from scholarly PDFs, create robust links by archiving their content, and replace the original URLs with these robust links.

Graduate Assistant, Computer Science, Old Dominion University, Norfolk VA
(2019 – 2024)

- Trained ML methods to diagnose ASD from discrete wavelet coefficients of EEG / IRT data.
- Built a probabilistic estimator to forecast updates to webpages using archived and timestamped content, improving crawl scheduling efficiency.
- TA – Data Structures and Algorithms, Principles of Programming Languages, Computers in Society, Programming with C++, Data Science and Analytics

- Awards - Outstanding Teaching Assistant (2022)

Developer / Team Lead, DesignBoo (PVT) Ltd, Sri Lanka
(2018, 2019)

- Developed a React Native app for doctor consultations for The GP Service (UK) Ltd.
- Integrated single sign-on (SSO) and migrated web apps from Angular V2 to V4.
- Set up CI/CD from Bitbucket to AWS and CloudWatch logging, managed DevOps.

Undergraduate Assistant, Computer Science Engineering, University of Moratuwa, Sri Lanka
(2018)

- Teaching / Grading – CS2963 Presentation Skills

Software Engineering Intern, WSO2 (PVT) Ltd, Sri Lanka
(2017)

- Indexed support docs in Elasticsearch and trained TensorFlow models for query lookup
- Developed an API to answer support questions and integrated it with DialogFlow

Co-Founder, Onion Inc, Sri Lanka
(2016 – 2019)

- Developed a Point-of-Sales, Inventory, Reporting, Loan, & Payroll System for Storefronts in Dambulla Economic Centre, Sri Lanka

PROJECTS

Cybershuttle (2024 – Present)

- Building a platform that brings together research data, code, and compute for seamless execution of research workflows.

Real Time Attention (2023 – Present)

- Building real-time algorithms to track users' mental effort and attention from eye movements.

OoD Hypothesis Tests (2022 – 2024)

- Two-sample hypothesis testing approach leveraging sample homogeneity to enhance out-of-distribution detection for trained models.

Sparse Imager (2022)

- Perceiver-style attention model for whole-slide imaging in a sparse multi-resolution format, capturing key regions in high resolution.

MGaze (2020 – 2021)

- Web-based platform for multi-user eye tracking via a single webcam.

Containerized Deployment of Apache OODT (2019)

- Created Dockerfiles for core components of OODT. Added a Maven Archetype to generate docker/compose files for new OODT projects.

StreamingHub (2019 – 2024)

- Biosignal processing framework for assembling computational elements into real-time workflows and processing live and recorded biosignal data streams.

DengAI (2017)

- Machine learning model to predict dengue spread using weather and geography features. Awarded 1st Place in DrivenData 2017.

Raven (2016 – 2017)

- Platform for Real-time customer satisfaction monitoring for the hospitality industry. Uses CCTV feeds for face tracking, emotion analysis, satisfaction monitoring, and real-time alerts. Awarded 3rd Place in TadHack 2017.

SERVICES

Invited Talks

- Re-Streaming and Synthesis for Real-Time Analysis, WSDL Research Expo, ODU, 2021
- Machine Learning on Data Streams, STRS Camp, ODU, 2020
- Diagnosing ASD from Brain Activity, CS395 Invited Lecture, ODU, 2020
- Data Science with EEG Signals, CS Summer Research Workshop, ODU, 2019

Peer Review

- Medical Image Computing and Computer Assisted Intervention (MICCAI), 2024
- ACM/IEEE Joint Conference on Digital Libraries (JCDL), 2020, 2021, 2022, 2023
- IEEE International Conference on Big Data (BigData), 2023
- ACM Conference on Human Information Interaction and Retrieval (CHIIR), 2020, 2021
- ACM Conference on Intelligent User Interfaces (IUI), 2020, 2021
- ACM Augmented Human International Conference (AH), 2019

Volunteering

- Annual Trick or Research Event, ODU, 2019 – 2024
- 34th Great Computer Challenge, ODU, 2019
- Science Connection Day, ODU, 2019
- STEAM on Spectrum, VMASC ODU, 2019

Leadership

- Vice President, Sri Lankan Association, ODU, 2022

TEACHING

- CS250 Problem Solving and Programming II, ODU, 2021
- CS620 Introduction to Data Science and Analytics, ODU, 2021
- CS300T Computers in Society, ODU, 2020
- CS361 Data Structures and Algorithms, ODU, 2020
- CS355 Principles of Programming Languages, ODU, 2020
- CS2963 Presentation Skills, ODU, 2018

AWARDS

- Outstanding Teaching Assistant, 2022, Old Dominion University
- Sigma Xi Grant in Aid of Research (GIAR), 2020 – Amount: $500
- Dominion Graduate Scholar, 2019, Old Dominion University
- First Class Honors, 2018, University of Moratuwa
- Dean's List (6 of 8 Semesters), 2014-2018, University of Moratuwa

MEMBERSHIPS

- Graduate Student Member, Honor Society of Phi Kappa Phi (PKP)
- Student Member, ACM
- Student Member, IEEE
- Student Member, IESL

TECHNICAL EXPERTISE

- **Languages -** Python, Go, Java, C/C++, C#, Julia, PHP, HTML/JS/CSS
- **Frameworks (ML) -** PyTorch, Lightning, TensorFlow, TF.js, OpenCV, Scikit-Learn, SciPy, NumPy, Pandas
- **Frameworks (Web) -** Node.js, Angular, React, React-Native, Flask
- **Databases -** MySQL, PostgreSQL, MongoDB, SQLite, Redis, DynamoDB
- **Cloud -** Docker, Kubernetes, S3, RDS, EC2, ELB, EKS
- **Biosensor Software -** Pupil Capture, EEGLab, Node-RED, LabStreamingLayer, WEKA, NeuroPype, Orange
- **Biosensor Hardware -** PupilLabs Core, Empatica E4, Emotiv Insight, CGX Quick-30

PUBLICATIONS

Journal Articles

[2025] G Jayawardena, **Y Jayawardana**, J Gwizdka, "Measuring Mental Effort in Real Time Using Pupillometry," In Journal of Eye Movement Research (JEMR), MDPI.

[2024] Y Abeysinghe, B Mahanama, G Jayawardena, **Y Jayawardana**, M Sunkara, AT Duchowski, VG Ashok, and S Jayarathna, "A-DisETrac Advanced Analytic Dashboard for Distributed Eye Tracking," In International Journal of Multimedia Data Engineering and Management (IJMDEM), IGI Global.

[2022] B Mahanama, **Y Jayawardana**, S Rengarajan, G Jayawardena, L Chukoskie, J Snider, S Jayarathna, "Eye Movement and Pupil Measures: A Review", In Frontiers in Computer Science, Frontiers Media**. [Editor's Pick]**

[2019] S Jayarathna, **Y Jayawardana**, M Jaime, S Thapaliya, "Electroencephalogram (EEG) for Delineating Objective Measure of Autism Spectrum Disorder", in Computational Models for Biomedical Reasoning and Problem Solving, IGI Global.

Conference Proceedings

[2025] **Y Jayawardana,** S Jayarathna, DN Wadduwage**,** "Thinking in Groups: Permutation Tests Reveal Near-Out of Distribution". **[In Review]**

[2025] G Jayawardena, **Y Jayawardana**, S Jayarathna, "A Real-Time Approach to Capture Ambient and Focal Attention in Visual Search", in ACM Symposium on Eye Tracking Research (ETRA).

[2024] **Y Jayawardana,** D Wannipurage, E Abeysinghe, and S Marru, "Enhancing Research Productivity: Seamless Integration of Personal Devices and HPC Resources with the Cybershuttle Notebook Gateway" in Practice and Experience in Advanced Research Computing: Human Powered Computing (PEARC). ACM.

[2023] H Kariyawasam, S Jayasinghe, **Y Jayawardana**, DN Wadduwage, "Differentiable Modeling of Nonlinear Dynamics in Multimode Fibers" in IEEE Photonics Conference (IPC), IEEE.

[2022] **Y Jayawardana,** VG Ashok, S Jayarathna, "StreamingHub: Interactive Stream Analysis Workflows" in ACM/IEEE Joint Conference on Digital Libraries (JCDL), ACM.

[2022] G Jayawardena, **Y Jayawardana**, S Jayarathna, J Högström, T Papa, D Akkil, AT Duchowski, V Peysakhovich, I Krejtz, N Gehrer, K Krejtz. "Toward a real-time index of pupillary activity as an indicator of cognitive load" in Procedia Computer Science.

[2021] **Y Jayawardana,** G Jayawardena, AT Duchowski, S Jayarathna, "Metadata-Driven Eye Tracking for Real-Time Applications" in ACM Symposium on Document Engineering (DocEng), ACM.

[2020] **Y Jayawardana,** AC Nwala, G Jayawardena, J Wu, S Jayarathna, ML Nelson, CL Giles, "Modeling Updates of Scholarly Webpages Using Archived Data" in IEEE International Conference on Big Data (Big Data), IEEE.

[2020] **Y Jayawardana,** S Jayarathna, "Streaming Analytics and Workflow Automation for DFS" in ACM/IEEE Joint Conference on Digital Libraries (JCDL), ACM.

[2020] B Mahanama, **Y Jayawardana**, S Jayarathna, "Gaze-Net: Appearance-Based Gaze Estimation using Capsule Networks" in Augmented Human Conference (AH), ACM.

[2019] D Haputhanthri, G Brihadiswaran, S Gunathilaka, D Meedeniya, **Y Jayawardana**, S Jayarathna, M Jaime, "An EEG based Channel Optimized Classification Approach for Autism Spectrum Disorder" in Multidisciplinary Engineering Research Conference (MERCon), IEEE.

[2019] **Y Jayawardana,** S Jayarathna, "DFS: A Dataset File System for Data Discovering Users", in ACM/IEEE Joint Conference on Digital Libraries (JCDL), ACM **[Best Poster Nominee]**

[2019] **Y Jayawardana,** M Jaime, S Jayarathna, "Analysis of Temporal Relationships between ASD and Brain Activity through EEG and Machine Learning", in International Conference on Information Reuse and Integration (IRI), IEEE. **[Best Student Paper]**

[2018] **Y Jayawardana,** R Fernando, G Jayawardena, D Weerasooriya, I Perera, "A Full Stack Microservices Framework with Business Modelling" in International Conference on Advances in ICT for Emerging Regions (ICTer), IEEE.

Dissertation

[2024] **Y Jayawardana** "StreamingHub: A Realtime Biosignal Processing Framework for Lab Scale Experimentation", Doctor of Philosophy, Computer Science, Old Dominion University.

Preprints / Symposiums

[2024] **Y Jayawardana,** A Ahmad, BS Ahluwalia, R Ahmad, S Jayarathna, DN Wadduwage**,** "Hypothesis-Driven Deep Learning for Out of Distribution Detection". **[arXiv]**

[2022] **Y Jayawardana,** BJ Cain, M Klein, SM Jones, "PDF Server: Robustifying URL References in PDF Documents," Los Alamos National Laboratory (LANL). **[Symposium]**

[2020] **Y. Jayawardana,** S. Jayarathna, "Towards a Consistent Metadata Format for Biosignal Data Analysis", in ACM/IEEE Joint Conference on Digital Libraries (JCDL). **[Symposium]**

Newsletters and Press Coverage

[2024] Marketrix Revolutionizes In-App Product Support with Groundbreaking AI | Accesswire

[2020] Yasith Jayawardana Receives Sigma-Xi Grant | Old Dominion University