

YASITH JAYAWARDANA

Ph.D. Student

E&CS 3110, Department of Computer Science
Old Dominion University
Norfolk, VA 23529

yasith@cs.odu.edu

+1 (757) 762-8922

<https://yasith.dev>

RESEARCH INTERESTS

Deep Learning, Uncertainty Estimation, Robust ML, Interpretable AI, Reproducibility, Streaming Analytics

EDUCATION

Ph.D. Computer Science @ Old Dominion University, Norfolk, VA Deep Learning, DSP, Interpretable AI, Reproducibility, Uncertainty Estimation) • Awards: Dominion Graduate Scholar (2019) • Advisor: Dr. Sampath Jayarathna	2019 – 2023* GPA: 4.00
B.Sc. Computer Science & Engineering @ University of Moratuwa, Moratuwa, LK Machine Learning, DSP, Bioinformatics, Distributed Systems, Calculus, Probability, Statistics • Awards: First Class Honors, Dean's List (Semesters 1,2,4,6,7,8)	2015 – 2018 GPA: 3.84

EXPERIENCE

Postgraduate Research Fellow @ Harvard University, Cambridge, MA Center for Advanced Imaging at Harvard • Projects: DL-Guided Sparse Imaging, QPM Bacteria	2022 – Now
Graduate Assistant @ Old Dominion University, Norfolk, VA Department of Computer Science • Projects: StreamingHub, MGaze, ASDetection, HACs	2019 – Now
Graduate Research Intern @ Los Alamos National Laboratory, Los Alamos, NM LANL Research Library • Projects: Robust PDF Links	2021 Summer, 2022 Summer
Developer / Team Lead @ DesignBoo (PVT) Ltd, Colombo, LK The GP Service (UK) • Projects: GP Service Platform	2018 – 2019
Undergraduate Assistant @ University of Moratuwa, Moratuwa, LK Department of Computer Science • Projects: Teaching, Grading	2018 Jan – Jun
Software Engineering Intern @ WSO2 (PVT) Ltd, Colombo, LK WSO2 Support Team • Projects: Semantic-KB	2017 Jun – Dec

TECHNICAL SKILLS

Languages	Python, Java, C/C++, C#, Julia, PHP, HTML/JS/CSS
Frameworks (ML)	TensorFlow, TensorFlow-Probability, TF.js, PyTorch, OpenCV, Pandas, NumPy
Databases	MySQL, PostgreSQL, MongoDB, SQLite, Redis, DynamoDB
AWS	S3, RDS, EC2, Route 53, CloudWatch, ELB, EKS
Frameworks (JS)	Node.js, Angular, React, React-Native
IDEs	PyCharm, IntelliJ, Visual Studio, XCode, VSCode
Software	WEKA, NeuroPype, Node-RED, LabStreamingLayer, Orange, Pupil Capture
Devices	PupilLabs Core, Empatica E4, Emotiv Insight, CGX Quick-30
OS	Windows, Android, MacOS, Ubuntu, iOS
Version Control	Git, SVN
Creative Tools	Adobe Photoshop, Adobe Illustrator, Draw.io

PROJECTS	
DL-Guided Sparse Imaging	2022 – Now
Python, PyTorch, SciPy, NumPy, Wandb Building differentiable, budget-constrained, multi-resolution-imaging decision models for a downstream task. I first designed and optimized Perceiver-based models for a downstream task, and then compared the predicted decisions with random selection.	
QPM-Bacteria	2021 – Now
Python, PyTorch, GeoTorch, BoTorch, SciPy, NumPy, Wandb Building interpretable deep learning algorithms for culture-free early detection of antibiotic drug resistant bacteria using Quantitative Phase Microscopy (QPM). Using deep learning, I first predicted biomarkers of antibiotic drug resistance from microscopic images of bacteria cells, and then quantified their predictive uncertainty through Bayesian methods.	
StreamingHub	2019 – Now
Node-RED, Python, LibLSL, WebSocket, Node, TF.js, Docker, Kubernetes, HTML/JS/CSS A stream-oriented framework to create scientific workflows through visual programming and flow-based programming. It provides a web interface to create scientific workflows, connect to sensory data streams, pipe sensory data through workflows, and visualize analytics in real-time. A repository of preset workflows is also provided for common use cases. Additionally, it supports re-streaming of stored data into workflows, and generating synthetic data using stored data.	
Robust PDF Links	2021 Summer, 2022 Summer
Python, PyPDF2, PDFIUM, GROBID, PDFMiner, Flask, Linked Data, HTML/JS/CSS A web service to generate robust links for web resources. It allows to upload PDF documents, extract URLs from PDF annotations/text, invoke the Robust Links Service on URLs to preserve their content in web archives, and thereby generate robust links. Upon generating robust links, their availability can be announced to external systems via Linked Data Notifications. It also allows to view PDF documents side-by-side with robust links.	
MGaze	2020 – 2021
MediaPipe, TF.js, Node, Parcel, HTML/JS/CSS Collaborative project for webcam-based, multi-user eye tracking on the browser. It eliminates the need for additional eye-tracking equipment by performing facial detection, facial landmarks detection, iris detection, and gaze estimation through webcam feeds.	
ASDetection	2019 – 2020
TensorFlow, Python, NumPy, Pandas, PyWavelets Using EEG and Thermography data to predict a diagnosis of ASD. First, features were extracted from pre-processed EEG and thermography data. Here, spatiotemporal features were extracted from EEG data using wavelet transformation. Next, machine learning models were trained on features to predict a diagnosis of ASD.	
HACS	2019 – 2020
Python, Internet Archive, SciPy, NumPy, Pandas Estimating the rate of change of the academic web using archived copies of web pages. Here, archived copies are first obtained from the Internet Archive through its CDX Server API. Next, for each web page, archived copies are analyzed to detect when changes have occurred. These changes are then modeled as a Poisson process and used to predict when a page is likely to change in the future.	
Containerized Deployment of Apache OODT	2019 Summer
Java, Maven, Docker, Docker-Compose, Avro, Solr, SLF4J, JIRA, Confluence Created Dockerfiles for each core component in Apache OODT. Added a Maven Archetype to auto-generate Dockerfiles and a Docker-Compose file when creating a new Apache OODT project. Issue tracking was handled using JIRA, and documentation was written using Confluence.	
GP Service Platform	2018 – 2019
React Native, AWS, Docker, Angular, Spring, PostgreSQL, OpenID, OAuth, Bitbucket, HTML/JS/CSS Built a mobile application for making doctor consultations. Re-structured cloud infrastructure on AWS to reduce costs. Set up unified logging using AWS CloudWatch. Created Dockerfiles and Bitbucket Pipelines to build, test, and push build artifacts into AWS. Provided development and production support for the web apps of The GP Service (UK) Ltd. Added single-sign-on capability to web portal. Upgraded web portal from Angular v2 to v4.	
MS-stack	2018 – 2019
Java, Netty, Kafka, Zookeeper, Curator, Git A full-stack, event-driven, microservices framework for Java, with business modeling. It abstracts away the complexities of microservices architecture by providing interfaces to write business logic. The framework internally handles microservice lifecycle, data partitioning, and auto-scaling. It also facilitates generating boilerplate code from Business Process Models.	

Deng-AI	2018 Jan – Jun
Python, Scikit-Learn, Pandas, WEKA A competition hosted by DrivenData, to model the spread of Dengue using weather and geographical information. Built a machine learning model that ranked #1 in 2017.	
Semantic-KB	2017 Jun – Dec
Elasticsearch, TensorFlow, PostgreSQL, NLTK, Scrapy, Flask, Python, DialogFlow, HTML/JS/CSS Internship project at WSO2 Lanka (PVT) Ltd to automate question answering in WSO2 Support portal. Created a document index using Elasticsearch, a reinforcement learning model using TensorFlow to predict document-query relevance, and a search interface using HTML/JS/CSS.	
Tourmate	2017 Jan – Jun
ExpressJS, Node, MongoDB, React, Git, HTML/JS/CSS A web platform aimed at tourists and tour providers. Tourists can discover tour services and make reservations, while tour providers can post and advertise their services.	
Raven	2016 – 2017
Microsoft Emotion API, C# A real-time customer satisfaction monitoring framework for the hospitality industry. It uses camera feeds to detect customer faces, analyze emotions, provide satisfaction ratings, and alert dissatisfactions in real-time.	
Onion	2016 – 2017
C#, WPF, MySQL, Dapper ORM, VSTS A Point-of-Sales, Inventory, Reporting, Loan, & Payroll System for Dambulla Economic Centre, Sri Lanka	
Music School	2016 Jan – Jun
PHP, Laravel, jQuery, MySQL, HTML/JS/CSS A web platform to manage information of a medium sized music school. It supports classroom management, progress tracking, attendance, and payroll.	

PUBLICATIONS

JOURNALS

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*, 2022, Frontiers Media. [\[Featured\]](#)

BOOK CHAPTERS

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*, 2019, IGI Global.

CONFERENCE PROCEEDINGS

Y. Jayawardana, V.G. Ashok, S. Jayarathna, “StreamingHub: Interactive Stream Analysis Workflows”, in *ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 2022, ACM.

Y. Jayawardana, G. Jayawardena, A.T. Duchowski, S. Jayarathna, “Metadata-Driven Eye Tracking for Real-Time Applications”, in *ACM Symposium on Document Engineering (DocEng)*, 2021, ACM.

Y. Jayawardana, A.C. Nwala, G. Jayawardena, J. Wu, S. Jayarathna, M.L. Nelson, C.L. Giles, “Modeling Updates of Scholarly Webpages Using Archived Data”, in *IEEE International Conference on Big Data (Big Data)*, 2020, IEEE.

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

Y. Jayawardana, S. Jayarathna, “Streaming Analytics and Workflow Automation for DFS”, in *ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 2020, ACM. [\[Best Poster Nominated\]](#)

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 *International Multidisciplinary Engineering Research Conference (MERCon)*, 2019, IEEE.

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)*, 2019, IEEE. [\[Best Student Paper\]](#)

Y. Jayawardana, S. Jayarathna, “DFS: A Dataset File System for Data Discovering Users”, in *ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 2019, ACM.

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)*, 2018, IEEE.

DOCTORAL CONSORTIUMS (Not in Proceedings)

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

GRANTS

\$500 – Grants in Aid of Research (GIAR), Sigma Xi 2020

Can we stream Data Analytics alongside Sensory Data and Metadata?

Article: https://www.odu.edu/sci/news/2020/7/yasith_jayawardana_r

AWARDS, HONORS, & SCHOLARSHIPS

Dominion Graduate Scholar, Old Dominion University 2019

First Class Honors, University of Moratuwa 2018

Dean's List, University of Moratuwa Semesters 1,2,4,6,7,8

TEACHING EXPERIENCE

CS250 Problem Solving & Programming II, Dr. Ayman El Mesalami, ODU 2021 Spring

CS620 Introduction to Data Science & Analytics, Dr. Sampath Jayarathna, ODU 2021 Spring

CS300T Computers in Society, Rekha Gupta, ODU 2020 Fall

CS361 Data Structures & Algorithms, Dr. Steven Zeil, ODU 2020 Summer

CS355 Principles of Programming Languages, Dr. Jay Morris, ODU 2020 Summer

CS361 Data Structures & Algorithms, Dr. Zac Howland, ODU 2020 Spring

CS2963 Presentation Skills, Dr. Rapti de Silva, UOM 2018 Spring

SERVICES

INVITED TALKS

Re-Streaming and Synthesis for Real-Time Analysis 2021

Web Science & Digital Libraries (WSDL) Research Group Expo, ODU

Machine Learning on Data 2020

Student ThinSat Research Summer Camp (STRS), ODU

Diagnosing ASD from Brain Activity 2020

CS395: Research Methods in Data and Web Science, ODU

Data Science with EEG 2019

CS Summer Research Workshop, ODU

PEER REVIEWS

ACM/IEEE Joint Conference on Digital Libraries (**JCDL**) 2020, 2021, 2022, 2023

ACM SIGIR Conference on Human Information Interaction and Retrieval (**CHIIR**) 2020, 2021

ACM Conference on Intelligent User Interfaces (**IUI**) 2020, 2021

Augmented Human International Conference (**AH**) 2020, 2021

VOLUNTEERING

34th Great Computer Challenge @ ODU 2019

Trick or Research @ ODU 2019, 2020, 2021

Science Connection Day @ ODU 2019

STEAM on Spectrum @ Virginia Modeling, Analysis, & Simulation Center 2019

MEMBERSHIPS

Graduate Student Member @ Honor Society of Phi Kappa Phi (PKP)

Student Member @ Association for Computing Machinery (ACM)

Student Member @ Institute for Electrical and Electronics Engineers (IEEE)

Student Member @ Institution of Engineers, Sri Lanka (IESL)