

Yasith Jayawardana

Ph.D. Student

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RESEARCH INTERESTS

Streaming Analytics, Data Science, Deep Learning, Signal Processing

EDUCATION

- Jan. 2019 - Present **Ph.D.** in Computer Science
Old Dominion University, Norfolk, VA
GPA – 4.0. | **Awards** – Dominion Graduate Scholar (2019). | **Advisor** – Dr. Sampath Jayarathna. | **Key Courses** – Data Science & Analytics, Information Retrieval, Machine Learning, Data Structures & Algorithms, Computer Architecture, DevOps Containers and Cloud, Database Concepts.
- Jan. 2015 - Dec. 2018 **B.Sc.** in Computer Science and Engineering (First Class Honors)
University of Moratuwa, Sri Lanka
GPA – 3.84. | **Awards** – Dean's List (Semesters 1,2,4,6-8). | **Key Courses** – Human Computer Interaction, Machine Learning, Advanced Algorithms, Data Mining & Information Retrieval, Distributed Systems.

WORK EXPERIENCE

- Jan. 2019 - Present **Old Dominion University**, Norfolk, VA
Graduate Research/Teaching Assistant in Computer Science
- Jun. 2018 - Dec. 2018 **DesignBoo (PVT) Ltd**, Sri Lanka
Freelance Software Developer, Team Lead
- Jan. 2018 - Jun. 2018 **University of Moratuwa**, Sri Lanka
Teaching Assistant in Computer Science
- Jun. 2017 - Dec. 2017 **WSO2 (PVT) Ltd**, Sri Lanka
Software Engineering Intern

TEACHING EXPERIENCE

- Spring 2021 **CS250 – Problem Solving & Programming II**, Old Dominion University
Teaching Assistant for Dr. El Mesalami
CS620 – Introduction to Data Science & Analytics, Old Dominion University
Teaching Assistant for Dr. Sampath Jayarathna
- Fall 2020 **CS300T – Computers in Society**, Old Dominion University
Teaching Assistant for Lecturer Rekha Gupta
- Summer 2020 **CS361 – Data Structures & Algorithms**, Old Dominion University
Teaching Assistant for Dr. Steven Zeil
CS355 – Principles of Programming Languages, Old Dominion University
Teaching Assistant for Dr. Jay Morris
- Spring 2020 **CS361 – Data Structures & Algorithms**, Old Dominion University
Teaching Assistant for Dr. Zac Howland

PUBLICATIONS

BOOK CHAPTERS

1. Sampath Jayarathna, **Yasith Jayawardana**, Mark Jaime, Sashi Thapaliya, “Electroencephalogram (EEG) for Delineating Objective Measure of Autism Spectrum Disorder”, in *Computational Models for Biomedical Reasoning and Problem Solving*, 2019, IGI Global. pp. 34-65.

PEER-REVIEWED CONFERENCE PUBLICATIONS

- 2 **Yasith Jayawardana**, Gavindya Jayawardana, Andrew Duchowski, Sampath Jayarathna, “Eye Movement Replay Simulation and Synthesis for Real-time Analysis”, in *SIGSIM Conference on Principles of Advanced Discrete Simulation (PADS)*, 2021, ACM. (In Review)
3. **Yasith Jayawardana**, Alexander C. Nwala, Gavindya Jayawardana, Jian Wu, Sampath Jayarathna, Michael L. Nelson, C. Lee Giles, “Modeling Updates of Scholarly Webpages Using Archived Data”, in *5th Computational Archival Science (CAS) Workshop at IEEE BigData*, 2020, IEEE. (In Press)
4. Bhanuka Mahanama, **Yasith Jayawardana**, Sampath Jayarathna, “Gaze-Net: Appearance-Based Gaze Estimation using Capsule Networks”, in *11th Augmented Human International Conference (AH)*, 2020, ACM. pp. 1-4.
5. **Yasith Jayawardana**, Sampath Jayarathna, “Streaming Analytics and Workflow Automation for DFS”, in *20th ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 2020, ACM. pp. 513-514. (Nominated for Best Poster)
6. Dilantha Haputhanthri, Gunavaran Brihadiswaran, Sahan Gunathilaka, Dulani Meedeniya, **Yasith Jayawardana**, Sampath Jayarathna, Mark Jaime, “An EEG based Channel Optimized Classification Approach for Autism Spectrum Disorder”, in *5th International Multidisciplinary Engineering Research Conference (MERCon)*, 2019, IEEE. pp. 123-128.
7. **Yasith Jayawardana**, Mark Jaime, Sampath Jayarathna, “Analysis of Temporal Relationships between ASD and Brain Activity through EEG and Machine Learning”, in *20th International Conference on Information Reuse and Integration for Data Science (IRI)*, 2019, IEEE. pp. 151-158. (Best Student Paper)
8. **Yasith Jayawardana**, Sampath Jayarathna, “DFS: A Dataset File System for Data Discovering Users”, in *ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 2019, ACM. pp. 355-356.
9. **Yasith Jayawardana**, Randil Fernando, Gavindya Jayawardana, Dileka Weerasooriya, Indika Perera, “A Full Stack Microservices Framework with Business Modelling”, in *18th International Conference on Advances in ICT for Emerging Regions (ICTer)*, 2018, IEEE. pp. 78-85.

DOCTORAL CONSORTIUMS (Not in Proceedings)

10. **Yasith Jayawardana**, Sampath Jayarathna, “Towards a Consistent Metadata Format for Data Analysis”, in *ACM/IEEE Joint Conference on Digital Libraries (JCDL)*, 2020, ACM.

PRE-PRINTS AND TECHNICAL REPORTS

11. Sampath Jayarathna, **Yasith Jayawardana**, Mark Jaime, Sashi Thapaliya, "Electroencephalogram (EEG) for Delineating Objective Measure of Autism Spectrum Disorder", in *arXiv:1907.01515 [eess.SP]*, 2019. (Extended Preprint)
12. **Yasith Jayawardana**, Alexander C. Nwala, Gavindya Jayawardana, Jian Wu, Sampath Jayarathna, Michael L. Nelson, C. Lee Giles, "Modeling Updates of Scholarly Webpages Using Archived Data", in *arXiv:2012.03397 [cs.DL]*, 2020. (Extended Preprint)
13. Bhanuka Mahanama, **Yasith Jayawardana**, Sampath Jayarathna, "Gaze-Net: Appearance-Based Gaze Estimation using Capsule Networks", in *arXiv:2004.07777 [cs.CV]*, 2020. (Extended Preprint)
14. **Yasith Jayawardana**, Sampath Jayarathna, "DFS: A Dataset File System for Data Discovering Users", in *arXiv:1905.13363 [cs.DL]*, 2019. (Extended Preprint)

INVITED TALKS

1. "Machine Learning on Data". Student ThinSat Research Summer Camp (STRS), Old Dominion University, 2020.
2. "Diagnosing ASD from Brain Activity". CS395: Research Methods in Data and Web Science, Old Dominion University, 2020.
3. "Data Science with EEG". CS Summer Research Workshop, Old Dominion University, 2019.

PROJECTS

1. **StreamingHub** (Ongoing)
Node-RED, Python, LibLSL, WebSockets, 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.
2. **MGaze** (Ongoing)
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.
3. **ASDDetection** (2019)
TensorFlow, Python, NumPy, Pandas, PyWavelets
 Using EEG and Thermography data to predict a diagnosis of ASD. Here, EEG signals were first pre-processed. Simultaneously, features were extracted from Thermography data. Next, a wavelet transformation was applied on each EEG signal to generate features. Machine learning models were then trained from these features to predict a diagnosis of ASD.
4. **HACS** (2019)
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.

5. **TheGPService** (2017)
React Native, AWS, Docker, Docker-Compose, Angular, Spring Boot, PostgreSQL, OpenID-Connect, OAuth2, 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 2.x to 4.x.
6. **Containerized Deployment of Apache OODT** (2019)
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.
7. **MSstack** (2018)
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.
8. **Semantic-KB** (2017)
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, and CSS.
9. **DengAI** (2017)
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.
10. **TourMate** (2017)
Express.JS, 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.
9. **Raven** (2016)
Microsoft Emotion API, C#
 A real-time customer satisfaction monitoring framework for the hospitality industry. It uses camera feeds to detect customer faces, analyze their emotions, and provide satisfaction ratings and dissatisfaction alerts in real-time.
8. **Onion** (2016)
C#, WPF, MySQL, Dapper ORM, VSTS
 A Point-of-Sales, Inventory, Reporting, Loan, and Payroll System for Dambulla Dedicated Economic Centre, Sri Lanka
10. **MusicSchool** (2016)
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.

GRANTS

1. Sigma Xi Grants in Aid of Research (GIAR), “Analytic Streams for Sensory Data: can data analytics be streamed alongside sensory data and metadata to build efficient data pipelines?”, March 2020. Amount: \$500.

SERVICES

- Reviewing (CHIIR) ACM SIGIR Conference on Human Information Interaction and Retrieval, 2020
(JCDL) ACM/IEEE-CS Joint Conference on Digital Libraries, 2020
(AH) Augmented Human International Conference Series, 2020
- Volunteering **34th Great Computer Challenge**, Old Dominion University, 2019
Trick Or Research, Old Dominion University, 2019
Science Connection Day, Old Dominion University, 2019
STEAM on Spectrum, VMASC, Old Dominion University, 2019

AWARDS, HONORS, & SCHOLARSHIPS

Dominion Graduate Scholar, 2019, Old Dominion University
Dean’s List - Semesters 1, 2, 4, 6, 7, and 8, University of Moratuwa, Sri Lanka

SKILLS

Programming Languages - Python, Java, C/C++, C#, HTML, JS, CSS, PHP

Databases – MySQL, MongoDB, Redis, DynamoDB

AWS – S3, RDS, EC2, Route 53, CloudWatch, ELB, EKS

Version Control – Git, SVN

IDEs - PyCharm, IntelliJ, Visual Studio, XCode, VS-Code

Frameworks / Libraries - TensorFlow, TensorFlow.js, Keras, OpenCV, Pandas, NumPy, Angular, React, React-Native, NodeJS

Operating Systems - Windows, Android, iOS, MacOS, Ubuntu

Devices - PupilLabs Core, Empatica E4, Emotiv Insight

Software - WEKA, NeuroPype, Node-RED, Lab Streaming Layer, Orange, Pupil Capture

Creative Tools – Adobe Photoshop, Adobe Illustrator, SmartDraw, draw.io

MEMBERSHIPS

Student Member, Association for Computing Machinery (ACM)

Student Member, Institute for Electrical and Electronic Engineers (IEEE)

Student Member, IEEE Sri Lanka (IESL)