

GAVINDYA JAYAWARDENA

Ph.D. Student (Computer Science) at Old Dominion University, Norfolk, VA

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WORK EXPERIENCE

Graduate Research / Teaching Assistant @ Old Dominion University

📅 Jan 2019–Present 📍 Norfolk, VA

Python NumPy Pandas OpenCV Detectron WEKA Eye-Tracking

Developing a real-time advanced eye movements analysis pipeline • Automated filtering of eye movements from dynamically detected AOIs • Built ML models to predict a diagnosis of ADHD from eye-tracking data • Assessed audiovisual speech-in-noise performance of adolescents with ADHD using eye-tracking.

Summer Research Intern @ Los Alamos National Laboratory

📅 Jun 2021–Aug 2021 📍 Los Alamos, NM

GROBID Python BeautifulSoup Flask HTML

Built a software to extract header information such as title, abstract, keywords, authors, affiliations, and full text from scholarly PDF documents in real-time and process extracted data.

Software Engineering Intern @ Ustocktrade (PVT) Ltd

📅 Jun 2017–Dec 2017 📍 Colombo, Sri Lanka

Java OpenAPI/Swagger Maven Mustache templating HTML CSS JS

Developed a program to reduce documentation efforts by automating the API documentation generation based on code changes.

RECENT PROJECTS

GROBID based Scholarly PDF Header and Full Text Extractor @ Los Alamos National Laboratory

📅 Summer 2021 📍 Los Alamos National Laboratory

GROBID Python BeautifulSoup Flask HTML

Designed and developed a software to extract header information such as title, abstract, keywords, authors, affiliations, and full text from scholarly PDF documents in real-time and process extracted data. Goal was to populate LANL's Review and Approval System, RASSTI's forms with extracted data.

Automate Filtering of Eye Movements @ Old Dominion University

📅 Spring 2020–Fall 2020 📍 DOI: 10.1109/IRI49571.2020.00018

Python Pandas OpenCV Detectron

Designed a study to detect dynamic areas of interest using object detectors and filter eye movement data that falls within the polygonal boundaries of detected dynamic AOIs.

Performance of Adolescents with ADHD Using Eye-Tracking @ Old Dominion University

📅 Summer 2020 📍 DOI: 10.1145/3379156.3391373

Python Pandas NumPy TobiiPro X2-60 eye tracker Tobii Studio analysis software

Conducted a pilot study to assess audiovisual Speech-In-Noise (SIN) performance of adolescents with ADHD compared to age-matched controls using eye-tracking measures. Found that some signal-to-noise ratios shifts noise to a point where processing of speech becomes less automatic and relies more on increased cognitive load.

ADHD Prediction using Eye Movements @ Old Dominion University

📅 Spring 2019 📍 DOI: 10.4018/978-1-5225-7467-5.ch003

WEKA Python NumPy Pandas TobiiPro X2-60 eye tracker Tobii Studio analysis software

Developed a feasibility study to confirm eye movement data as a predictor of a diagnosis of ADHD in adults. Tree-based classifiers performed with 91% accuracy.

Modeling Updates to Web Pages using Archived Data @ Old Dominion University

📅 Spring 2019 📍 DOI: 10.1109/BigData50022.2020.9377796

Internet Archive Python Scikit-Learn NumPy Pandas

Used mementos from IA to build and evaluate stochastic models for the dynamics of the web.

Full Stack Microservices Framework for Java @ University of Moratuwa

📅 Jan 2018–Dec 2018 📍 DOI: 10.1109/ICTER.2018.8615473

ZooKeeper Kafka Curator Freemarket Netty Java Maven

Created a framework that uses distributed messaging for service orchestration, and a business process specification for generating microservices.

ABOUT ME

Self-motivated PhD student looking for a Summer Internship (2022) in Software Development, Data Science or Research, LANL Summer Research Intern (3 months), UStocktrade Software Engineering Intern (6 months), Data Science researcher (2 years).

EDUCATION

Ph.D. (Computer Science) @ Old Dominion University, Norfolk, VA

📅 2019–2023 (Expected) 📍 GPA: 4.00/4.00

Eye-Tracking Data Science Machine Learning

Information Retrieval DevOps, Containers, & Cloud

B.Sc (Computer Science & Engineering) @ University of Moratuwa, Sri Lanka

📅 2014–2018 📍 GPA: 3.85/4.20

Human Computer Interaction Software Engineering

Algorithms Distributed Systems

Database Internals Computer Architecture

ACHIEVEMENTS

- 🏆 Best Student Poster Award (2021,2020) ACM/IEEE JCDL
- 🏆 Irwin B. Levinstein Scholarship (2020) Old Dominion University, Funding: \$2500
- 🏆 Outstanding Researcher Award (2020) Old Dominion University
- 🏆 Best Student Paper Award (2019) MERCon
- 🏆 Dominion Scholar Award (2019) Old Dominion University
- 🏆 Graduated with First Class Honors (2018) University of Moratuwa

SKILLS

Python C# Java PHP MySQL MongoDB

TensorFlow WEKA NumPy Pandas Keras

Laravel Ionic scikit-learn OpenCV Spring

Angular Maven Gradle Neuropype

LabStreamingLayer PupilLabs Pupil Capture

GazePoint GP3 HTC VIVE Pro Eye Tobii

Android Ubuntu Docker Zookeeper

LabStreamingLayer Elasticsearch Solr Lucene

INTERESTS

Eye-Tracking Information Retrieval

Machine Learning Data Science

Distributed Systems API Management

OUTREACH

- 👋 Volunteer, Old Dominion University
Trick or Research (2019)
Science Connection Day (2019)
STEAM on Spectrum (2019)
Great Computer Challenge (2019)
- 👋 Sub-Reviewer
CHIIR (2021), IEEE Big Data (2021), ETRA (2020), JCDL (2020), IUI (2020)

PUBLICATIONS

- Bhanuka Mahanama, Yasith Jayawardana, Sundararaman Rengarajan, **Gavindya Jayawardena**, Leanne Chukoskie, Joseph Snider, and Sampath Jayarathna (2021). In: *Frontiers in Computer Science – Human-Media Interaction*. Vol. 3. Frontiers Media. Chap. Eye Movement and Pupil Measures: A Review, pp. 1–22. DOI: 10.3389/fcomp.2021.733531.
- Mahanama, Bhanuka, **Jayawardena**, **Gavindya**, and Jayarathna, Sampath (2021). “Analyzing Unconstrained Reading Patterns of Digital Documents Using Eye Tracking”. In: *2021 ACM/IEEE Joint Conference on Digital Libraries (JCDL)*. IEEE, pp. 282–283.
- Yasith Jayawardana, **Gavindya Jayawardena**, Andrew T. Duchowski, and Sampath Jayarathna (2021). “Metadata-Driven Eye Tracking for Real-Time Applications”. In: *Proceedings of the 21st ACM Symposium on Document Engineering*. Limerick, Ireland: ACM. DOI: 10.1145/3469096.3474935.
- Jayawardena**, **Gavindya** (2020). “RAEMAP: Real-time advanced eye movements analysis pipeline”. In: *ACM Symposium on Eye Tracking Research and Applications*, pp. 1–4.
- Jayawardena**, **Gavindya** and Jayarathna, Sampath (2020). “Automated Filtering of Eye Gaze Metrics from Dynamic Areas of Interest”. In: *2020 IEEE 21st International Conference on Information Reuse and Integration for Data Science (IRI)*. IEEE, pp. 67–74.
- Jayawardena**, **Gavindya**, Jayarathna, Sampath, and Wu, Jian (2020). “Analyzing the Effect of Reading Patterns using Eye Tracking Measures”. In: *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries in 2020*, pp. 517–518.
- Jayawardena**, **Gavindya**, Michalek, Anne, Duchowski, Andrew, and Jayarathna, Sampath (2020). “Pilot study of audiovisual speech-in-noise (sin) performance of young adults with adhd”. In: *ACM Symposium on Eye Tracking Research and Applications*, pp. 1–5.
- Yasith Jayawardana, Alexander C. Nwala, **Gavindya Jayawardena**, Jian Wu, Sampath Jayarathna, Michael L. Nelson, and C. Lee Giles (2020). “Modeling Updates of Scholarly Webpages Using Archived Data”. In: *2020 IEEE International Conference on Big Data (Big Data)*. Atlanta, GA: IEEE, pp. 1868–1877. DOI: 10.1109/BigData50022.2020.9377796.
- De Silva, Senuri, Dayarathna, Sanuwani, Ariyaratne, Gangani, Meedeniya, Dulani, Jayarathna, Sampath, Michalek, Anne MP, and **Jayawardena**, **Gavindya** (2019). “A rule-based system for ADHD identification using eye movement data”. In: *2019 Moratuwa Engineering Research Conference (MERCOn)*. IEEE, pp. 538–543.
- Jayawardena**, **Gavindya**, Michalek, Anne, and Jayarathna, Sampath (2019). “Eye tracking area of interest in the context of working memory capacity tasks”. In: *2019 IEEE 20th International Conference on Information Reuse and Integration for Data Science (IRI)*. IEEE, pp. 208–215.
- Yasith Jayawardana, Randil Fernando, **Gavindya Jayawardena**, Dileka Weerasooriya, and Indika Perera (2018). “A Full Stack Microservices Framework with Business Modelling”. In: *18th International Conference on Advances in ICT for Emerging Regions (ICTer)*. Colombo, Sri Lanka: IEEE, pp. 78–85. DOI: 10.1109/ICTER.2018.8615473.

ARTICLES

- **Effect of Reading Patterns of Novice Researchers using Eye Tracking**
<https://ws-dl.blogspot.com/2020/04/2020-04-25-effect-of-reading-patterns.html>
This article explains how novice researchers’ eye movements change during a research papers reading task.
- **Lab Streaming Layer (LSL) Tutorial for Windows**
<https://ws-dl.blogspot.com/2019/07/2019-07-15-lab-streaming-layer-lsl.html>
This article explains how to install open source LSL and stream eye movement data from PupilLabs Core eye tracker to NeuroPype academic edition.
- **Use of Cognitive Memory to Improve the Accessibility of Digital Collections**
<https://ws-dl.blogspot.com/2019/06/2019-06-19-use-of-cognitive-memory-to.html>
This article explains a study conducted to investigate eye gaze metrics collected during Reading SPAN task to differentiate the performance of adults with and without ADHD, and how to generalize that study to improve content accessibility for the people with learning disabilities without overloading their cognitive memory.
- **Real-time Header Extraction from Scientific PDF Documents: Summer Research Internship Experience at Los Alamos National Laboratory**
<https://ws-dl.blogspot.com/2021/09/2021-09-23-real-time-header-extraction.html>
This article explains my 2021 Summer research internship experience at Los Alamos National Laboratory.
- **ACM Symposium on Eye Tracking Research and Applications (ETRA) 2021 Trip Report**
<https://ws-dl.blogspot.com/2021/06/2021-06-xx-acm-symposium-on-eye.html>
This article serves as a virtual trip report for the ACM Symposium on Eye Tracking Research and Applications (ETRA) 2021.

INVITED TALKS

- **Introduction to Data Wrangling**
Student ThinSat Research Summer Camp (STRS), ODU (2020)
- **Eye-Tracking for Assessing Speech-In-Noise Performance of Adults with ADHD**
CS395 - Research Methods in Data and Web Science, ODU (2020)
- **Eye Tracking for Predicting ADHD**
ODU CS Summer Workshop, ODU (2019)