

# YASASI ABEYSINGHE

Ph.D. Student, Computer Science, Old Dominion University, Norfolk, VA 23529

@ yasasi@cs.odu.edu

in yasasi-abeyasinghe

yasasi-abeyasinghe

yasasi-abeyasinghe.github.io

@Yasasi\_Abey

## RESEARCH INTERESTS

Data Science, Human-Computer Interaction, Eye Tracking, Virtual Reality/Augmented Reality/Mixed Reality

## EDUCATION

Ph.D., Computer Science, Old Dominion University, USA

January 2022 – May 2026 (Expected)

GPA: 4.0/4.0

Advisor: Dr. Sampath Jayarathna

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

October 2014 – December 2018

Specialized in Integrated Computer Engineering (ICE)

GPA: 3.71/4.2

Award: First Class Honors

Dean's list: Semesters 2, 6, & 8

Diploma in Computer System Design, National Institute of Business Management, Sri Lanka

October 2013 – October 2014

Distinction

## WORK EXPERIENCE

Graduate Research Assistant, Old Dominion University, USA

January 2022 – Present

- Research on analyzing users' eye movements within VR/AR.
- Research on identifying objective measures using eye movements to assess human cognitive load and behavioral patterns.

Graduate Teaching Assistant, Old Dominion University, USA

August 2023 – December 2023

- Course: Natural Language Processing

Senior Software Engineer, Sysco LABS, Sri Lanka

September 2020 – December 2021

- Developed the Event Platform 2.0 which provides the data streaming and processing capabilities to Sysco teams.

Software Engineer, Sysco LABS, Sri Lanka

January 2019 – September 2020

- Developed new features for the Event Platform 1.0 and the API Central which provides API management capabilities to Sysco.

## Engineering Intern, LSEG Technology | London Stock Exchange Group, Sri Lanka

📅 June 2017 – December 2017

- Built a tool to measure the compliance of each project team to Code Review Guidelines in LSEG Technology.

## ACHIEVEMENTS

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🏆 **Outstanding Researcher - Academic Year 2023/2024**  
Old Dominion University

🏆 **Irwin B. Levinstein Scholarship - Academic Year 2023/2024**  
Old Dominion University

🏆 **CINTEC Award - Academic Year 2017/2018**  
University of Moratuwa  
This is awarded to the student who has earned the highest marks for the Final Year Research

🏆 **Graduated with First Class Honors - 2018**  
University of Moratuwa

## SKILLS

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**Languages:** Python, Java, C/C++, JavaScript, HTML/CSS, Golang

**Software:** Maven, Docker, WEKA, Google Apigee, Github, Bitbucket, Jira

**Virtual Reality:** Unity, Meta Quest Pro

**Database:** MySQL, MongoDB, Sqlite

**AWS:** AWS Kinesis, DynamoDB, RDS, S3, CloudWatch, EC2, AWS Lambda, Elastic Container Service (ECS), Elastic File System (EFS), Amazon Polly, Route 53, AWS Database Migration Service (DMS), CloudFormation

**Data Streaming:** AWS Kinesis, Apache Kafka

**Frameworks:** Pandas, NumPy, SciKit, SciPy, Apache Avro, Holoviz

**Operating Systems:** Windows, MacOS, Ubuntu

**Version Control:** Git

**IDEs:** PyCharm, IntelliJ IDEA, NetBeans, CodeBlock

**Devices:** Tobii Eye Tracker, Pupil Labs Eye Tracker, Raspberry pi, Arduino

**Microsoft Office:** MS Word, MS Excel, MS PowerPoint

## PROJECTS

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### Gaze Analytics Dashboard for Distributed Eye Tracking

📅 Jan 2023 – Ongoing

📍 Old Dominion University

**Python | Pandas | MQTT | Holoviz | Streamz | Git**

Interactive gaze analytics dashboard that generates and visualizes real-time advanced gaze measures in a distributed eye-tracking system.

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### Assess Fake News Engagement via Eye movements, Old Dominion University

📅 Jan 2022 – Ongoing

**Python | Pandas | NumPy | SciKit | Git**

Research on analyzing eye movement data to identify reading patterns of participants and to identify objective measures using eye movements to effectively assess the engagement of fake news.

🔗 [github.com/nirdslab/FakeNewsDataAnalysis](https://github.com/nirdslab/FakeNewsDataAnalysis)

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## Automatic Feature Extraction from Scientific Papers, Old Dominion University

📅 Jan 2022 – Aug 2022

**Python | Pandas | NumPy | SciKit | Git**

Research and development of extracting features such as table and figure references, gender diversity of authors, and novelty for predicting reproducibility of scientific papers.

🔗 [github.com/lamps-lab/TableAndFigureReferenceExtractor](https://github.com/lamps-lab/TableAndFigureReferenceExtractor)

🔗 [github.com/lamps-lab/GenderDiversityByAuthorNames](https://github.com/lamps-lab/GenderDiversityByAuthorNames)

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## Exploring STEM Educational Delivery in Norfolk Juvenile Detention Center, Old Dominion University

📅 August 2022 – Ongoing

**NVivo**

A case study of STEM learning at Norfolk Juvenile Detention Center. This entails identifying barriers to STEM education accessibility in Norfolk Juvenile Detention Center, assessing challenges due to pandemic, and anticipating future challenges in personalized STEM learning ecosystems.

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## SPEED Adapter, Sysco LABS

📅 January 2019 – December 2021

**Java | Maven | AWS Kinesis | Kafka | Avro | Apache NiFi | Python | NodeJS**

SPEED Adapter is built based on AWS Kinesis Streaming platform and Kafka platform which provides the capability to ingest and consume serialized or binary data into/from Amazon Kinesis Streams/Kafka topics.

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## Sysco Kinesis Agent, Sysco LABS

📅 March 2019 – December 2021

**Java | Maven | AWS Kinesis**

A stand-alone Java application developed by enhancing the AWS Kinesis Agent to support to ingest compressed data into Amazon Kinesis Streams and supports data consumption through decompression.

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## API Central, Sysco LABS

📅 January 2019 – December 2021

**Google Apigee | GO language | Java | Kotlin | Bash | AWS | Docker | Python**

A platform which provides API Management capabilities to Sysco with the use of Google Apigee API Manager and WSO2 API Manager.

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## Context Aware Hierarchical Aspect Aggregation, University of Moratuwa

📅 January 2018 – December 2018

**Python | Machine Learning | Natural Language Processing | Data Mining**

A research on generation of review aspect term hierarchy using word embedding and clustering carried out as the Final Year Project of the undergraduate course.

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## Code Review Coverage Reporter, LSEG Technology

📅 June 2017 – December 2017

**Python | HTML | CSS | AngularJS | Grafana**

A tool which is currently used by LSEG Technology to measure the compliance of each project team to Code Review Guidelines.

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## DengAI: Predicting Disease Spread, University of Moratuwa

📅 January 2018 – July 2018

**Python | Machine Learning | Data Mining**

A project of predicting the number of dengue cases each week based on environmental variables.

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## Smart Math Tutor, University of Moratuwa

📅 February 2017 – May 2017

### Python | Raspberry pi 3 | Raspberry Pi Camera Module V2 | LCD Screen

A stand-alone device that helps to solve handwritten or printed mathematical equations by capturing a photograph of it.

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## Smart Wheelchair, University of Moratuwa

📅 September 2016 – December 2016

### Python | Myo-Band | Raspberry pi 3

Smart Wheelchair allows driving the wheelchair with use of hand movements.

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## Smart Gesture Glove, University of Moratuwa

📅 January 2016 – May 2016

### Android Studio | Ardiuno | Flex Sensors

A glove that allows speech impaired people to communicate by translating sign language into words and displaying it on a mobile app.

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## PUBLICATIONS

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### 📄 Journal Articles

- **Yasasi Abeysinghe**, Bhanuka Mahanama, Gavindya Jayawardena, Yasith Jayawardana, Mohan Sunkar, Andrew T. Duchowski, Vikas Ashok, and Sampath Jayarathna (2024). "A-DisETrac Advanced Analytic Dashboard for Distributed Eye Tracking". In: *International Journal of Multimedia Data Engineering and Management (IJMDEM)* 15.1, pp. 1–20. DOI: 10.4018/IJMDEM.341792.

### 👥 Conference Proceedings

- **Yasasi Abeysinghe** (2023a). "Can Reading Web-based Information Affect Human Working Memory Capacity: An Eye Tracking Study". In: *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries in 2023*. Doctoral Consortium Paper. (In Press).
- **Yasasi Abeysinghe** (2023b). "Evaluating Human Eye Features for Objective Measure of Working Memory Capacity". In: *Proceedings of the 2023 Symposium on Eye Tracking Research and Applications*. Doctoral Consortium Paper. DOI: 10.1145/3588015.3589537.
- **Yasasi Abeysinghe**, Bhanuka Mahanama, Gavindya Jayawardena, Mohan Sunkar, Vikas Ashok, and Sampath Jayarathna (2023). "Gaze Analytics Dashboard for Distributed Eye Tracking". In: *2023 IEEE 24th International Conference on Information Reuse and Integration for Data Science (IRI)*, pp. 140–145. DOI: 10.1109/IRI58017.2023.00031.
- Bhanuka Mahanama, Gavindya Jayawardena, **Yasasi Abeysinghe**, Vikas Ashok, and Sampath Jayarathna (2022). "Multidisciplinary Reading Patterns of Digital Documents". In: *Proceedings of the 2022 Symposium on Eye Tracking Research and Applications*. DOI: 10.1145/3517031.3531630.
- Rashindrie Perera, Tamasha Malepathirana, **Yasasi Abeysinghe**, Yumna Albar, and Uthayasanker Thayasivam (2019). "Amalgamation of General and Domain Specific Word Embeddings for Improved Hierarchical Aspect Aggregation". In: *2019 IEEE 13th International Conference on Semantic Computing (ICSC)*, pp. 55–62. DOI: 10.1109/ICOSC.2019.8665518.
- Tamasha Malepathirana, Rashindrie Perera, **Yasasi Abeysinghe**, Yumna Albar, and Uthayasanker Thayasivam (2019). "Adaptation of Multivariate Concept to Multi-Way Agglomerative Clustering for Hierarchical Aspect Aggregation". In: *Proceedings of the Thirty-Second International Florida Artificial Intelligence Research Society Conference (FLAIRS 2019)*.

## ARTICLES

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- **A-DisETrac: Advanced Analytic Dashboard for Distributed Eye Tracking**

<https://ws-dl.blogspot.com/2024/05/2024-05-14-disetrac-advanced-analytic.html>

This article explains the architecture of the A-DisETrac, an advanced analytic dashboard for distributed eye tracking system.

- **Real-time Interactive Dashboard for Data in a Distributed System**  
<https://ws-dl.blogspot.com/2023/08/2023-08-15-real-time-interactive.html>  
 This article explains an approach for developing an interactive visualization dashboard for real-time data in a distributed system using Python.
- **Regular Expression Rule-Based Approach for Table and Figure Reference Extraction from Scientific Papers**  
<https://ws-dl.blogspot.com/2022/05/2022-05-19-regular-expression-rule.html>  
 This article explains a simple but effective rule-based approach using regular expressions (Regex) for extracting table and figure references from the text in scientific papers.

## TUTORIALS

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- **Compressing Data in Amazon Kinesis Data Stream with AVRO Data Serialization**  
<https://youtu.be/CJorHctmsi4>  
 This video tutorial explains how to compress data in Amazon Kinesis Data Streams with Avro Data Serialization.




## OPEN-SOURCE CONTRIBUTIONS

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- **TableAndFigureReferenceExtractor**  
[https://github.com/lamps-lab/TableAndFigureReferenceExtractor/tree/main/src/table\\_and\\_fig\\_ref\\_extraction](https://github.com/lamps-lab/TableAndFigureReferenceExtractor/tree/main/src/table_and_fig_ref_extraction)  
 Python Package for extracting the table and figure references from the text in scientific papers using Regular Expressions(Regex) with predefined lists of Regex patterns which represent different styles that the authors can use to refer tables and figures in scientific papers.
- **Real-time Interactive Dashboard for Distributed Systems**  
<https://github.com/yasasi-abeyasinghe/Realtime-Interactive-Dashboard-for-Distributed-Systems.git>  
 Real-time visualization dashboard for a distributed system using Python.
- **amazon-kcl-sample-project**  
<https://github.com/yasasi-abeyasinghe/amazon-kcl-sample-project.git>  
 Java Kinesis Client Library consumer application with data deserialization with Apache Avro.

## INVITED TALKS

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- **Ubiquitous Computing and Augmented Realities**   
*CS 732/832 Human Computer Interaction Course, Old Dominion University (Spring 2024)*
- **Believe It or Not: Exploring Human Perception while Reading Fake and Real News Articles**   
*SPiRIT Lab Lecture Series, Magdeburg-Stendal University of Applied Sciences, Germany (2023)*
- **Sensory Data Analytics**   
*High School Summer Camp, "CARE: Coastal Adaptation and Resilience Education", Old Dominion University (2023)*

## SERVICES & OUTREACH

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- **Publicity Chair:** ACM ETRA Conference (2024)
- **Treasurer:** ODU CS Graduate Society (2022-23)
- **Web Coordinator:** ODU Sri Lankan Association (2023-24)
- **Vice President - Membership:** Sysco LABS Toastmasters Club (2020-21)
- **Conference Session Chair:** Information Retrieval Access Session, Online, ACM/IEEE JCDL (2022)
- **Mentor Assistant:** ODU REU in Disinformation Detection and Analytics program (Summer 2022, Summer 2023)
- **Volunteer Judge:** Poster Session, ACM CAPWIC (2022)
- **Sub-Reviewer:** ACM CIKM (2022), IEEE Big Data (2022), ACM CHIIR (2022), ACM/IEEE JCDL (2023), ACM CHI (2024)
- **Student Volunteering (In-Person):** ACM ETRA (2023)

## MEMBERSHIPS

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- Member of ACM SIGCHI, 2023 - 2024
- Member of ACM-W, Old Dominion University, 2022 - 2023
- Student member of Institute of Electrical and Electronic Engineers, Sri Lanka (IEEE)
- Member of Rotaract Club, University of Moratuwa
- Member of IEEE Women in Engineering (WIE), University of Moratuwa