

Gavindya Jayawardena

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The University of Texas at Austin
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RESEARCH INTERESTS

Eye-tracking, Interactive-Information Retrieval, HCI, Data Science, Machine Learning

EDUCATION

- Jan. 2019 - Aug. 2024 **Ph.D.**, Computer Science, Old Dominion University, Norfolk, VA
Dissertation: "*RAEMAP: Real-Time Advanced Eye Movements Analysis Pipeline*"
Advisor: *Sampath Jayarathna*
Committee Members: *Michele C. Weigle, Michael L. Nelson, Vikas G. Ashok, Anne M. Perrotti*
Courses: *Data Science and Analytics, Machine Learning, Practical Machine Learning and Applications, Information Retrieval, Algorithms and Data Structures, DevOps & Containers, Natural Language Processing, Blockchains and Cryptocurrencies, Deep Learning on Graphs*
- Jan. 2015 - Dec. 2018 **B.Sc.**, Computer Science and Engineering, First Class Honors
University of Moratuwa, Sri Lanka
Courses: *Human Computer Interaction, Machine Learning, Advanced Algorithms, Data Mining & Information Retrieval, Distributed Systems*

EXPERIENCE

- Sept. 2024 - Present **School of Information, The University of Texas at Austin**, Austin, TX
Bullard Postdoctoral Research Fellow
Supervisor/Mentor: *Jacek Gwizdka*
Mentor: *James Howison*
- Jan. 2019 - Aug. 2024 **Old Dominion University**, Norfolk, VA
Graduate Research/Teaching Assistant in Computer Science
- May 2022 - May 2023 **Learning, Innovation, & Technology Lab**, Harvard University, Cambridge, MA
Remote Research Assistant
- Jun. - Aug. 2021 & 2022 **Los Alamos National Lab**, Los Alamos, NM
Summer Research Intern, Institutional Scientific Content Team
- Jan. 2018 - Jun. 2018 **University of Moratuwa**, Sri Lanka
Visiting Instructor in Computer Science
- Jun. 2017 - Dec. 2017 **UStocktrade (Pvt) Ltd.** Sri Lanka
Software Engineering Intern

PUBLICATIONS

UNDER REVIEW

- 2025 Jayawardena, Gavindya, Yasith Jayawardana, and Jacek Gwizdka. "A Real-Time Pupillometry-Based Algorithm for Estimating Mental Effort." Under review at the Journal of Eye Movement Research (**JEMR**) [Submitted on September 29, 2025]
- 2025 Jayawardena, Gavindya, Li Shi, and Jacek Gwizdka. "Effects of Working Memory Capacity and Search Task Complexity on Cognitive Load." Under review at the 2026 ACM SIGIR Conference on Human Information Interaction and Retrieval (**CHIIR '26**) [Submitted on October 15, 2025]

- 2025 Dan Zhang, *Gavindya Jayawardena*, and Jacek Gwizdka. "Attention! Rethinking What We Measure in CHIIR Studies." Under review at the 2026 ACM SIGIR Conference on Human Information Interaction and Retrieval (**CHIIR '26**) [Submitted on October 15, 2025]

PEER-REVIEWED JOURNAL ARTICLES

- 2024 Abeysinghe, Yasasi, Bhanuka Mahanama, *Gavindya Jayawardena*, Yasith Jayawardana, Mohan Sunkara, Andrew T. Duchowski, Vikas Ashok, and Sampath Jayarathna. "A-disetrac advanced analytic dashboard for distributed eye tracking." *International Journal of Multimedia Data Engineering and Management (IJMDEM)* 15, no. 1 (2024): 1-20.
- 2022 Mahanama, Bhanuka, Yasith Jayawardana, Sundararaman Rengarajan, *Gavindya Jayawardena*, Leanne Chukoskie, Joseph Snider, and Sampath Jayarathna. "Eye movement and pupil measures: A review." **Frontiers in Computer Science** 3 (2022): 733531. [**Editor's Pick**]
- 2020 *Jayawardena, Gavindya*, and Sampath Jayarathna. "Automated filtering of eye movements using dynamic aoi in multiple granularity levels." *International Journal of Multimedia Data Engineering and Management (IJMDEM)* 12, no. 1 (2021): 49-64.

PEER-REVIEWED CONFERENCE PROCEEDINGS

- 2025 *Jayawardena, Gavindya*, Yasith Jayawardana, Yasasi Abeysinghe, Bhanuka Mahanama, Sampath Jayarathna, and Jacek Gwizdka. "A Real-Time Approach to Capture Ambient and Focal Attention in Visual Search." In *Proceedings of the 2025 Symposium on Eye Tracking Research and Applications*, pp. 1-7. 2025. (**ETRA '25**)
- 2025 Shi, Li, *Gavindya Jayawardena*, and Jacek Gwizdka. "Pupillometric Analysis of Cognitive Load in Relation to Relevance and Confirmation Bias." In *Proceedings of the 2025 ACM SIGIR Conference on Human Information Interaction and Retrieval*, pp. 219-230. 2025. (**CHIIR '25**)
- 2024 *Jayawardena, Gavindya*, Vikas Ashok, and Sampath Jayarathna. "Advanced Gaze Analytics Dashboard." In *2024 IEEE International Conference on Information Reuse and Integration for Data Science*, pp. 114-119. IEEE, 2024. (**IRI 2024**)
- 2023 Abeysinghe, Yasasi, Bhanuka Mahanama, *Gavindya Jayawardena*, Mohan Sunkara, Vikas Ashok, and Sampath Jayarathna. "Gaze analytics dashboard for distributed eye tracking." In *2023 IEEE 24th International Conference on Information Reuse and Integration for Data Science*, pp. 140-145. IEEE, 2023. (**IRI 2023**)
- 2022 *Jayawardena, Gavindya*, Yasith Jayawardana, Sampath Jayarathna, Jonas Höglström, Thomas Papa, Deepak Akkil, Andrew T. Duchowski et al. "Toward a real-time index of pupillary activity as an indicator of cognitive load." *Procedia Computer Science* 207 (2022): 1331-1340. (**KES 2022**)
- 2021 Jayawardana, Yasith, *Gavindya Jayawardena*, Andrew T. Duchowski, and Sampath Jayarathna. "Metadata-driven eye tracking for real-time applications." In *Proceedings of the 21st ACM Symposium on Document Engineering*, pp. 1-4. 2021. (**DocEng 2021**)
- 2021 *Jayawardena, Gavindya*, and Sampath Jayarathna. "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*, pp. 67-74. IEEE, 2020. (**IRI 2020**)
- 2020 *Jayawardena, Gavindya*, Anne Michalek, Andrew Duchowski, and Sampath Jayarathna. "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. 2020. (**ETRA 2020**)
- 2020 Jayawardana, Yasith, Alexander C. Nwala, *Gavindya Jayawardena*, Jian Wu, Sampath Jayarathna, Michael L. Nelson, and C. Lee Giles. "Modeling updates of scholarly webpages using archived data." In *2020 IEEE International Conference on Big Data*, pp. 1868-1877. IEEE, 2020. (**Big Data 2020**)
- 2019 De Silva, Senuri, Sanuwani Dayarathna, Gangani Ariyaratne, Dulani Meedeniya, Sampath Jayarathna, Anne MP Michalek, and *Gavindya Jayawardena*. "A rule-based system for ADHD identification using eye movement data." In *2019 Moratuwa engineering research conference*, pp. 538-543. IEEE, 2019. (**MERCon 2019**) [**Best Paper Award**]

- 2019 Jayawardena, Gavindya, Anne Michalek, and Sampath Jayarathna. "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, pp. 208-215. IEEE, 2019. **(IRI 2019)**
- 2018 Jayawardana, Yasith, Randil Fernando, Gavindya Jayawardena, Dileka Weerasooriya, and Indika Perera. "A full stack microservices framework with business modelling." In 2018 18th International Conference on Advances in ICT for Emerging Regions, pp. 78-85. IEEE, 2018. **(ICTer 2018)**

PEER-REVIEWED BOOK CHAPTERS

- 2019 Michalek, Anne MP, Gavindya Jayawardena, and Sampath Jayarathna. "Predicting ADHD using eye gaze metrics indexing working memory capacity." In Computational Models for Biomedical Reasoning and Problem Solving, pp. 66-88. **(IGI Global)**, 2019.

DOCTORAL CONSORTIA (not in proceedings)

- 2022 Jayawardena, Gavindya. "Introducing a real-time advanced eye movements analysis pipeline." In 2022 Symposium on Eye Tracking Research and Applications, pp. 1-2. 2022. **(ETRA 2022) [Best Doctoral Symposium Presentation Award]**
- 2020 Jayawardena, Gavindya. "RAEMAP: Real-Time Advanced Eye Movements Analysis Pipeline". In 2020 International Conference on Artificial Intelligence in Medicine, 2020. **(AIME 2020)**,
- 2020 Jayawardena, Gavindya. "RAEMAP: Real-time advanced eye movements analysis pipeline." In ACM Symposium on Eye Tracking Research and Applications, pp. 1-4. 2020. **(ETRA 2020)**

PEER-REVIEWED POSTERS

- 2022 Mahanama, Bhanuka, Gavindya Jayawardena, Yasasi Abeysinghe, Vikas Ashok, and Sampath Jayarathna. "Multidisciplinary reading patterns of digital documents." In 2022 Symposium on Eye Tracking Research and Applications, pp. 1-2. 2022. **(ETRA 2022)**.
- 2021 Mahanama, Bhanuka, Gavindya Jayawardena, and Sampath Jayarathna. "Analyzing unconstrained reading patterns of digital documents using eye tracking." In 2021 ACM/IEEE Joint Conference on Digital Libraries, pp. 282-283. IEEE, 2021. **(JCDL 2021)[Best Poster Award]**
- 2020 Jayawardena, Gavindya, Sampath Jayarathna, and Jian Wu. "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. 2020. **(JCDL 2020)[Best Poster Award]**

PEER-REVIEWED WORKSHOPS

- 2024 Spina, Damiano, Jacek Gwizdka, Kaixin Ji, Yashar Moshfeghi, Javed Mostafa, Tuukka Ruotsalo, Min Zhang, Adnan Ahmad, Sara Fahad Dawood Al Lawati, Nattapat Boonprakong, Nishani Fernando, Jiaman He, Orland Hoeber, Gavindya Jayawardena, Boon-Giin Lee, Haiming Liu, Matthew Pike, Abbas Pirmoradi, Bahareh Nakisa, Mohammad Naim Rastgoo, Flora D. Salim, Fletcher Scott, Shuoqi Sun, Huimin Tang, Dave Towey, Max L. Wilson. "Report on the 3rd Workshop on NeuroPhysiological Approaches for Interactive Information Retrieval at SIGIR CHIIR 2025." In *ACM SIGIR Forum*, vol. 59, no. 1, pp. 1-43. New York, NY, USA: ACM, 2025. **(NeuroPhysIIR 2025)**

OTHER ACADEMIC CONTRIBUTIONS (Not peer-reviewed, not in proceedings)

- 2024 Shi, Li, Gavindya Jayawardena, Jacek Gwizdka. "Relevance, Confirmation Bias, and Cognitive Load: An Eye-tracking Study." Poster presented at 2024 iSchool AI Showcase, Austin, Texas (2024)
- 2023 Jayawardena, Gavindya, Sampath Jayarathna, and Yi He. "ADHD Prediction Through Analysis of Eye Movements With Graph Convolution Network." In 2023 Graduate Research Achievement Day, College of Sciences, ODU (2023).
- 2023 Owens, James, Gavindya Jayawardena, Yasasi Abeysinghe, Vikas G. Ashok, and Sampath Jayarathna. "Main Sequence Relationships, Task Load, and Cognitive Load." In Undergraduate Research Symposium, College of Sciences, ODU (2023).

- 2023 Abeysinghe, Yasasi, *Gavindya Jayawardana*, Autumn Woodson, Efe Bozkir, Enkelejda Kasneci, Andrew Duchowski, and Sampath Jayarathna. "Exploring Human Perception while Reading Fake and Real News Articles." In 2023 Graduate Research Achievement Day, College of Sciences, ODU (2023).
- 2021 *Gavindya Jayawardana*, Sampath Jayarathna, and Jian Wu. "Analysis of Reading Patterns of Scientific Literature using Eye-Tracking Measures." In 2021 Graduate Research Achievement Day, College of Sciences, ODU (2021).
- 2020 *Gavindya Jayawardana*, Anne Michalek, and Sampath Jayarathna, "Pilot Study of Audiovisual Speech-In-Noise (SIN) Performance of Adolescence with ADHD Using Eye-Tracking", ACM CAPWIC, Newport News, VA (2020).

INVITED TALKS

1. "Introduction to Numpy and Pandas". Coastal Adaptation and Resilience Education (CARE) Summer Camp, Computer Science Department, Old Dominion University, 2023
2. "RAEMAP: Real-time Advanced Eye Movements Analysis Pipeline". Student Presenter at Web Science & Digital Libraries Research Group Expo (WS-DL Expo), Computer Science Department, Old Dominion University, 2023
3. "Eye Tracking for Predicting ADHD". CS Summer Research Workshop, Old Dominion University, 2019
4. "Eye-Tracking for Assessing Speech-In-Noise Performance of Adults with ADHD". Guest Lecture for CS395 - Research Methods in Data & Web Science, Old Dominion University, 2020
5. "Introduction to Data Wrangling". Guest Lecture for STRS: Student ThinSat Research Summer Camp, Old Dominion University, 2020

TEACHING EXPERIENCE

- Summer 2024 Course Instructor - CS115: Introduction to Python, Old Dominion University
- Spring 2021 Teaching Assistant - CS250: Problem Solving and Programming II, Old Dominion University
- Fall 2020 Teaching Assistant - CS334: Computer Architecture, Old Dominion University
- Fall 2020 Teaching Assistant - CS450: Database, Old Dominion University
- Spring 2020 Teaching Assistant - CS441/541: App Development for Smart Devices, Old Dominion University
- Spring 2018 Teaching Assistant - CS2963: Presentation Skills, University of Moratuwa
- Summer 2023 Workshop Instructor - CARE Summer High School Workshop, Old Dominion University
- Summer 2020 Workshop Instructor - STRS: Student ThinSat Research Summer Camp, Old Dominion University

SERVICE

- Graduate Mentoring IX Lab, The University of Texas at Austin, 2024-2025
- Undergraduate Mentoring NIRDS Lab, Old Dominion University, 2021-2024
- NSF Research Experiences for Undergraduates (REU 2023), Computer Science Department, Old Dominion University, 2023
- Reviewing Frontiers in Virtual Reality, 2025
- (IWC) Interacting with Computers - Oxford Academic, 2025
- (ETRA) Eye Tracking Research & Applications Symposium, 2025, 2024, 2020
- (OzCHI) Australian Conference on Human-Computer Interaction, 2024
- (CHI) Conference on Human Factors in Computing Systems, 2024
- (IUI) Intelligent User Interfaces, 2020, 2021, 2022
- (JCDL) ACM/IEEE-CS Joint Conference on Digital Libraries, 2025, 2024, 2022, 2020
- (AH) Augmented Human, 2020
- (CIKM) Conference on Information and Knowledge Management, 2022
- (CHIIR) ACM Conference on Human Information Interaction & Retrieval, 2021

IEEE BigData, 2021, 2023

Leadership President of ACM Student Chapter-Women, Old Dominion University, 2022-2023
President of ACM Student Chapter, University of Moratuwa, 2018

Volunteering 2nd Annual JRMF Math & Computer Science Festival, Old Dominion University
34th Great Computer Challenge (Grades 6-12), Old Dominion University
STEAM on Spectrum event, VMASC, VA, 2019
Trick-or-Research Event, Computer Science Department, Old Dominion University, 2023, 2022, 2021, 2020, 2019

AWARDS, HONORS, & SCHOLARSHIPS

1. **Lee Entsminger Outstanding Dissertation Award**, 2024-2025, Old Dominion University
2. **Outstanding Service Award**, IEEE IRI 2024 & MIPR 2024, Student Volunteer
3. **Best Doctoral Symposium Presentation Award**, 2022 Symposium on Eye Tracking Research and Applications (ETRA 2022)
4. **Best Poster Award**, 2021 ACM/IEEE Joint Conference on Digital Libraries (JCDL 2021)
5. **Best Poster Award**, 2020 ACM/IEEE Joint Conference on Digital Libraries (JCDL 2020)
6. **Computer Science, Irwin B. Levinstein Scholarship**, 2020-2021, Old Dominion University (\$2500)
7. **Best Paper Award**, 2019 International Multidisciplinary Engineering Research Conference (MERCon2019)
8. **Computer Science Outstanding Researcher Award**, 2019-2020, Old Dominion University
9. **Dominion Graduate Scholar**, 2019, Old Dominion University
10. **Dean's List** - Semester 1, 6, 7, 8, University of Moratuwa, Sri Lanka
11. **Mahapola Higher Education Scholarship** (4 academic years) - 20014/2018 University of Moratuwa, Sri Lanka

RESEARCH-BASED & TECHNICAL BLOG ARTICLES

1. 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.
2. 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.
3. 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.
4. 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.
5. PDFServer - Our Summer Internship at LANL
<https://ws-dl.blogspot.com/2022/12/2022-12-21-pdfserver-our-summer.html>
This article explains my 2022 Summer research internship experience at Los Alamos National Laboratory.

6. ADHD Prediction Through Analysis of Eye Movements With Graph Convolution Network

<https://ws-dl.blogspot.com/2022/06/2022-06-18-adhd-prediction-through.html>

This article discusses how I utilized graphs generated using eye-tracking data for the diagnosis of ADHD.

MEMBERSHIPS

Member, SIGCHI

Past Member, The Honor Society of Phi Kappa Phi

Past Student member, Association for Computing Machinery – Women (ACM-W)

Past Student member, IEEE Computer Society