Isayas Adhanom

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Research Interests

My research interests lie at the intersection of Human-Computer Interaction (HCI), Cognitive Neuroscience and Machine Learning with a focus on Virtual/Augmented Reality (VR/AR). Specifically, I conduct mixed methods research to understand the technical and perceptual challenges of VR that cause sickness and discomfort in a large percentage of VR users, potentially making VR less accessible and less appealing to these users, and I develop systems that aim to address these challenges. The systems I create utilize psychophysiological data, and combine techniques from HCI, cognitive neuroscience and graphics to solve these challenges through the adaptive personalization of virtual environments and interfaces.

Education

2022 (Expected) **University of Nevada, Reno**, NV, United States
Ph.D. in Computer Science and Engineering, *GPA: 3.87/4.0*

2019 **University of Nevada, Reno**, NV, United States
M.Sc. in Computer Science and Engineering, *GPA: 4.0/4.0*

2016 **Eritrea Institute of Technology**, Asmara, Eritrea
B.Sc. in Computer Engineering, *GPA: 3.48/4.0*

Honours & Awards

2021 **Graduate Access Grant**, University of Nevada, Reno

2021 **Google CS Research Mentorship Program Mentee**, Google

2020 **Graduate Access Grant**, University of Nevada, Reno

2020 **Graduate Student Association Travel Award**, University of Nevada, Reno

2018 **Summer Tuition Award (Not Accepted)**, University of Nevada, Reno

2017-2018 **Graduate Dean's Fellowship**, University of Nevada, Reno

2017 **CS Graduate Student Scholarship (Not Accepted)**, University of Houston

2016 **Great Distinction Honor**, Eritrea Institute of Technology

Selected Publications

Journal Papers

I. B. Adhanom, M. Al Zayer, P. MacNeilage, E. Folmer. 2021. Field-of-View Restriction to Reduce VR Sickness Does not Impede Spatial Learning in Women. ACM Transactions on Applied Perception (TAP). 18, 2, 1-17.

A. Prithul, **I. B. Adhanom**, E. Folmer. 2021. Teleportation in Virtual Reality; A Mini-Review. Frontiers in Virtual Reality. 2. 138.

I. B. Adhanom, P. MacNeilage, E. Folmer. 2021. Eye-tracking in Virtual Reality: a Broad Review of Applications and Challenges. Virtual Reality. ***In review.***

Conference Papers

A. Prithul, **I. B. Adhanom**, E. Folmer. 2021. Embodied Third-Person Virtual Locomotion using a Single Depth Camera. In Proceedings of Graphics Interface (GI 2021).

I. B. Adhanom, S. C. Lee, E. Folmer, P. MacNeilage. 2020. GazeMetrics: An Open-Source Tool for Measuring the Data Quality of HMD-based Eye Trackers. In Proceedings of Symposium on Eye Tracking Research and Applications (ETRA '20). 645-652.

I. B. Adhanom, N. N. Griffin, P. MacNeilage, E. Folmer. 2020. The effect of a foveated field-of-view restrictor on VR sickness. In 2020 IEEE conference on virtual reality and 3D user interfaces (IEEEVR '20). 1-5.

M. Al Zayer, **I. B. Adhanom**, P. MacNeilage, E. Folmer. 2019. The effect of field-of-view restriction on sex bias in vr sickness and spatial navigation performance. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI 2019). 1-12.

Workshop Papers & Posters

P. Pavilionis, **I. B. Adhanom**, M. R. Taylor, L. Netzel, M. Kelly, D. Hopfe, N. Constantino, FACSM, N. G. Murray. 2021. Virtual Reality application for the Vestibular/Ocular Motor Screen: a comparison with a novel prototype. In Annual Meeting of the American College of Sports Medicine (ACSM).

I. B. Adhanom. 2021. Towards Universal VR Sickness Mitigation Strategies. In 2021 IEEE Conference on Virtual Reality and 3D User Interfaces

Preprints

I. B. Adhanom, E. M. Hand. 2019. A First Look into Neural Machine Translation for Tigrinya. Preprint, To be submitted to the ACM Transactions on Asian and Low-Resource Language Information Processing

Work Experience

2018 – Now **University of Nevada, Reno**, *Graduate Research Assistant*, Reno, NV.

2013 – Now **Binogi International**, *Freelance E-leaning Content Developer*.

2015 – 2017 **Eritrea Institute of Technology**, *Software Engineer*, Asmara, Eritrea.

2013 – 2017 **Emmanuel IT Solutions Provider**, *Software Engineer*, Dekemhare, Eritrea.

Teaching Experience

2021 **University of Nevada, Reno**, *App Development Instructor, NSF GAIN Scholars*, Reno, NV.

2021 **University of Nevada, Reno**, *Co-Lecturer for CS484/684 Virtual Reality*, Reno, NV.

2020 **University of Nevada, Reno**, *Teaching Assistant for CS484/684 - Virtual Reality*, Reno, NV.

2008-2009 **Dekemhare Comprehensive Secondary School**, *Instructor of the Information & Communication Technology Class*, Dekemhare, Eritrea.

Selected Projects and Open Source

2019 GazeMetrics: An Open-Source Tool for Measuring the Data Quality of HMD-based Eye Trackers.
Github

2020 Eye Gaze Prediction with Convolutional Recurrent Neural Networks.

Github

2020 The Effect of a Foveated Field-of-view Restrictor on VR Sickness.
Github

2020 VR and Eye Tracking based Macular Degeneration Scotoma Simulator.
Github

Presentations & Press

2021 GazeMetrics: An Open-Source Tool for Measuring the Data Quality of HMD-based Eye Trackers, ETRA 2021, Invited Talk (Planned)

2021 Towards Universal VR Sickness Mitigation Strategies, IEEEVR 2021, Doctoral Consortium

2021 The Effect of a Foveated Field of Restrictor on VR Sickness, IEEEVR 2020

2020 Measuring the Spatial Accuracy and Precision of VR HMD-based Eye Trackers, Smith Kettlewell Eye Research Institute, Invited Talk

2017 The Graduate School Honors Graduate Dean's Award Winners, Nevada Today

Academic Service

Reviewer

2020-2022 ACM Conference on Human Factors in Computing Systems (ACM CHI)

2020-2022 IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)

2021 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

2021 ACM Symposium on Eye Tracking Research and Applications (ETRA)

2020 ACM Symposium on Virtual Reality Software and Technology (VRST)

Web Master

2018-2021 International Symposium on Visual Computing (ISVC)

2019-2021 International Symposium on Mathematical and Computational Oncology

Students Mentored

2019-2020 **Ceslee Montgomery**, Graduate Student, Georgia Tech, Mentored Through BlackInAI

2020 **Andrea Estep**, Undergraduate CS Student, University of Nevada, Reno

2020 **Trevor Olsen**, Undergraduate CS Student, University of Nevada, Reno

2020 **Frederick Shafer**, Undergraduate CS Student, University of Nevada, Reno