Isayas Berhe Adhanom

Postdoctoral Research Associate
Computer Science & Engineering
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Research Interests

My research interests include Virtual/Augmented Reality, Human-Computer Interaction and Applied Machine Learning.

Educational Background

2022–Present **University of Minnesota - Twin Cities**, MN, United States
President's Postdoctoral Fellow

May 2022 **University of Nevada, Reno**, NV, United States
Ph.D. in Computer Science and Engineering
Honor: Outstanding Ph.D. Dissertation Award

May 2019 **University of Nevada, Reno**, NV, United States
M.Sc. in Computer Science and Engineering

July 2016 **Eritrea Institute of Technology**, Asmara, Eritrea
B.Sc. in Computer Engineering

Honors & Awards

2022-2024 **President's Postdoctoral Fellowship**, University of Minnesota Twin Cities

2022 **Outstanding Ph.D. Dissertation Award**, University of Nevada, Reno

2022 **Special Recognitions for Outstanding Review**, VRST 2022

2022 **IEEE VR 2022 IDA Scholarship**, IEEE VR 2022

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

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

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

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

Publications

Peer Reviewed Journal Articles

J5 **I. B. Adhanom**, P. MacNeilage, E. Folmer. 2023. Eye-tracking in Virtual Reality: a Broad Review of Applications and Challenges. Springer Virtual Reality.

J4 P. Pavilionis, **I. B. Adhanom**, R. Morran, M. Taylor, N.G Murray. 2023. Virtual Reality Application for Vestibular/Ocular Motor Screening: Current Clinical Protocol Versus a Novel Prototype. Sports Health.

J3 **I. B. Adhanom**, S. Halow, E. Folmer, P. MacNeilage. 2022. VR Sickness Adaptation with Ramped Optic Flow Transfers from Abstract To Realistic Environments. Frontiers in VR.

J2 **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).

J1 A. Prithul, **I. B. Adhanom**, E. Folmer. 2021. Teleportation in Virtual Reality; A Mini-Review. Frontiers in VR.

Peer Reviewed Conference Papers

C6 T. Nie, **I. B. Adhanom**, E. S. Rosenberg. 2023. Like a Rolling Stone: Effects of Space Deformation During Linear Acceleration on Slope Perception and Cybersickness. In Proceedings of IEEE conference on virtual reality and 3D user interfaces (IEEE VR '23).

C5 P. Sarker, K.F Hossain, **I. B. Adhanom**, P.K. Pavilionis, N.G. Murray, A. Tavakkoli. Analysis of Smooth Pursuit Assessment in Virtual Reality and Concussion Detection Using BiLSTM. In Proceedings of Advances in Visual Computing (ISVC 2022).

C4 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).

C3 **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).

C2 **I. B. Adhanom**, N. N. Griffin, P. MacNeilage, E. Folmer. 2020. The effect of a foveated field-of-view restrictor on VR sickness. In Proceedings of IEEE conference on virtual reality and 3D user interfaces (IEEE VR '20).

C1 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).

Workshop Papers and Posters

W1 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).

W2 **I. B. Adhanom**. 2021. Towards Universal VR Sickness Mitigation Strategies. In 2021 IEEE Conference on Virtual Reality and 3D User Interfaces

Preprints

P1 **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

Research and Work Experience

2022 – Now **University of Minnesota**, *President's Postdoctoral Fellow*, Minneapolis, MN.
Researching the use of spatiotemporal models of visual motion to better understand the effect of stimulus characteristics on VR users' sense of discomfort.

2018 – 2022 **University of Nevada, Reno**, *Graduate Research Assistant*, Reno, NV.
Completed various research projects on VR sickness mitigation, eye tracking in VR, and the development of healthcare applications with VR.

2017 – 2018 **University of Nevada, Reno**, *Graduate Deans Fellow*, Reno, NV.
Researched the effect of FOV restriction on VR sickness and spatial navigation performance.

2013 – Now **Binogi International**, *Freelance E-leaning Content Developer*.
Helped develop more than 1250 educational video lessons and interactive quizzes in Tigrinya - a very low-resourced language - to improve educational equity.

2015 – 2017 **Eritrea Institute of Technology**, *Software Engineer*, Asmara, Eritrea.
Led a team of software engineers to collect requirements, design, implement, test, and deploy distributed web applications for the central management of student records and human resources.

2013 – 2017 **Emmanuel IT Solutions Provider**, *Software Engineer*, Dekemhare, Eritrea.
Led a team of software engineers to collect requirements, design, implement, test, and deploy distributed web applications for the central management of student records and human resources.

Teaching Experience

Spring 2022 **University of Nevada, Reno**, *Co-Lecturer for CS484/684 Virtual Reality*, Reno, NV.

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

Spring 2021 **University of Nevada, Reno**, *Teaching Assistant for CS484/684 Virtual Reality*, Reno, NV.

Spring 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.

Invited Presentations and Talks

Nov 2023 **University of Minnesota, Computer Science and Engineering Colloquium, Invited Speaker**

Unlocking Virtual Reality's True Potential: Addressing the Challenge of VR Sickness

Nov 2023 **University of Minnesota, CSCI 5619 - VR and 3D Interaction, Invited Guest Lecture**

Virtual Reality Sickness

Sep 2023 **University of Minnesota, CSCI 8001 - Introduction to Research in Computer Science, Invited Panelist**

How to Thrive as a PhD Student in Computer Science

Oct 2022 **University of Minnesota, CSCI 5619 - VR and 3D Interaction, Invited Guest Lecture**

Eye Tracking in VR: an Overview of Applications and Challenges

Feb 2020 **Smith Kettlewell Eye Research Institute, Invited Talk**

Measuring the Spatial Accuracy and Precision of VR HMD-based Eye Trackers

Academic Service

Program Committee

2023 IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR '24)

Organizing Committee

2023 Co-organizer for Workshop on Immersive Sickness Prevention (WISP) at IEEE VR '23

2018-2021 Web Chair for International Symposium on Visual Computing (ISVC)

Journal Reviewer

2022-2023 IEEE Transactions on Visualization and Computer Graphics (TVCG)

2023 ACM Transactions on Applied Perception (ACM TAP)

Conference Reviewer

2020-2023 ACM Conference on Human Factors in Computing Systems (ACM CHI)

2020-2023 IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR)

2021-2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)

2020-2023 ACM Symposium on Virtual Reality Software and Technology (VRST)

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

Students Mentored

2023 **Haoyu Tan**, Ph.D. Student, University of Minnesota

2023 **Tongyu Nie**, Ph.D. Student, University of Minnesota

2023 **Jayden Barthel**, Undergraduate CS Student, University of Minnesota, REU Mentor

2020-2022 **Aniruddha Prithul**, Ph.D. CS Student, University of Nevada, Reno

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