

SAMANTHA D. AZIZ

sda69@txstate.edu

EDUCATION

- PhD** Texas State University, Computer Science (in-progress) May 2025
Dissertation: “Toward Multi-Utility Privacy Preservation for Eye Tracking in Mixed Reality”
Advisor: Dr. Oleg Komogortsev
- BS** Texas State University, Computer Science May 2020
Graduated Summa Cum Laude
Minored in Sociology

HONORS AND AWARDS

- National Science Foundation Graduate Research Fellowship 2020 - 2023
Merrick Merit Fellowship 2020 - 2021
STARS Scholarship 2018 - 2021
National Distinction Scholarship for National Merit Scholars 2017 - 2020
President’s Honor Scholarship for High School Valedictorians 2017 – 2020
Lone Star Scholar Award 2017 – 2020
University Scholars Award – Science and Engineering 2017 – 2020
Reed Parr Presidential Endowment Award 2017 – 2018

RESEARCH AND TEACHING EXPERIENCE

Graduate Research Fellow (August 2020-present)

Texas State University Human-Computer Interaction Lab. Advisor: Dr. Oleg Komogortsev

- Led the construction of GazeBaseVR, the first large-scale, longitudinal eye movement dataset collected in virtual reality; collected data from 465 participants over the course of three years (publication pending).
- Characterized the eye tracking signal quality of emerging eye tracking devices, including the Microsoft HoloLens 2 and the AdHawk MindLink. Both investigations were published in ETRA, the top conference in eye tracking research.

Undergraduate Research Assistant (February 2019-August 2020)

Texas State University Human-Computer Interaction Lab. Advisor: Dr. Oleg Komogortsev

- Designed and executed novel eye tracking experiments in virtual reality. Developed software framework to perform biometric identification on eye movement signals collected in virtual reality.

Supplemental Instruction Leader (August 2018-August 2020)

- Independently developed a 15-week supplemental curriculum to tutor 120 at-risk computer science students per semester. Position funded by Hispanic Serving Institution initiative at TXST.

RESEARCH INTERESTS

Privacy and Biometrics: Establishing and applying privacy-preserving techniques to eye movement signals to protect personally identifying information present in eye movement, while preserving its utility for other applications.

Gaze Prediction: Developing statistical and machine learning-based frameworks to anticipate a user's eye movements for the purpose of overcoming latency requirements for gaze-contingent rendering in eye-tracking-enabled devices.

Data Quality Assessment: Evaluating the generalizability of existing eye tracking applications, including biometrics and gaze prediction, to low-quality eye tracking data that can be expected from consumer-grade eye trackers.

SELECTED PUBLICATIONS

Samantha Aziz, Dillon J Lohr, and Oleg Komogortsev. 2022. “**SynchronEyes: A Novel, Paired Data Set of Eye Movements Recorded Simultaneously with Remote and Wearable Eye-Tracking Devices**”. In 2022 Symposium on Eye Tracking Research and Applications (ETRA '22). Association for Computing Machinery, New York, NY, USA, Article 67, 1–6. <https://doi.org/10.1145/3517031.3532522>

Samantha Aziz and Oleg Komogortsev. 2022. “**An Assessment of the Eye Tracking Signal Quality Captured in the HoloLens 2**”. In 2022 Symposium on Eye Tracking Research and Applications (ETRA '22). Association for Computing Machinery, New York, NY, USA, Article 5, 1–6. <https://doi.org/10.1145/3517031.3529626>

Dillon J Lohr, Saide Johnson, **Samantha Aziz**, and Oleg Komogortsev. 2022. “**Demonstrating Eye Movement Biometrics in Virtual Reality**”. Arxiv. <https://doi.org/10.48550/arXiv.2207.02325>

Dillon Lohr, Henry Griffith, **Samantha Aziz** and Oleg Komogortsev, “**A Metric Learning Approach to Eye Movement Biometrics**”. In 2020 IEEE International Joint Conference on Biometrics (IJCB), 2020, pp. 1-7, doi: 10.1109/IJCB48548.2020.9304859.

Dillon Lohr, **Samantha Aziz**, and Oleg Komogortsev. 2020. “**Eye Movement Biometrics Using a New Dataset Collected in Virtual Reality**”. In ACM Symposium on Eye Tracking Research and Applications (ETRA '20 Adjunct). Association for Computing Machinery, New York, NY, USA, Article 40, 1–3. <https://doi.org/10.1145/3379157.3391420>

Henry Griffith, **Samantha Aziz** and Oleg Komogortsev, “**Prediction of Oblique Saccade Trajectories Using Learned Velocity Profile Parameter Mappings**”. In 2020 10th Annual Computing and Communication Workshop and Conference (CCWC), 2020, pp. 0018-0024, doi: 10.1109/CCWC47524.2020.9031274.

PRESENTATIONS AND INVITED LECTURES

Invited Paper Presentation, “**SynchronEyes: A Novel, Paired Data Set of Eye Movements Recorded Simultaneously with Remote and Wearable Eye-Tracking Devices,**” Symposium on Eye Tracking Research and Applications, 2022. Seattle, WA USA.

Invited Poster, “**Demonstrating Eye Movement Biometrics In VR**”. Symposium on Eye Tracking Research and Applications, 2022. Seattle, WA USA.

Invited Poster, “**Eye Movement-Driven Authentication in Virtual Reality**”. National Science Foundation Secure and Trustworthy Computing, 2019. Washington D.C., USA.

PROFESSIONAL AFFILIATIONS

Association for Computing Machinery, 2018-Present

SKILLS

- Proficient programmer in Python, MATLAB, C#, and R
- Familiar with PyTorch, PyTorch Lightning, Unity
- Extensive experience in working with various eye tracking devices, interfacing with their APIs, and analyzing time series data.
- Extensive experience in conducting large-scale user studies and managing experiment funds.