Adhi Widagdo

Researcher & Engineer | XR and Video Systems

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Researcher and engineer developing gaze-adaptive VR streaming and neural video compression. Combines C++, GPU shaders, Python, and PyTorch with systems integration and perceptual evaluation.

EXPERIENCE

Doctoral Researcher | Cloud-XR & Gaming

University of Helsinki | November 2023-present

- Implemented gaze-adaptive foveation in ALVR using HLSL/Vulkan, eye tracking, and H.265 streaming; evaluated system supported native 72 FPS.
- Developed gaze prediction and latency compensation; reported 24.04% lower mean gaze error in tested conditions, with a collaborative 30-participant study.
- Evaluated dynamic foveation using objective quality measures and a 16-participant study; dynamic methods generally improved visual quality over static foveation.
- Research foveated neural video compression for VR. Ongoing, unpublished work.
- Build C++/Python research software for gaze analysis, parameter tuning, and visual-quality evaluation.
- Collaborate with researchers at Aalto University and National Tsing Hua University; contribute to teaching and undergraduate thesis supervision.

Researcher | Immersive Telepresence

University of Oulu | 2019-October 2023

- Integrated headset playback, gaze tracking, and event handling for immersive perception studies in 2022-2023; supported user-experience analysis.
- Earlier work included rendering 16K panoramic images and 8K video, with Oculus and Varjo headset integration for immersive telepresence.
- Supported robot-based headset benchmarking and Python analysis of latency, field of view, and tracking accuracy.

SELECTED PUBLICATIONS

Gaze-Adaptive Foveation for Remote Rendered VR
First author | ACM Multimedia 2025

Latency-Driven Optimization for Foveation in Remote Rendered VR
First author | ACM Multimedia 2026 (forthcoming)

Investigating a simple technique to alter viewpoint height in immersive 360° video
Co-author | IEEE Conference on Telepresence 2024

EDUCATION & RESEARCH TRAINING

University of Helsinki | PhD studies in Computer Science, May 2024-present. In progress.

MSc Electrical Engineering | National Taiwan University of Science and Technology (Taiwan Tech).

BASc Mechatronics Engineering | Sepuluh Nopember Institute of Technology, Indonesia.

SELECTED RECOGNITION

Best Student Conference Paper, CACS 2015. Team: first place, RoboCup 2015 Teen-size Technical Challenge; second place, Teen-size Soccer.

TECHNICAL SKILLS

C++ | Python | PyTorch | HLSL / GLSL | Vulkan | GPU programming | Systems integration | Perceptual evaluation