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Shivi Vats

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Please note: I hold a *Red-White-Red Card Plus*, which gives me unlimited labor market access in Austria.

Work Experience

Project Assistant

SPIRIT Project

OCT 2022 – Present

Alpen-Adria Universität Klagenfurt, Austria

Development

- Developed a Unity/C# platform for point cloud testing using the HoloLens 2.
- Implemented dynamic resource management, HoloLens 2 shaders, and maintained a modular design to ensure ease-of-use by third-parties.
- Implemented a custom solution for eye-tracking calibration and data collection.
- Implemented a solution in C# and MATLAB to generate visual saliency heatmaps from user eye-tracking data.
- Ported a Unity collaborative telepresence app from VR to AR for the Meta Quest 3.
- Trained objective QoE models for point clouds using Python.
- Integrating LLL-DASH-based systems for point cloud streaming with WebRTC-based systems by facilitating communication between two foreign systems with minimal changes to the code.

Communication and Organisation

- Conducted subjective testing with 60+ participants, collecting 2000+ data points.
- Organised and led regular internal meetings for over 2 years.
- Represented the University in meetings with European project partners.
- Collaborated with partners on five publications (and more ongoing work).
- Presented/demonstrated my work at four academic conferences and three public events, along with other internal demonstrations.
- Mentored an intern for 6 weeks, providing guidance and reviewing progress.
- Regularly contributed to project reports and deliverables.

Lecturer

Masters Game Studies and Engineering

OCT 2024 – PRESENT

Alpen-Adria Universität Klagenfurt, Austria

- Developed and taught “Self-Guided Game Studies and Engineering” for the Masters curriculum.
- Mentored 17 students on their self-study journey through various topics related to game development and design.
- Teaching “Non-Entertainment Games” and “Introduction to Computer Graphics” for the curriculum from Oct 2025.
- Held a guest lecture for the “Representation and Configuration in Games: Perspectives” course on “Glitches: A Programmer’s Perspective”.

Project Assistant

5G Playground “Virtual Reality”

OCT 2020 – OCT 2022

Alpen-Adria Universität Klagenfurt, Austria

- Developed a Python (Flask) web application, featuring a viewport prediction algorithm for on-demand 360° videos.
- Deployed the webapp at a 5G edge using NGINX.
- Implemented caching of predicted viewports using NGINX caching rules and Python requests, reducing server response time by up to 77%.
- Reduced motion-to-glass latency for on-demand streaming by up to 62% through significant modification of an existing Android DASH 360° video client.
- Collaborated with project partners throughout Austria.
- Presented my work at project meetings and dissemination events and regularly contributed to project deliverables.

- Hosted bi-weekly Twitch streams, teaching programming and game development concepts to Masters students.
- Developed a basic 2D platformer in Unity and C#, demonstrating core game development principles including physics, tilemaps, animations, and audio, and more.

Education

M.Sc. Game Studies and Engineering	Alpen-Adria Universität Klagenfurt, Austria	Oct 2018–Apr 2022
<ul style="list-style-type: none"> • Final Grade: 1.5 (1 is best, 5 is worst) • Thesis: Edge-supported Semantic-aware View Prediction for 360° Video Streaming • Awarded full fee rebate for four semesters (maximum allowed) due to excellent grades. 		
B.Tech. Computer Science and Engineering	IIIT Una, India	Aug 2018–May 2018
<ul style="list-style-type: none"> • Final Grade: 7.56 (10 is best, 4 is worst) 		

Skills

Technical (Self-assessment)	Proficient: Unity, C#, MRTK2; Independent: Python, Unreal Engine with C++, Git, MATLAB, ML models; Basic: Android (Java), Golang, React, TailwindCSS with ShadCN, Bash; <i>Levels: Basic User - Independent User - Proficient User</i>
Communication and Organisation	Conducted countless presentations at internal meetings as well as academic and University events; Planned, led and participated in regular internal and project-wide meetings, conveying project progress and challenges to partners; Planned and led collaborative research efforts with other research institutes, resulting in successfully published papers; Oversaw external projects as part of the SPIRIT open calls as a patron, guiding them in their work and ensuring alignment with SPIRIT project goals; Held multiple workshops and tutoring sessions on game development with Unity, and taught and mentored Masters students as a lecturer;
Languages	Hindi (Native), English (C1), German (B2)
Research	Reviewed multiple papers for conferences and journals;

Selected Projects

Subjective Testing Platform	A modular mixed reality testing platform from scratch for HoloLens 2 using Unity and C#. The user-centric design allows researchers to import their own content and configure custom tests. The platform facilitated subjective testing with over 60 participants and was the foundation for five publications. GitHub .
Vis à Vis	3D first-person horror game developed using UE4 (C++ and BP). As the sole programmer, I designed and implemented the core gameplay systems, including the player controller, inventory management, dynamic trigger interactions, event sequences, and cutscenes. itch.io .

Interests

- I like to write about my experiences during game development and other personal projects and reflect on them in my portfolio. You can find them here: shivivats.github.io.
- I am very passionate about TTRPGs, especially D&D 5e. I have run numerous one-shots and a few short campaigns. I am currently running a homebrewed campaign for a party of 5.

Publications

- Publication accepted to EuroXR 2025: **S. Vats**, C. Timmerer, H. Hellwagner, *"STEP-MR: A Subjective Testing and Eye-Tracking Platform for Dynamic Point Clouds in Mixed Reality"*
- M. Nguyen, **S. Vats**, X. Zhou, I. Viola, P. Cesar, C. Timmerer, H. Hellwagner, *"ComPEQ-MR: Compressed Point Cloud Dataset with Eye Tracking and Quality Assessment in Mixed Reality,"* in ACM MMSys 2024
- M. Nguyen, **S. Vats**, H. Hellwagner, *"No-Reference Quality of Experience Model for Dynamic Point Clouds in Augmented Reality,"* in ACM MHV 2024
- M. Nguyen, **S. Vats**, S. Van Damme, J. Van der Hooft, M. Torres Vega, T. Wauters, F. De Turck, C. Timmerer, H. Hellwagner, *"Characterization of the Quality of Experience and Immersion of Point Cloud Video Sequences through a Subjective Study,"* in IEEE Access 2023 Volume 11
- **S. Vats**, M. Nguyen, S. Van Damme, J. van der Hooft, M. Torres Vega, T. Wauters, C. Timmerer, H. Hellwagner, *"A Platform for Subjective Quality Assessment in Mixed Reality Environments,"* in QoMEX 2023
- M. Nguyen, **S. Vats**, S. Van Damme, J. van der Hooft, M. Torres Vega, T. Wauters, C. Timmerer, H. Hellwagner, *"Impact of Quality and Distance on the Perception of Point Clouds in Mixed Reality,"* in QoMEX 2023;
- **S. Vats**, J. Park, K. Nahrstedt, M. Zink, R. Sitaraman, H. Hellwagner, *"Semantic-aware View Prediction for 360-degree Videos at the 5G Edge,"* in IEEE ISM 2022.

Certificates

- Completion of the "Deutsch als Fremd- und Zweitsprache" Level B2/b with an overall grade of "1", where 1 is best and 5 is worst (2025).
- Successful completion of the "Proposal Writing Workshop" hosted by Kseniia Harshina and Mathias Lux at the University of Klagenfurt (2024).
- First Aid in Work Environments (2024).
- Drivers License Class B.