Shreyas Shivakumara

PhD Student, Immersive Visualization

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Research Interests

Neural view synthesis (NeRFs, 3D Gaussian Splatting), perceptual quality assessment of neural rendering, stereoscopic and immersive VR, and deep learning for photorealistic real-time graphics.

Education

2023–Present **PhD in Visualization and Media Technology**, *Linköping University*, Norrköping, Sweden
Supervisor: Karljohan Lundin Palmerius Co-supervisors: Gabriel Eilertsen, Patric Ljung

2019–2021 **MSc in Computer Science**, *Uppsala University*, Uppsala, Sweden
Thesis: *Image Processing in MRI-guided Real-Time Adaptive Radiotherapy – Upsampling and Segmentation of Target Volume and Organs at Risk*.
Developed a GAN-based model with 3D convolutional networks for high-resolution segmentation and upsampling of volumetric MRI.
Supervisor: Robin Strand

2015–2019 **BTech in Computer Science & Engineering**, *Nitte Meenakshi Institute of Technology*, Bangalore, India
Thesis: *Classification and Analysis of EEG Signals using Machine Learning* – seizure prediction with Random Forest, Naive Bayes and K-Means.
Supervisor: Sarojadevi H

Publications

Submitted *Beyond Monoscopic Viewing: A Study on 3D Gaussian Splatting Quality in VR.* Submitted to IEEE VR 2026.

Submitted *Quality Assessment for Neural Radiance Fields: A Survey and Comparative Study.* Submitted to Springer Multimedia.

2025 *Exploring Metric Fusion for Evaluation of NeRFs.* Short paper, International Conference on Quality of Multimedia Experience (QoMEX 2025).

Experience

2024–2025 **Research Project: VISCP**, *Linköping University*, Norrköping, Sweden
Rendered photorealistic images of real environments with NeRFs (2024) and 3D Gaussian Splatting (2025).

2021–2023 **Research Engineer**, *Linköping University*, Linköping, Sweden
- Built infrastructure for the BIGPICTURE project, a petabyte-scale AI platform for European digital pathology.
- Developed services in Go for securely sharing petabytes of sensitive medical data in compliance with GDPR, using OpenStack, S3, Terraform and Kubernetes.
- Supported operations of the AIDA Data Hub and maintained its NVIDIA DGX-2 GPU cluster.

2020 **Machine Learning Intern**, *SustainLab*, Stockholm, Sweden
- Built a deep learning pipeline that extracts information from PDF, image and text files into structured spreadsheets for data analysis.
- Served the models through a RESTful Flask API with CI/CD, deployed on Google Cloud Platform, working in an agile team.

2018–2019 **Research Assistant**, *Indian Institute of Science*, Bangalore, India
- Compared colour thresholding, background subtraction and CNNs for detecting animals in video across three species and environments (Centre for Ecological Sciences).

Teaching

2025–2026 Practical Data Visualization and Virtual Reality (TNM093)
Supervised lab sessions on interactive data visualization, VR head tracking and view projection for around 20 students each year; examined the lab work through oral examinations (viva).

2024–2026 Computer Graphics (TNM122)
Supervised OpenGL and shader programming labs for around 40 students each year (meshes, 3D transformations, perspective projection, lighting and shading, texture mapping); revised the lab material in 2025, which had not been updated since 2012.

2025 Introduction to Machine Learning (TNM119)
Assessed hand-in assignments for 36 students.

Supervision

2026 **Master's thesis supervision** – *Efficient 3D Reconstruction and Real-Time Rendering of Large Environments Using Gaussian Splatting*.

2025 **Master's thesis supervision** – *An Empirical Investigation of Data Calibration for Neural Radiance Fields – Analysis and Methods for Quality Improvements*.

2025 **Master's thesis supervision** – *Adaptive Difficulty with Artificial Intelligence in Virtual Reality Games*.

Posters & Conference Talks

2026 *Stereoscopy Reveals What 2D Metrics Miss: Robust 3D Gaussian Splatting Initialization for VR*
Paper talk at ITN PhD Conference; posters at Nordic AI Meet (Reykjavik), ELLIIT Workshop and MIT PhD Conference.

2025 *Exploring Metric Fusion for Evaluation of NeRFs*
Posters at QoMEX 2025, ELLIIT Workshop, MIT PhD Conference and Nordic AI Meet.

2024 *Machine Learning for Photo-realistic Exploration of Urban Environments in Virtual Reality*
Poster at ELLIIT Workshop, Lund University.

Invited Talks & Seminars

2025–2026 Conference reports to colleagues on ECCV (2026) and the EuroXR Summer School (2025).

2024–2025 Unit seminar series: *Gaussian Splatting* (2025), given to the Immersive Visualization and Applied Visualization units; *NeRFs and their Applications* (2024).

2024 *Neural Radiance Fields and their Applications* – Visual Sweden project, for project members and stakeholders.

Summer Schools & Conferences

2026 Nordic AI Meet, Reykjavik, Iceland

2026 European Conference on Computer Vision (ECCV), Malmö, Sweden

2025 Nordic AI Meet, Norrköping, Sweden

2025 EuroXR Summer School – Advancing Research and Innovation in Virtual, Augmented and Mixed Reality, Lecco, Italy

2025 High-Performance Graphics (HPG), Copenhagen, Denmark

2024 WASP Joint Summer School on Generative AI, Visualization Center C, Norrköping

2022 ELIXIR All Hands Meeting, Amsterdam

2021 AIDA Days – AI in medical imaging, Stockholm

2018 6th CSA Undergraduate Summer School, Indian Institute of Science, Bangalore