Patrick Noras

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EDUCATION

University Kaiserslautern-Landau, Kaiserslautern, Germany 2023 - Present
Master of Science in Computer Science
Relevant Coursework: 2D Image Processing, Very Deep Learning, Advanced Topics in Computer Vision and Deep Learning, Machine Learning II - Statistical ML, Scientific Visualization, Computational Topology, Probabilistic Graphical Models
Thesis: *Relightable Sparse-View 3D Gaussian Splatting*; Advisor: Prof. Didier Stricker

University Kaiserslautern-Landau, Kaiserslautern, Germany 2019 - 2023
Bachelor of Science in Computer Science
Relevant Coursework: 3D Computer Vision, Machine Learning I - Foundations, Computer graphics, Artificial Intelligence, Data Visualization
Thesis: *Performance and Accuracy Assesment of Nvidia's Omniverse Isaac Sim for Generating Synthetic Data from Real-world Scenarios*; Advisor: Prof. Christoph Garth

RESEARCH PUBLICATION

Patrick Noras, Jun Myeong Choi, Didier Stricker, Pieter Peers, Roni Sengupta. GAINS: Gaussian-based Inverse Rendering from Sparse Multi-View Captures. Preprint 2025

RESEARCH EXPERIENCE

Graduate Research Assistant, DFKI 2024 - Present
Advisor: Prof. Didier Stricker
Image Based Rendering, VR, 3D Reconstruction

- Developed *Monocular360° GS*, a method for reconstructing 3D environments from a single omnidirectional image using 3D Gaussian Splatting, achieving superior results compared to state-of-the-art, in collaboration with Ricoh
- Conducted a survey on state-of-the-art approaches for 3D Gaussian Splatting in sparse-view contexts and presented findings internally
- Developed a VR application for 3D Gaussian Splatting, demonstrated at a public outreach event [article link]

Visiting Graduate Researcher, UNC at Chapel Hill May 2025 - Nov 2025
Advisor: Prof. Roni Sengupta
Inverse Rendering, 3D Reconstruction, Diffusion

- Developed GAINS, a Gaussian-based inverse rendering method from sparse inputs using a two-stage approach (geometry and material estimation) with learning-based priors to stabilize the process
- Demonstrated superior performance of GAINS compared to existing Gaussian-based inverse rendering methods

INDUSTRY EXPERIENCE

Undergraduate Software Developer, SmartFactory KL 2021 - 2023
Data management, real-time visualization, digital twins, virtual sensor evaluation

- Contributed to the SmartMA-X project (part of the GAIA-X European initiative), developing data connectors and a real-time visualization tool for monitoring data transfers between organizations
- Designed a visual programming interface to simplify policy creation for data management
- Participated in the TWIN4TRUCKS project (digital twin and AI for connected factory in integrated commercial vehicle production), where my work also contributed to my Bachelor thesis evaluating NVIDIA Omniverse Isaac Sim capabilities for virtual sensors (camera and LiDAR) against real-world sensors

PROJECTS

Monocular360° GS
Presentation, Demo

- Developed Mono 360° GS, a method for monocular panoramic image-based rendering that generates parallax through partial ground-truth views and inpainting to handle occlusions
- Created an iterative point cloud refinement approach, updating low-coverage regions with inpainted novel views over multiple iterations
- Demonstrated that this method surpasses existing NeRF-based techniques for monocular panoramic image-based rendering on real-world scenes

Performance and Accuracy Assessment of NVIDIA's Omniverse Isaac Sim for Generating Synthetic Data from Real-world Scenarios
Thesis, Presentation, Code

- Evaluated NVIDIA Omniverse Isaac Sim for generating realistic synthetic stereo-camera images and LiDAR point clouds by comparing simulated data to a real-world cube-tower scenario
- Developed a digital twin environment including scene, sensor, and trajectory files to enable flexible synthetic data generation for diverse scenarios
- Assessed sensor accuracy with focus on RTX and PhysX LiDAR implementations and analyzed performance relative to real-world sensors
- Collaborated closely with NVIDIA Omniverse team to ensure realism and fidelity in synthetic data generation

HONORS & AWARDS

German Academic Exchange Service (DAAD) PROMOS Scholarship,
Scholarship funded research stay at UNC Chapel Hill — Jan 2025

SKILLS

Programming	Python, C, C++, C#, Java, JavaScript, SQL, Bash, PowerShell
Machine Learning	PyTorch, scikit-learn
Software & Tools	Unity, Isaac Sim, ROS, VTK, Docker, Slurm, GDP
Databases	PostgresSQL, Redis
Languages	German, Polish, English