Senior individual contributor

WIELAND MORGENSTERN

COMPUTER VISION RESEARCH ENGINEER

Profile

I develop computer-vision methods from research idea through algorithm design, rigorous evaluation and publication. My recent work focuses on 3D Gaussian Splatting compression, backed by broad experience in GPU computing, geometry, imaging and production software engineering, including system architecture, performance engineering, maintainability, testing, debugging, code review and continuous integration.

Contact

Location	Berlin, Germany
Email	wm@morgenst.de
Web	wieland.morgenst.de
GitHub	github.com/w-m
Scholar	Google Scholar
LinkedIn	linkedin.com/in/wiemo

Technical practice

Python / C++ / CUDA / OpenCL
PyTorch / NumPy / OpenCV
GPU computing / parallel algorithms / profiling
Numerics / geometry / visualization
Architecture / testing / code review / CI
Local LLM serving / agent sandboxing
Optimization / debugging / maintainability

Education

PhD Candidate, Computer Vision
Expected 2027, Humboldt University of Berlin
Supervisor: Peter Eisert

M.Sc. Computer Engineering
Neuroinformatics & Cognitive Robotics
TU Ilmenau, 2015
Supervisor: Karlheinz Brandenburg

B.Sc. Computer Engineering
TU Ilmenau, 2012
Supervisor: Horst-Michael Groß

Languages

German / English / French

RESEARCH & ENGINEERING

From a new computer-vision idea, through efficient and robust systems code, to controlled evaluation and publication.

TRACK RECORD / AUG 2026

85–319×	17	579	★ 398
size reduction vs. 3DGS	peer-reviewed papers	citations / Scholar	SOG research code

01 EXPERIENCE

Research Associate

APR 2018 – PRESENT

Computer Vision & Graphics, Fraunhofer HHI

BERLIN / DE

- **Initiated and led the research on PLAS, SOG, 3DGS.zip and KISS-GS**; developed the core algorithms, wrote most of the research code, and drove experiments and publication, achieving **85–319**× scene-size reduction with gains attributed stage by stage.
- **Built end-to-end computer-vision systems** for event-camera depth, animatable virtual humans, volumetric capture and temporal mesh registration; contributed to MPEG and glTF standardization for volumetric video and animation, with several resulting patent filings.
- **Mentored 11+ students** across research projects and theses, convened the group's internal 3DGS working group, and actively shared knowledge through technical discussions, demos, presentations and cross-team collaboration.
- **Contributed across publicly funded European R&D projects** covering immersive telepresence, volumetric capture, mixed reality, accessible media and next-generation XR.

Senior Computer Vision Engineer

DEC 2014 – MAR 2018

Orah / VideoStitch

PARIS / FR

- **Architected a cross-platform GPU backend**, separating the CUDA video-processing backend and shipping its OpenCL counterpart across ARM SoCs, Intel iGPUs and NVIDIA desktop GPUs.
- **Developed production components for live 4K+ 360-degree stitching** from up to 32 inputs, including video synchronization, calibration, exposure correction, blending and undistortion.
- **Worked across the product stack**, from GPU compute and I/O libraries through C++ orchestration to Qt UI, on Linux, macOS and Windows; established profiling, testing, CI, code review and cross-platform build practices.

Graduate Assistant

FEB – NOV 2014

Fraunhofer IOSB-AST

ILMENAU / DE

Developed autonomous-vehicle path-planning software using rapidly-exploring random trees, with embedded C/C++ implementation and Python/ROS integration.

Software Engineering Intern

MAR – NOV 2010

DxO Labs

PARIS / FR

Worked on the macOS interface of DxO Optics Pro in Objective-C/Cocoa and C++ as part of an agile professional imaging-software team.

12+ YEARS R&D / 2026

Open source

ffsplat ★ 47	3DGS Encoding Research Testbed
SOG ★ 398	Self-Organizing Gaussians
PLAS ★ 65	Parallel Linear Assignment Sorting
3DGS.zip ★ 249	3DGS Compression Survey
X-maps ★ 83	Event-Camera Depth for XR
stitchEm ★ 333	360 video

Academic

Venues	ECCV, CVPR/W, Eurographics, IEEE VR, NeurIPS, SIGGRAPH Asia
Papers	17 total / 5 first / 1 senior
Citations	579 / h-index 9
Mentoring	11+ students mentored, 5 theses supervised
Reviewing	CVPR, ECCV, IJCV, CGF + others

Awards

2025	CVMP Research Impact Award
2024	Innovationspreis für Medientechnologie (German media-technology innovation award)
2019	CVMP Best Paper Award

Talks

2025	Metaverse Standards Gaussian Splats Townhall Part 3
2024	Voxel51 ECCV 2024 Redux: High-Efficiency 3D Scene Compression
2024	View Dependent Podcast with Michael Rubloff and MrNeRF

Volunteering

2022 - 2025	Bürger*innenrat Stromnetz Berlin (Citizens' Council of Berlin's power grid operator)
2009 - 2013	Organization committee & group leader, International Student Week in Ilmenau
2007 - 2010	Student representative & head of departments, University & Faculty students unions

02 RESEARCH CONTRIBUTIONS

KISS-GS

ECCV 2026

3DGS COMPRESSION / 2025 – 2026

MODULAR PIPELINE / LEADING COMPRESSION

Led KISS-GS (ECCV 2026), which splits reconstruction, compaction, encoding and encoding-aware adaptation into **independently measurable, replaceable modules**, closing an attribution gap in prior work. Contributed **SOG-XT**, its browser-oriented attribute codec. Reaches **85–319**× size reduction over vanilla 3DGS at matched quality (738 MB to 3.2 MB average on Mip-NeRF 360) from standard `.ply` files, decoding **a million Gaussians in under a second on CPU** with no MLPs, hash grids or anchors.

Self-Organizing Gaussians & Survey

ECCV 2024, EG 2025

PLAS / SOG / 3DGS.ZIP / 2023 – 2025

IMPACT AWARD / REFERENCE SURVEY

Developed PLAS, a highly parallel GPU algorithm that sorts millions of Gaussian parameters into a **neighborhood-preserving 2D grid**, and initiated Self-Organizing Gaussians (SOG) (ECCV 2024): attributes trained into locally smooth grids that standard image codecs compress **19.9–39.5**×, decoding back to plain 3DGS for established renderers. Conceived and organized **3DGS.zip** (Eurographics 2025, senior author), the field's reference survey.

Event Cameras

CVPR/W 2023

X-MAPS / 2021 – 2023

DIRECT LOOKUP / REAL-TIME DEPTH

X-maps is a direct depth-lookup method for event-based structured light. Rectifying the projector time map into an X-map reduces disparity estimation to **two lookups instead of per-point search**, with a time-map calibration for the non-linear sweep of cheap projectors. Built the real-time depth and reprojection pipeline for spatial AR at **under 3 ms per frame**.

Virtual Humans

IEEE VR / TVCG

VOLUMETRIC CAPTURE / 2019 – 2024

CVMP 2019 / NON-RIGID REGISTRATION

Animatable Virtual Humans (IEEE VR 2024 / TVCG): **pose-dependent appearance and geometry** learned from studio-captured mesh sequences as residuals against a fitted SMPL model, encoded in **consistent UV space** for real-time animation. Earlier best-paper work on **progressive non-rigid registration** of temporal mesh sequences (CVMP 2019), plus volumetric capture and MPEG/glTF assets.

03 SELECTED PUBLICATIONS

FIRST OR LAST AUTHOR

2026	KISS-GS: 3D Gaussian Splatting Compression Kept Simple	ECCV
2025 150 citations	3DGS.zip: A Survey on 3D Gaussian Splatting Compression Methods	Eurographics
2024 260 citations	Compact 3D Scene Representation via Self-Organizing Gaussian Grids	ECCV
2024 9 citations	Animatable Virtual Humans: Learning Pose-Dependent Human Representations in UV Space	IEEE VR / TVCG
2023 20 citations	X-maps: Direct Depth Lookup for Event-Based Structured Light Systems	CVPR/W
2019 18 citations	Progressive Non-Rigid Registration of Temporal Mesh Sequences	CVMP