Bartłomiej Baranowski

PhD Candidate, Visual Computing & AI Lab, Technical University of Munich

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I work on spatial intelligence, models that perceive, reason about, and act in the 3D world, spanning 3D reconstruction, 3D-aware vision-language models, and robot manipulation.

Education

Technical University of Munich — *Nov 2025 – present*
PhD Candidate, advised by Prof. Dr. Matthias Nießner

- 3D-aware vision-language models (OneCanvas, built on Qwen3-VL), now extending them to embodied manipulation.

University of Tübingen — *2022 – 2025*
MSc in Machine Learning

- Master's thesis on 3D Gaussian Splatting in Prof. A. Geiger's group, published as ConeGS. Research assistant in the group, Sep – Nov 2025.

Lodz University of Technology — *2018 – 2022*
BEng in Computer Science

Publications

OneCanvas: 3D Scene Understanding via Panoramic Reprojection
B. Baranowski, D. Z. Chen, M. Nießner. **NeurIPS 2026** SPOTLIGHT
[project] [paper] [code]
Adds 3D spatial reasoning to a pretrained VLM by reprojecting multi-view features onto one panoramic canvas. State of the art on SQA3D and VSI-Bench, trained with an order of magnitude less compute than the strongest competing methods.

ConeGS: Error-Guided Densification Using Pixel Cones for Improved Reconstruction with Fewer Primitives
B. Baranowski, S. Esposito, P. Gschoßmann, A. Chen, A. Geiger. **3DV 2026** ORAL
[project] [paper] [code]
Densifies 3DGS along the cones of high-error pixels, best under tight budgets.

Experience

Data Scientist — *Jan 2022 – Oct 2022*
MIM Solutions (Folliscan)

- Ovarian reserve assessment, detecting and counting antral follicles in ultrasound video with 2D and 3D deep learning models (PyTorch), served through an API.

Software Developer — *Aug 2021 – Jan 2022*
Digica

- Object detection and segmentation of street utilities in UAV footage (PyTorch).

Associate Software Developer — *Dec 2019 – Jan 2021*
Fujitsu Łódź

- Automotive digital-twin application with stream processing and object detection and similarity for vehicle video, deployed on AWS (Python, TensorFlow, Java).

Skills

Research. Vision-language models, spatial reasoning and grounding, embodied agents, reinforcement learning (GRPO), imitation learning, Gaussian Splatting.
Tools. PyTorch, Hugging Face, distributed training, Isaac Sim, OmniGibson, cuRobo.
Programming. Python, C++, CUDA, Java.
Languages. Polish (native), English (C1), German (B2). **Interests.** Accordion, running, climbing.

Talks

- OneCanvas, invited talk, Google Research, Munich, Aug 2026.
- ConeGS, oral presentation, 3DV 2026, Vancouver, Mar 2026.

Teaching

Teaching Assistant — *2026 – present*
Advanced Deep Learning for Computer Vision (ADL4CV), TUM