Alexey Nekrasov

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Profile

PhD Researcher specializing in Holistic Scene Understanding and Video Segmentation with a focus on multimodal LLMs, anomaly detection, and 3D perception. Published at **CVPR, ICRA, 3DV** and others.

Education

RWTH Aachen University, Aachen, Germany   May 2021 – Present

Ph.D. Candidate in Computer Vision & Robotics   Advisor: Prof. Dr. Bastian Leibe

RWTH Aachen University, Aachen, Germany   Oct. 2018 – Apr. 2021

M.Sc. Robotic Systems Engineering

- **Thesis:** Mix3D: Out-of-Context Data Augmentation for 3D Scenes **(3DV 2021, Oral Presentation)**
- **Honors:** Dean's List 2020/21 (Top 5% of students)
- **Specialization:** Machine Learning & Computer Vision

Research Experience

Computer Vision Group (RWTH Aachen)   May 2021 – Present

Doctoral Researcher   Aachen, Germany

Focus: Multimodal AI, 3D/4D perception, and safety for autonomous driving.

- **Multimodal LLMs:** Orchestrated training across **64 A100 GPUs** to develop *Sa2VA-i* (**ICCV 2025 Workshop Challenge, 3rd Place**). Resolved training inconsistencies in ByteDance's baseline, enabling *a 1B model to match the performance of the original 26B model* on referring video object segmentation.
- **Open Source Impact:** multiple projects adopted by the community with a total of **400+ GitHub stars**.
- **Anomaly Detection and Segmentation:** *STU* dataset **(CVPR 2025)** and *OoDIS* benchmark **(ICRA 2025)** for safety-critical autonomous driving, as well as instance-segmentation *UGainS* model **(GCPR 2023)**.
- **3D/4D Panoptic Segmentation:** *Mix3D* model **(3DV 2021, Oral)** for out-of-context data augmentation in 3D scenes and co-authored *Mask4Former* **(ICRA 2024)** for spatio-temporal 3D scene understanding.

Awards & Honors

- **CIFAR Summer School** - Accepted to CIFAR/Vector Institute Deep Learning + Reinforcement Learning Summer School 2024, 20th Anniversary Edition, 13-18% acceptance ratio (Toronto, Canada)
- **3rd Place** - ICCV 2025 LSVOS Challenge for Sa2VA-i model (2025)
- **1st Place** - Mix3D ranks 1st on the ScanNet semantic segmentation benchmark (July, 2021)
- **Dean's List** - Top 5% of students (2020/21)

Selected Publications

- **Alexey Nekrasov**, Ali Athar, Daan de Geus, Alexander Hermans, Bastian Leibe. "Sa2VA-i: Improving Sa2VA Results with Consistent Training and Inference." *ICCV Workshop Challenge (LSVOS)*, 2025. **(3rd Place)**
- **Alexey Nekrasov**, Malcolm Burdorf, Stewart Worrall, Bastian Leibe, Julie Stephany Berrio. "Spotting the Unexpected (STU): A 3D LiDAR Dataset for Anomaly Segmentation." *CVPR*, 2025.
- **Alexey Nekrasov**, Rui Zhou, Miriam Ackermann, Alexander Hermans, Bastian Leibe, Matthias Rottmann. "OoDIS: Anomaly Instance Segmentation Benchmark." *ICRA*, 2025.

- Tzu-Yun Tseng[*], **Alexey Nekrasov**[*], Malcolm Burdorf[*], Bastian Leibe, Julie Stephany Berrio, Mao Shan, Stewart Worrall. "Panoptic-CUDAL Technical Report: Rural Australia Point Cloud Dataset in Rainy Conditions." *ITSC*, 2025.
- Severin Heidrich[*], Till Beemelmanns[*], **Alexey Nekrasov**[*], Bastian Leibe, Lutz Eckstein. "OCCUQ: Efficient Uncertainty Quantification for 3D Occupancy Prediction." *ICRA*, 2025.
- K. Yilmaz, J. Schult, **Alexey Nekrasov**, Bastian Leibe. "Mask4Former: Mask Transformer for 4D Panoptic Segmentation." *ICRA*, 2024.
- **Alexey Nekrasov**, Alexander Hermans, Lars Kuhnert, Bastian Leibe. "UGainS: Uncertainty Guided Anomaly Instance Segmentation." *GCPR*, 2023.
- Jan-Lucas Uslu, **Alexey Nekrasov**, Alexander Hermans, Bernd Beschoten, Bastian Leibe, Lutz Waldecker, Christoph Stampfer. "MaskTerial: A Foundation Model for Automated 2D Material Flake Detection." Journal: *Digital Discovery*, 2025.
- Jan-Lucas Uslu, Taoufiq Ouaj, David Tebbe, **Alexey Nekrasov**, Jo Henri Bertram, Marc Schütte, Kenji Watanabe, Takashi Taniguchi, Bernd Beschoten, Lutz Waldecker, Christoph Stampfer. "An open-source robust machine learning platform for real-time detection and classification of 2D material flakes." Journal: *Machine Learning: Science and Technology*, 2024.
- **Alexey Nekrasov**[*], J. Schult[*], Or Litany, B. Leibe, F. Engelmann. "Mix3D: Out-of-Context Data Augmentation for 3D Scenes." *3DV*, 2021. **(Oral Presentation)**

ACADEMIC SERVICES

- **Teaching Assistant:** "Advanced Machine Learning" and "Computer Vision" (2021–2025)
- **Conference Reviewer (2023–ongoing):** CVPR, 3DV, AAAI, ICRA
- **Winter School Participation:** Winter School on Foundation Models, Amsterdam (March 2024)

VOLUNTARY WORK

Lab Admin, Computer Vision Group (RWTH Aachen)   2021 – Present

Voluntary SysAdmin

Linux servers, Docker containers, Slurm scheduler, and internal HPC cluster maintenance.

Hydronautics: Student Underwater Robotics Team   Sep. 2015 – Sep. 2016

Team Captain & C++ Programmer

International competition at NASA, USA, July 2016. Participated as C++ programmer for electronic devices and team manager.

SKILLS

- **Research Areas:** Multimodal LLMs, Anomaly Detection, 3D Perception, Robotics
- **Engineering:** Python, PyTorch (DDP, FSDP, DeepSpeed), Linux, Git, LaTeX
- **Languages:** English (Full professional proficiency), Russian (Native), German (Elementary)

REFERENCES

- **Prof. Dr. Bastian Leibe**
  Advisor, Computer Vision Group, RWTH Aachen University
  ✉ leibe@vision.rwth-aachen.de

- **Dr. Alexander Hermans**
  Senior Researcher, Computer Vision Group, RWTH Aachen University
  ✉ hermans@vision.rwth-aachen.de