Daniel Kusuma

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Education

Rheinisch-Westfälische Technische Hochschule Aachen **Apr. 2023 – Dec. 2025**
Master of Science in Computer Engineering *Aachen, Germany*

Technische Universität Braunschweig **Oct. 2017 – March 2023**
Bachelor of Science in Electrical Engineering, major in Computer Engineering *Braunschweig, Germany*

Experience

Convista AG **Oct. 2024 - now**
ML Engineer *Munich, Germany*

- Developing multimodal information extraction and retrieval.
- Deploying multimodal ML-solutions across domains, bypassing domain- and subject-specific processing.
- Scaled products towards domain robustness and multimodality.
- Improved inference time leveraging heuristic-based retrieval.

Learning on Graphs Group **July 2023 - Sep. 2024**
Student Assistant (i6 Chair of Machine Learning and Reasoning) *Aachen, Germany*

- Contributing in a work on the algorithmic reasoning of a Graph Transformer variant (NeurIPs 2024).
- Running and managing experiments on various benchmarks.
- Taking care of group's website.

Signal Processing and Machine Learning Lab **May 2022 – June 2023**
Student Assistant (Institute for Communications Technology) *Braunschweig, Germany*

- Implementing a performance prediction framework for semantic segmentation and object detection with varzing state-of-the art backbones such as ResNet-based to Transformer-based architecture in a modular way to accommodate further extensive studies.
- Reproducing paper benchmark results with own and external codebases.
- Running extensive experiments including efficient trainings and evaluations on the lab's GPU cluster.
- Contributing and co-authorship to lab's scientific publications.

Data Science in Biomedicine **May 2022 – June 2023**
Student Assistant (Peter L. Reichertz Institute for Medicine Informatics) *Braunschweig, Germany*

- Building with the team for the project KI4ALL a centralised directory of educational materials around machine learning and its applications. We were working to make topics around ML accessible for everyone.

IAV GmbH **Oct 2019 – May 2022**
Working Student *Braunschweig, Germany*

- Maintenance, servicing and extension as well as programming and verification of scripts for the automatic evaluation of measurement data using UniPlot and UniScript.
- Analysis of measurement data using internal tools.
- Care, maintenance, expansion, programming and verification of scripts for automatic evaluation of measurement data using UniPlot and UniScript.

Publications

Mohammad Kohankhaki, Daniel Kusuma, Shirin Salehi, Carsten Kamp, Sigrid Brell-Cokcan, and Anke Schmeink. Latent prediction needs alignment: A controlled study of joint-embedding predictive vision-language learning. *AACL-IJCNLP (Accepted)*, 2026

Luis Müller, Daniel Kusuma, Blai Bonet, and Christopher Morris. Towards principled graph transformers. *NeurIPS*, 2024

Andreas Bär, Daniel Kusuma, and Tim Fingscheidt. Improvements to image reconstruction-based performance prediction for semantic segmentation in highly automated driving. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops*, pages 219–229, June 2023

Projects

Master thesis | *PyTorch* **June 2025 - ongoing**

- Researching multimodal energy-based model (JEPA) for vision-language understanding.
- The thesis serves as a basis for our accepted work for AACL-ICJNLP 2026. Contributed as coauthor.

Graph Transformer for Algorithmic Reasoning | *PyTorch, Jax* **Dec 2023**

- Implemented a Graph Transformer variant (Edge Transformer) in Jax.
- Experimented with Edge Transformer for the CLRS algorithmic reasoning benchmark. GitHub repository: https://github.com/ksmdnl/clrs
- Contributed as coauthor.

Improvements on the Performance Prediction | *PyTorch* **Nov 2022 – Mar 2023**

- Improved the Performance Prediction framework using modular training techniques. Repository: https://github.com/ifnspaml/PerfPredRecV2
- Contributed as a coauthor.

Bachelor thesis | *PyTorch* **Feb 2022 – May 2022**

- Extended the pre-built Performance Prediction framework to an object detection model. The Performance Prediction framework attempts to make and study the safeness of semantic segmentation models in the real-world application.
- Studied the loss functions for the Performance Prediction framework and improved the regression performance by investigating relevant metrics such as structural similarity.

Technical Skills

Languages: Python, Java, bash
Frameworks: PyTorch, Tensorflow, Jax, Lightning, MLFlow, vLLM, Ollama
Domain: NLP, Vision, Vision-Language, Graph-learning
Software Development: Git, Jenkins, Containerization (Docker), Pydantic, RestAPI, Celery, PostgreSQL, PG Vector, S3, Grafana, Prometheus

Volunteer

Representation of Foreign Students (Ausländischer Vertretung) **April 2024 - Nov 2025**
Project Leader *RWTH Aachen*

- Helping in providing information and consultation for international students as well as in creating relevant workshops.

Association of Indonesian Students in Braunschweig **Oct 2017 – Dec 2019**
Vice President *Technische Universität Braunschweig*

- Maintained communication between the association and the student initiatives within campus.
- Supported the association to hold a successful cultural night to introduce Indonesian culture to broader public.

Interests

Judo Learning and practicing martial arts plays a big role in establishing a balance between mind and body.
Reading about biology Learning about biology at times makes me personally appreciate our place in the world.
Playing or making music During my adult life I noticed that making music or learning new songs helps me being creative.

Languages

Professional profeciency German, English
Native Indonesian, Javanese