

Master Thesis - Metric-Guided Diffusion Models for High-Fidelity In-Cabin Synthetic Data Generation - REF5866V

Náplň práce

Are you looking for an exciting master's thesis at the intersection of Generative AI, Computer Vision, and Automotive AI? Would you like to work with state-of-the-art diffusion models while contributing to privacy-safe, next-generation driver monitoring systems?

Then this thesis could be the perfect fit for you.

We are offering a **6-month master's thesis** in our **AI laboratory in Berlin**, with a **preferred start date of February 2026**.



ID pozície

REF5866V

Pracovná oblasť

Inform. technológie

Miesto práce

Berlin

Kontakt

Nadia-Victoriana Ciorba

Právnická osoba

co-pace GmbH

Your Thesis Tasks:

As part of this master's thesis, you will:

- Implement and experiment with diffusion-based image generation models
- Develop an evaluation pipeline for a large-scale, high-fidelity synthetic in-cabin image dataset
- Investigate metric-driven feedback loops to improve image generation quality
- Analyze the impact of synthetic data on downstream computer vision tasks
- Summarize findings in a master's thesis and potentially a research paper or patent submission

While not mandatory, this thesis is especially suitable for students considering a future PhD or research-oriented career.

Profil kandidáta

You are a strong candidate if you:

- Are enrolled in a master's program in Artificial Intelligence, Machine Learning, Computer Vision, Computer Science, Robotics, Mathematics, or a related field
- Have strong Python programming skills
- Possess a solid understanding of deep learning and computer vision fundamentals
- Have experience with PyTorch or similar deep learning frameworks

Nice-to-Have Skills

The following experience is beneficial but not required:

- Prior exposure to diffusion models, GANs, or synthetic data generation
- Experience with pose estimation, activity recognition, or multimodal

models

- Familiarity with CLIP, ControlNet, or image quality evaluation metrics
- Experience using Git, Docker, and GPU-based training
- Previous research projects, internships, or open-source contributions are a plus

Personal Skills

In addition to technical qualifications, we value candidates who are:

- Independent, structured, and goal-oriented
- Strong analytical thinkers with good problem-solving skills
- Curious and creative when exploring new ideas
- Good communicators who enjoy working in a team
- Motivated to deliver high-quality and reproducible research

Application Requirements

Before submitting your application, please ensure you can provide:

- Proof of enrollment in a master's program
- A current transcript of grades
- An excerpt from your study regulations confirming master's thesis requirements

If you are not from the EU, a valid residence permit and work permit (including the additional sheet) are required.

Applications from severely handicapped candidates are explicitly welcome

Čo ponúkame

At the **Aumovio AI Lab**, you will work in the heart of **Berlin**, surrounded by pioneering startups and established AI ventures. We offer:

- Close supervision by experienced researchers and PhD students
- Access to powerful GPU infrastructure
- Flexible working hours with hybrid work options
- Participation in journal clubs, technical talks, and networking events
- Fair remuneration for your thesis work

Diversity, Inclusion &

Belonging are important to us and make our company strong and successful. We offer equal opportunities to everyone - regardless of age, gender, nationality, cultural background, disability, religion, ideology or sexual orientation.

Ready to take your career to the next level? The future of mobility isn't just anyone's job. Make it yours! **Join AUMOVIO. Own What's Next.**

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O nás

Since its spin-off in September 2025 AUMOVIO continues the business of the former Continental group sector Automotive as an independent company. The technology and electronics company offers a wide-ranging portfolio that makes mobility safe, exciting, connected, and autonomous. This includes sensor solutions, displays, braking and comfort systems as well as comprehensive expertise in software, architecture platforms, and assistance systems for software-defined vehicles. In the fiscal year 2024 the business areas, which now belong to AUMOVIO, generated sales of 19.6 billion Euro. The company is headquartered in Frankfurt, Germany and has about 87.000 employees in more than 100 locations worldwide.