Master Thesis

Self-Supervised Models for Animal Tracking

Prof. Dr.-Ing. Johannes Stegmaier
Lehrstuhlinhaber

Emil Mededovic, M.Sc.
Wissenschaftlicher Mitarbeiter

Raum 106
Kopernikusstr. 16
52074 Aachen

Telefon: +49 241 80 22916
Email: Emil.Mededovic@lfb.rwth-aachen.de

Background

Automated laboratory animal tracking aids medical experts and biologists to reduce the use and enhance welfare monitoring of animals. By improving the accuracy, efficiency and reproducibility of research, automated tracking based on deep learning can help reduce the number of animals needed for scientific studies. Robust posteriori analysis of the experiments can help reduce interventions that causes distress or discomfort to animals.
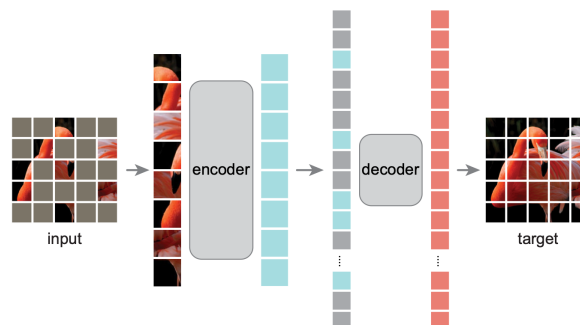
He, Kaiming, et al. "Masked autoencoders are scalable vision learners." Proceedings of the IEEE/CVF conference on computer vision and pattern recognition. 2022.

Tasks

- Literature review on self-supervised methods
- Replicate findings from literature review
- Experimentation on different datasets
- Investigating new ways to use self-supervised approaches on video data

Your Profile

- Strong programming skills (Python, C++, or a comparable programming language)
- Deep learning and machine learning experience
- Basic skills in Bash Unix shells
- Version control (e.g. Git, GitHub, GitLab)
- Familiarity with libraries such as Pytorch, Numpy
- Experience with Transformer-based architectures or/and Self-Supervised approaches is a plus

Our Offer

Our institute features a cluster with over 2000 CPU cores and 100 GPUs. We have more than 16TB of RAM and 1TB of VRAM available for computationally demanding tasks. Throughout the thesis period, you will be actively supported via jour fixe meetings. If you are interested, a short email to Emil.Mededovic@lfb.rwth-aachen.de with the latest résumé and the transcript of grades (Notenspiegel) would be expected.