Lehrstuhl für Bildverarbeitung

RWTH AACHEN UNIVERSITY

Ausschreibung
Bachelor- / Master-Arbeit

Multi-Marginal Optimal Transport for Multi-Rodent Tracking using Segmentation Heatmaps: A proof of concept

Univ.-Prof. Dr.-Ing. Volkmar Schulz
Lehrstuhlinhaber

Emil Mededovic
Wissenschaftliche/r Mitarbeiter/in

Raum 106
Kopernikusstr. 16
52074 Aachen

Telefon: +49 241 80-22916
Emil.Mededovic@lfb.rwth-aachen.de
10.01.2025

Hintergrund / 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.

Aufgaben / Tasks

- Get familiar with the tracking domain.
- Investigate different semantic segmentation methods.
- Literature review on multi-marginal optimal transport (MMOT).
- Development of the MMOT Framework for Heatmap-Based Tracking.

Voraussetzungen / Your Profile

- Strong mathematical background **is required**.
- Programming skills in Python are a plus.
- Deep Learning knowledge is a plus.

Unser Angebot / Our Offer

Our institute features a cluster with 2000 CPU cores and 100 GPUs. We have more than 12TB of RAM and 1TB of VRAM available for computationally demanding tasks.