

STELLENAUSSCHREIBUNG

Bachelorarbeit, Hilfskraftstelle, Masterarbeit, Studentische Abschlussarbeit

COMBINATION OF EXPERT DNNs TO ENHANCE RELIABILITY AND INTERPRETABILITY OF PERCEPTION TASKS

UMFELD

One of the ways to ensure reliable functioning of deep learning based systems in autonomous driving is redundancy. Intelligent combination of the complementary functional modules can help to develop subtasks individually, select the most suitable subsystem depending on the input and make a decision via comparison of the decisions of several submodels. This also results in a better interpretability of the overall system.

Mixture of experts (MoE) is an approach to combine several expert deep neural networks, each trained on a specific task or subdomain. The additional gating component learns to select the most appropriate expert for the current input or a weighted combination of several experts. Our research on MoEs aims to explore different possibilities to combine experts and study the possibilities to gain enhanced interpretability. The concrete tasks include training and evaluating individual expert networks for object detection or semantic segmentation tasks and experimenting with the architecture of a gating component. A bachelor or a master thesis in this area is also possible.

AUFGABEN

- Literature research and evaluation of the state of the art
- Implementation of the proposed approaches in Python (PyTorch)
- Experimenting with various network architectures

WIR BIETEN

- An interdisciplinary working environment with partners from science, industry and society
- Insights into cutting-edge research
- Hardware to train the algorithms
- A pleasant working atmosphere
- Constructive teamwork

WIR ERWARTEN

- Good Python programming skills
- Knowledge of deep learning
- Experience with Tensorflow or (better) PyTorch
- Self-reliant thinking and working
- Motivation and commitment
- Fluent in English or German

BEWERBUNG

We are looking forward to receiving your PDF application in English or German. Please send your application containing the following documents:

- Current transcript of records
- Curriculum vitae in tabular form

WEITERE INFORMATIONEN

Remote work is currently possible

- Themen-Schwerpunkt: Maschinelles Lernen, Sichere und intelligente Fahrzeuge
- Studiengänge: Informatik, Verwandte Studiengänge, Wirtschaftsinformatik
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