Increasing Safety of Deep Learning for Automated Vehicles with Physics–Informed Neural Networks Seminar

Anne Stockem-Novo Ph.D.

HUB 145, UW

Friday, February 21
FROM **10:00AM - 11:30AM PT**

Abstract

The development of automated driving is establishing for SAE-level 3-4 functions which is due to the strength of deep learning. Deep learning works well for a huge amount of training data, showing good variety, high quality and a sufficient coverage of edge cases. However, companies or certain use cases are often restricted to limited data. Injection of expert knowledge can be supportive since less training data is needed, which also serves as a regularization for a guided training, and most importantly, its extrapolation capabilities beyond the in-distribution training data.

The use case of trajectory prediction will be introduced, demonstrating the activities at Ruhr West University of Applied Sciences (HRW). Recent results on physics-informed neural networks will be discussed, showing extrapolation for out-of-distribution data and a significant reduction of the test error.

About the Speaker

Dr. Anne Stockem Novo is a professor for Applied Artificial Intelligence at the institute of computer science at Ruhr West University of Applied Sciences in Germany. Her research interest is centered around short-term trajectory prediction with deep learning models. While working in industry at ZF Automotive Germany GmbH, she developed behavioral functions for prediction, planning and control of automated vehicles.

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