



# Elektrotechnisches Kolloquium

der Bergischen Universität Wuppertal

Die Fakultät für Elektrotechnik, Informationstechnik und Medientechnik lädt zur Teilnahme an folgender Vortragsveranstaltung mit anschließender Diskussion ein:

Es spricht

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Doktorand am

Lehrstuhl für Automatisierungstechnik / Informatik  
Prof. Dr.-Ing Dietmar Tutsch

über das Thema

**A Data-Centric Approach to LiDAR-Based Perception for Robust and Reliable Autonomous Driving**

## **Inhalt:**

Autonomous driving systems rely on accurate and reliable perception of their surroundings to ensure safe and robust operation. LiDAR sensors play a crucial role in enabling high-precision 3D mapping, offering significant advantages over other sensor modalities, such as cameras and radar, particularly in challenging conditions like low lighting, occlusions, and adverse weather. Despite these advantages, LiDAR-based perception systems face several key challenges, including point cloud sparsity at long ranges, occlusions, and performance degradation under adverse weather conditions.

This Kolloquium presents a comprehensive study of novel data-centric methods designed to enhance LiDAR-based perception systems for autonomous vehicles. By enhancing the quality, completeness, and diversity of the raw sensor data, these methods provide a stronger foundation for downstream perception tasks and more robust environmental modeling.

The first study addresses the challenge of long-range perception, introducing a novel method to refine long-range LiDAR data and improve semantic segmentation accuracy.

The second study focuses on enhancing LiDAR performance under adverse weather conditions, introducing a novel generative method to simulate and augment LiDAR data with adverse weather conditions.

The last study tackles the issue of point cloud sparsity and occlusions, introducing a novel generative 3D LiDAR scene completion method that reconstructs missing structures from sparse point clouds.

Together, the presented methods advance a data-centric perspective on LiDAR-based perception, improving the robustness, coverage, and reliability of LiDAR data for autonomous vehicles in challenging driving conditions.

**T e r m i n:** 01.07.2026, 14:00 Uhr

**O r t:** Bergische Universität Wuppertal  
Campus Freudenberg, Seminarraum FG 1.01