technische universität dortmund

fakultät für informatik

ANS
AUTONOMOUS NAUTIC SYSTEMS

The Faculty of Computer Science, Department of Computer Science IV / Autonomous Nautic Systems, has a vacancy for a **student assistant (SHK, 5–16 hours/week)**.

The Autonomous Nautic Systems (ANS) research group develops methods and infrastructures for autonomous inland waterway transport. As part of the "DemoBin" project funded by the Federal Ministry of Digital and Transport, we are working on collecting and processing extensive reference data sets for AI models (image data, radar, lidar, sonar, network data, etc.) in order to subsequently develop detection, classification, and anomaly detection models for inland waterway vessels. Other components include the integration of sensor technology into test vehicles and the operation of a GPU-based data and training server. We formally model shipping laws in predicate logic for the verification of autonomous assistance systems and carry out real measurement campaigns on inland waterways and digital test fields.

You will support our team in one or more of the following areas:

**Data & AI**

- Support in the annotation, preparation, and analysis of large multimodal data sets (image, radar, lidar, sonar)
- Assistance in the development of AI models for object detection, classification, trajectory prediction, and anomaly analysis
- Collaboration in the setup and use of the GPU training environment and data infrastructure

**Software & Algorithms**

- Programming in Python or C++ for tools, ROS 2 nodes, data pipelines, or model training
- Implementation of algorithms for autonomous control, CV, ML, or simulation tools

**Legal Logic & Simulation**

- Support in modeling maritime law rules in predicate logic
- Testing of logic in real and simulated scenarios

**Hardware & Field Tests**

- Setup and testing of sensor hardware for test vehicles
- Field tests in ports, on waterways, or at industrial partners
- Manufacturing of small prototypes: 3D printing, soldering of simple circuit boards

**Scientific support**

- Creation of illustrations, presentations, and technical documentation
- Opportunity to collaborate on publications or theses

**You should have the following knowledge:**

- Degree in computer science, robotics, electrical engineering, data science, (business) mathematics, statistics, or a comparable field of study
- Very good knowledge of Python or C++
- Interest in AI methods, sensor technology, software development, or autonomous robotics
- Independent, meticulous way of working and confident use of Windows / MS Office

**Desirable**

- Experience with Linux / ROS 2
- Knowledge of AI/ML, CV, data processing, or parallel programming
- Basic knowledge of shipping, robotics, or embedded systems
- Motivation for interdisciplinary research in the field of mobility & waterways

**We offer**

- Flexible working hours, especially during exam periods
- Modern development environment for hardware and software
- Involvement in a cutting-edge research project on autonomous shipping
- Opportunity to write a bachelor's or master's thesis
- Very pleasant, motivated working environment in the ANS team

**Application**

Please send your **application as a single PDF file** (cover letter, resume, transcript, references, certificates) by December 31, 2025, via email to:

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Phone: (0231) 755-5855
Further information: http://ls4-www.cs.tu-dortmund.de / Autonomous Nautic Systems (ANS) - MS - TU Dortmund

The faculty aims to increase the proportion of women in science and therefore expressly encourages women to apply. Applications from suitable severely disabled persons are welcome.

International students are very welcome!