The chair for robotics, artificial intelligence and real-time systems has obtained one of the most challenging, visible and prestigious research projects in the field of autonomous driving. With these research funds, we aim to extend our research group, starting from 01.01.2020. Therefore, we are currently looking for multiple, highly motivated and enthusiastic PhD candidates, who want to start their research in one of the most future-compliant areas.

**Automated and connected driving / Intelligent Infrastructure Systems**

The goal of the research project is to provide the driver – when it comes to automated driving, the vehicle itself – a far-reaching view of the road ahead. We aim to deliver this foresight in a reliable, robust and situation-adapted approach, without overloading the driver with too much information. We want to provide this foresight in any situation, at day and night, and under all other environmental conditions. The complex image of the environment, which builds the basis of the far-reaching view, is created by combining sensor information from sensors installed along the highway (e.g. Radars, Cameras) and information provided by vehicles (e.g. Lidars). We spread the so-called “Digital Twin” via LTE and the new upcoming next generation radio network (5G). Automated vehicles, as well as drivers can derive all relevant information from this Digital Twin. Hence, our Digital Twin introduces the possibility to visualise the current traffic condition in all types of vehicles, from conventional up to partially automated or highly automated vehicles. Thus, we yield an essential contribution for automated vehicle control applications and increased traffic flow and safety.

**Your Task**
- Working in the scope of a highly innovative national-funded research project
- Development an evaluation of Hard- and Software components, e.g. algorithms for distributed real-time multi-sensor data fusion in C++
- Extending the current infrastructure system in the digital testbed on the A9 highway (sensors, computers, backend, 5G-communication, integration)
- Continuous testing and improvement of the ongoing development in the digital testbed
- Working in agile processes in close collaboration with our industry and research partners to improve and extend the intelligent infrastructure buildup.

**Requirements**
- Excellent master's degree in Computer Science, Robotics, Data Analytics, Electrical Engineering, MSE or a related field
- Professional proficiency in at least one common programming language (C/C++, C#, Java, Python) and high interest in software engineering and development
- Excellent writing skills and a self-reliant well-organized style of working are essential
- High motivation, strong communications skills and high team spirit
- Good German skills (B2 or higher)
- Furthermore good knowledge in at least one of the following points:
  - Planning and execution of distributed measurements with radars, cameras or other sensors
  - Simulation and testing of algorithms and traffic scenarios
  - Development of an intelligent infrastructure system in complex traffic environments
  - Real-time, distributed sensor data fusion in combination with WFIF/5G/LTE
  - Distributed algorithms and computing
Prediction of vehicle behaviour by using recorded sensor data
Excellent knowledge in software engineering, and software architecture concepts
Professional proficiency in C++

What We Offer
• Opportunity to obtain a PhD
• Employment as a research associate (TVL-E13) in a full-time position (fixed-term contract)
• Close collaboration with leading European companies from the semiconductor and automotive industry
• An open and innovative working environment at one of Europe’s top universities
• Working in a diverse research group in robotics with topics ranging from autonomous driving to biomimetic robotics and brain-inspired technologies

About Us
The Technical University of Munich (TUM) is one of the largest and in terms of third party funding one of the most successful universities in Germany. It is consistently ranked among the best universities in the world and is appointed as one of only three top-level elite universities by the German National Science Foundation since 2006. TUM as an entrepreneurial university actively supports knowledge transfer with over 300 start-ups created over the last years, numerous partnerships with industry and a comprehensive set of services aimed at successful commercialization of research. The Chair of Robotics, Artificial Intelligence and Real-time Systems led by Prof. Alois Knoll performs research in fields of human robot interaction and service robotics, medical robotics, cognitive robotics and cyber-physical systems. Across all these areas, there is a strong focus on the development and application of AI-based methods ranging from traditional machine learning to brain-inspired methods and neuromorphic computing.

Application
We are looking forward to receiving your application. The earliest starting date is January 1, 2020. Applications will be considered as long as the position is open and should include:
• A letter of motivation that describes your professional experience, your interest in the topic and why you think that you are a good fit for the topic and our team
• A detailed up-to-date CV that includes completed projects and publications
• Transcripts of record of your Bachelor’s and Master’s degree
• Names and e-mail addresses of at least two professors that can provide letters of recommendation on request

Please submit all documents in a single PDF via e-mail to neitz@in.tum.de. Use the subject “Digitales Testfeld”. Alternatively, you can submit the documents by mail to the address below.

TUM has been pursuing the strategic goal of substantially increasing the diversity of its staff. As an equal opportunity and affirmative action employer, TUM explicitly encourages nominations of and applications from women as well as from all others who would bring additional diversity dimensions to the university’s research and teaching strategies. Preference will be given to disabled candidates with equal qualifications. International candidates are highly encouraged to apply.
Contact
Technische Universität München
Institut für Informatik VI
Marie-Luise Neitz
Schleißheimer Str. 90A
85748 Garching bei München
Tel. +49 89 289 18121
neitz@in.tum.de
www6.in.tum.de
www.tum.de

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When you apply for a position with the Technical University of Munich (TUM), you are submitting personal information. With regard to personal information, please take note of the Datenschutzhinweise gemäß Art. 13 Datenschutz-Grundverordnung (DSGVO) zur Erhebung und Verarbeitung von personenbezogenen Daten im Rahmen Ihrer Bewerbung (data protection information on collecting and processing personal data contained in your application in accordance with Art. 13 of the General Data Protection Regulation (GDPR)). By submitting your application, you confirm that you have acknowledged the above data protection information of TUM.