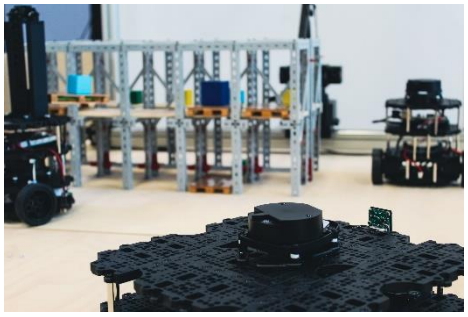
Karlsruher Institut für Technologie

Institut für Fördertechnik und Logistiksysteme

Master Thesis / Masterarbeit

Development of a Control Algorithm based on a Passive Grid and building a Prototype Automated Guided Vehicles to test it



Setup: Our group at the IFL is currently setting up an experimental environment (see images) to study production logistics. During this work you will be part of our team of students and academic researchers from different fields of study and can take an active part in our current research.

Problem: There are multiple different navigation methods for automated guided vehicles (AGVs) like SLAM, line following or passive grids. In this work we want to investigate a method used for example by amazon robotics to enable precise, stable, and easily adaptable navigation by using passive tags (RFID, magnets, etc.) that are spaced as a grid on the ground.

Task: You will be conducting a literature review on the different navigation techniques. Based on that you choose one type of passive tag and develop an algorithm to navigate a vehicle. You will be able to design and build a prototype of a vehicle to test your algorithm by using microcontrollers, motors and our 3D-printer and compare the precision of your algorithm to other navigation techniques.

Prerequisite: You should be interested in robotics and want to do something practical in addition to scientific work. You enjoy designing a system and comparing different concepts. For the practical implementation it is recommended to have some programming experience.

What we offer: A work with practical relevance and proximity to current research topics. The support includes weekly meetings and a great coffee machine.

Not really your topic, but you are interested in the general topic of mobile robots, automation in logistics and practical work?
Feel free to contact us and we can try to find a fitting topic.

Field of research:
Robotics and Interactive Systems

Content of this work:
☒ Experimental
☒ Theoretical
☒ Practical
☐ Simulation
☒ Design (CAD)
☐ Graphic design

Studies:
☒ Mechanical Engineering
☒ Mechatronics
☒ Industrial Engineering and Management

Starting: as soon as possible

Language: deutsch/english

Publication date:
20.05.2022

Contact Person at IFL:
Constantin Enke
Building 50.38; Room 1.14
Phone: 0721 608 48632
Constantin.Enke@kit.edu