

Partner:  
 Chair of Robotics,  
 Artificial Intelligence  
 and Embedded Systems

## Digital Twin of an Autonomous Trash Picking Robot

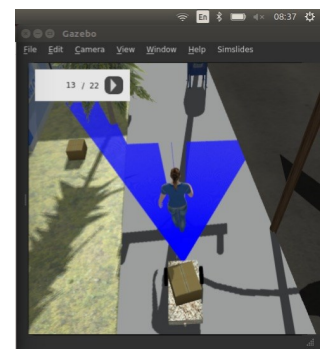
IDP Informatics

Bachelor's Thesis

Master's Thesis

Angsa revolutionizes the removal of trash on grass and gravel: Individual objects are detected by an artificial intelligence and removed by the autonomous robot.

**The goal of this project** is to develop a digital twin of the robot for simulation and optimization. For this purpose, the kinematics of the robot and the physical behavior of the environment have to be modeled.



### Your Tasks

- Review of literature and similar systems
- Description of the physical robot in URDF
- Kinematic modeling, collision behavior and environment simulation in Gazebo
- Visualization of the environment and robot state in Rviz
- Test and comparison to real-world behavior



### Your Profile

- You like solving complex problems!
- Enthusiasm for mobile and intelligent robots
- Experience with ROS / ROS2
- Good Python and/or C++ skills
- Team spirit and good communication skills
- Enrolled in Robotics, Informatics or similar



### What We Offer

- **Startup culture:** Team events, flat hierarchies, agile methods and flexible working hours
- **Real-world impact:** Your modules are used in pilot projects with customers.
- **Responsibility and leadership:** Good work and ownership are rewarded at Angsa: You can play a decisive role in shaping your role in the team.
- **Workplace & Equipment:** A workplace with desk for you in our office and workshop in the TUM Incubator, access to the Makerspace, free coffee & snacks.

### Sounds Interesting?

Send us an e-mail with a short description of your skills and motivation. If you have questions about the job or about us, just call us or come by our office in Garching.

Not the right topic yet? Have a look at our other open projects:  
[angsa-robotics.com/students](http://angsa-robotics.com/students)

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