Dein wissenschaftlicher Beitrag zur Weiterentwicklung der Robotik!
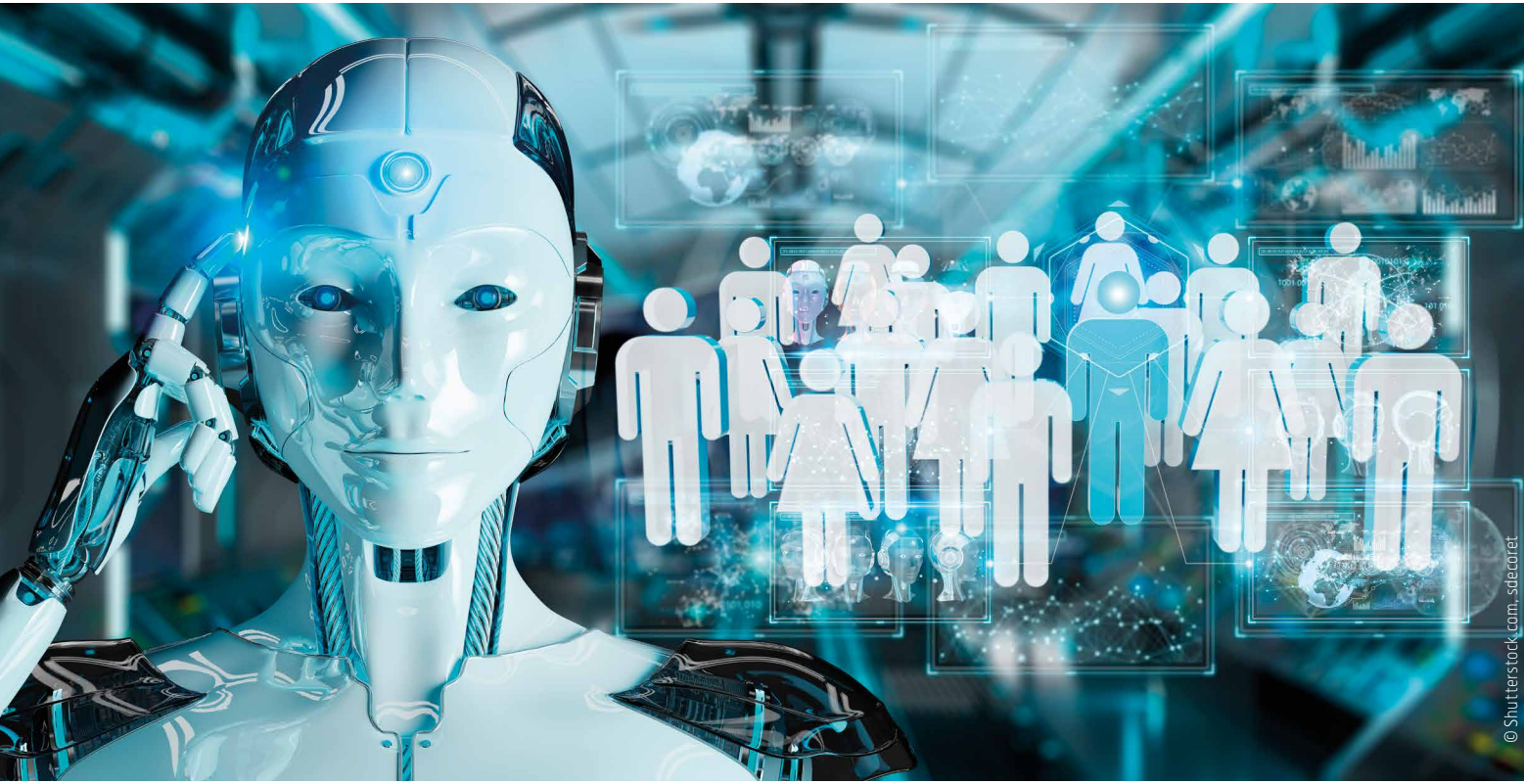
salzburg**research**

As an independent research institute, **Salzburg Research** offers know-how and sustainable solutions for complex challenges in the Internet of Things. We are a think tank for innovative companies from a wide range of industries and the public sector – internationally oriented and committed to the region.

Motion is an omnipresent aspect of our lives and an essential component of innovations in the areas of health, sports and fitness. Our research team "**Human Motion Analytics**" uses motion data from a variety of data sources. Using methods from signal processing, statistics and machine learning, we evaluate data quality, identify movement patterns and develop models. This detailed knowledge about the quality of movement enables novel applications for users – to increase health, performance, safety or the enjoyment of movement.

We are offering the following **master thesis topic** with immediate effect or later:

NAVIGATION OF A MOBILE AUTONOMOUS ROBOT

Objectives

For the navigation of autonomous co-worker robots in indoor scenarios it is necessary to avoid collisions with human co-workers in rooms and narrow corridors. The application of existing outdoor navigation algorithms for indoor navigation requires adaptation as the space to safely operate in is smaller and decision making via cost maps therefore becomes harder. The idea of the thesis is to adapt existing navigation of a mobile autonomous robot to meet indoor requirements and allow the robot to autonomously drive from one room to another while considering the movement and proximity preferences of human co-workers (who are moving within these rooms while pursuing their own work).

Real-time human motion data should be considered while navigating. Collisions with co-workers should be avoided at any cost. The final work should at least let the robot navigate from a fixed parking position in the lab to the neighboring room, which is accessible through a narrow corridor. The ROS navigation stack has to be reused. An already existing rviz-map from scanning both rooms and the outside corridor can be reused. The robot uses a LIDAR system and 3D cameras for orientation. Map making and localization (SLAM) is done via Google Cartographer. For path planning a local planning plugin is used.

Qualifications

- Master's courses completed (e.g. Data Science, Computer Science)
- Experiences with Python, C or C++
- Interest in navigation algorithms, LIDAR data & 3D camera
- No fear of robots and their large config files
- Ideally experience with ROS

Conditions

- Maximum 6 months duration
- Maximum 20 hours / week
- 2.687,- Euro / months (with full time, Forschungskollektivvertrag D1)

We encourage women in particular to apply and become part of an exciting and creative working environment at the meaningful intersection between non-profit research and economics. We give preference to women with equal qualifications in order to be able to integrate the different perspectives of the genders equally at all levels.

More details about us at: www.salzburgresearch.at

Interested? Send your application with ID **[MAS]** to: **jobs@salzburgresearch.at**

We are glad to get contacted!