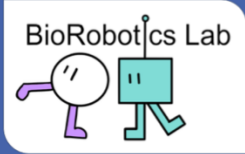


Optimization and Biomechanics for Human Centred Robotics

KIT BioRobotics Lab



Prof. Dr. Katja Mombaur

Endowed Chair by Hector Foundation II
Institute for Anthropomatics and Robotics (IAR)

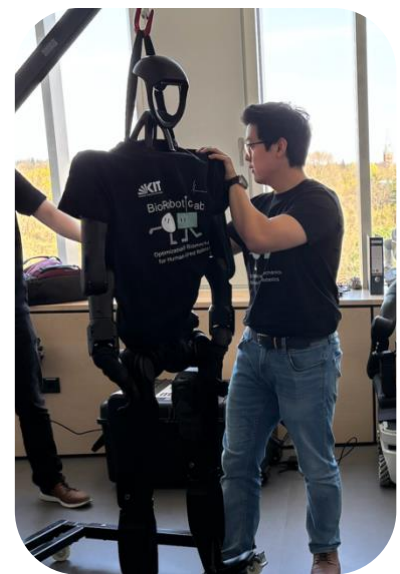


Master's or Bachelor's Thesis: Evaluating the impact of face designs on social acceptance of a humanoid robot

Contact: Prof. Dr. Katja Mombaur (katja.mombaur@kit.edu)

Background

Our new humanoid robot Unitree H1 ("Heinz") has some amazing motion skills – it can walk, recover from perturbations and shake hands, and we will teach it many more movements in the future. But it does not have a face which makes social interaction and finding friends very difficult. Since Heinz is planned to interact closely with humans in the future, we want to give it a more friendly appearance, starting with a new face.



Scope of the thesis

The goal of this thesis is to design new faces for Heinz and evaluate their effect on human interaction partners. You can be creative and propose face designs, colors, materials and manufacturing methods of your choice (including, but not limited to 3D printing, wood working, hand painting, special LIDAR transparent materials). Faces should be designed in such a way that they can be easily attached to the existing robot and interchanged. Without damage. This thesis includes the following tasks (scaled to scope of MA or BA thesis):

- Designing and manufacturing several robot faces
- Designing a study with human participants for the evaluation of these faces during some short term approach and interaction in proximity with Heinz which should involve some short action sequence (not static). Define objective measures to be collected and questionnaires.
- Programming the humanoid robot Heinz to perform the desired actions
- Perform the study with healthy participants and analyze outcome.

Required knowledge

This thesis requires a basic knowledge of robotics (kinematics, dynamics & planning) and programming skills.