

PROJECT WORK

Restoring Equilibrium: Rehabilitation of the Balancing Robot Experiment

Motivation

Similar to a Segway, the balancing robot (BalRob) experiment (see Figure 1) demonstrates the principles of stability and control. The heart of the experiment is an Arduino, on which a controller ensures the stabilization of the BalRob. An IMU is used as a sensor and stepper motors as actuators. In addition, Bluetooth modules allow the connection to a smartphone to remotely control the BalRob and transmit measurement data to the smartphone. Currently, the components of the laboratory test are damaged. The goal of the work is to identify damaged components, replace them, and get the experiment up and running again. Future damage will be prevented by improving the design.

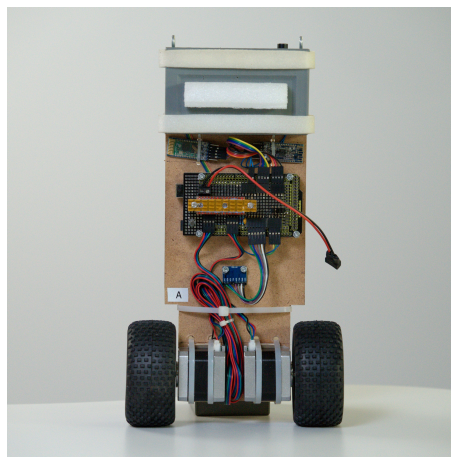


Abbildung 1: Balancing Robot Laboratory Experiment.

Tasks

- Diagnose and identify malfunctioning components
- Replace damaged parts, ensuring compatibility and functionality
- Propose and implement design modifications or component upgrades to enhance the experiment's reliability and longevity
- Documentation of the recovery process and adaptation of the existing user manual



TECHNISCHE
UNIVERSITÄT
WIEN
Vienna University of Technology

INSTITUT FÜR
MECHANIK UND
MECHATRONIK
Mechanics & Mechatronics



Requirements

- Proficiency in troubleshooting electrical systems
- Arduino experience is a benefit
- Knowledge of control engineering

If you are interested and need more information, please do not hesitate to contact me.

Contact

Projekttass. Dipl.-Ing. Lukas Stanger

Institute of Mechanics and Mechatronics
Division of Control and Process Automation
TU Wien

Getreidemarkt 9 / BA / 5th floor, E325-04
1060 Vienna

Tel.: +43 1 58801 325542
Email: lukas.stanger@tuwien.ac.at

Vienna, 16. Mai 2024