‘Control of lower limb prostheses, CYBATHLON tasks

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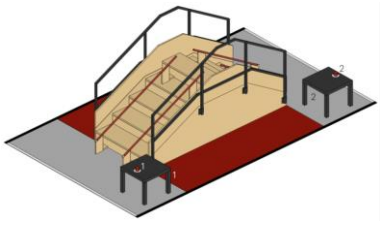
Context

Control is key to the utility and fluid adoption of robotic prostheses and working on complicated tasks may allow for the development of generalized controllers. Here we would like to study new controller designs with the focus of creating robust controllers for use in CYBATHLON 2024. CYBATHLON provides a number of difficult tasks for which we would like to find controller solutions. Using hardware developed in our lab as well as through the use of IMUs, force and pressure, EMG, ultrasound, and more we hope to build new controller architectures using techniques such as Human-in-the-loop, reinforcement learning, and others for a wide variety of motions.

CYBERLEGs X-Leg, knee and ankle modules.



Example task of the CYBATHLON

Objective

Design a controller for a specific chosen task of the CYBATHLON 2024, and implement it on the active lower limb prosthesis.

Description of Work

Project will consist of:

- Literature study
- Testing of controller without prosthesis
- Design of a new controller
- Testing of controller with an individual

Experience and Equipment

Labview – The X-Leg ankle is programmed in Labview and will be required to learn for the project.

Matlab – For data analysis and controller development

Location

VUB-MECH/Brubotics (Pleinlaan 9, Floor -1, 1050 Brussels.)

Contact

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