PBL Flagship Project 2022-2023

Truly Autonomous Legged Robots for Assisted Living and more

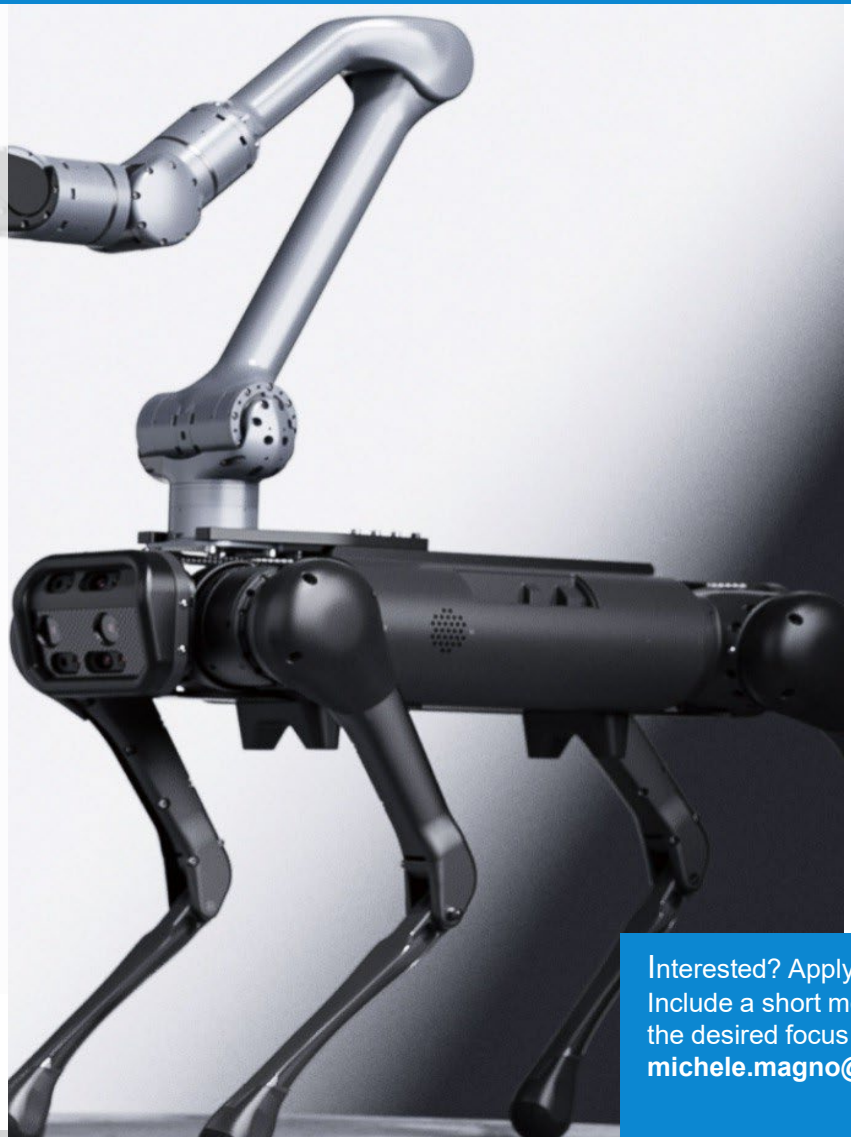
With a Bachelor/Semester/Master Thesis/ FreeLancer and Staff at PBL

Would you like to design, Design and development of an Autonomous quadruped robot for real-work applications such as blind person assistance and other applications?

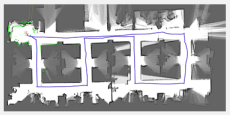
Would you like to work with embedded systems, sensors including camera and Lidar, Embedded Control, hardware and software design, Controlling Robotic Arms, and with state of art legged Robots from Unitree?

We are looking students to work in the following areas:

- Embedded Control
- Manipulation of robotic Arm
- AI-Perception for autonomous navigation with sensors
- Computer vision for perception and planning
- And many other topics
- Participation on students' competitions



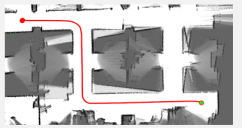
Perception



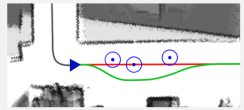
Mapping and Localization:
The robot uses Lidar and Depth Camera to create a map of the environment and locate itself

Dynamic entity tracking:
Dynamic entities are detected an tracked with computer vision

Planning

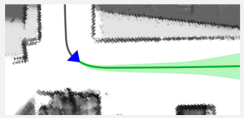


Global trajectory planning:
The oprimal path to a way-point is computed using the acquired map



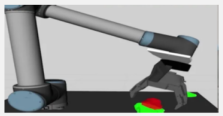
Object avoidance:
The path is adjusted locally to avoid dynamic obstacles

Control



Model Predictive Control:
This technique is used to optimally follow the generate path using high-level motion control

Manipulation



Robotic arm manipulation to assistance living. Control and perception will be exploited

Project in collaboration with:

life.augmented

Infineon

Unitree

Interested? Apply until **31.01.2023**!
Include a short motivation letter, grade transcript and the desired focus topic in your application and send to **michele.magno@pbl.ee.ethz.ch**

CYBATHLON ETH zürich

CENTER FOR PROJECT-BASED LEARNING

Future Computing Laboratory