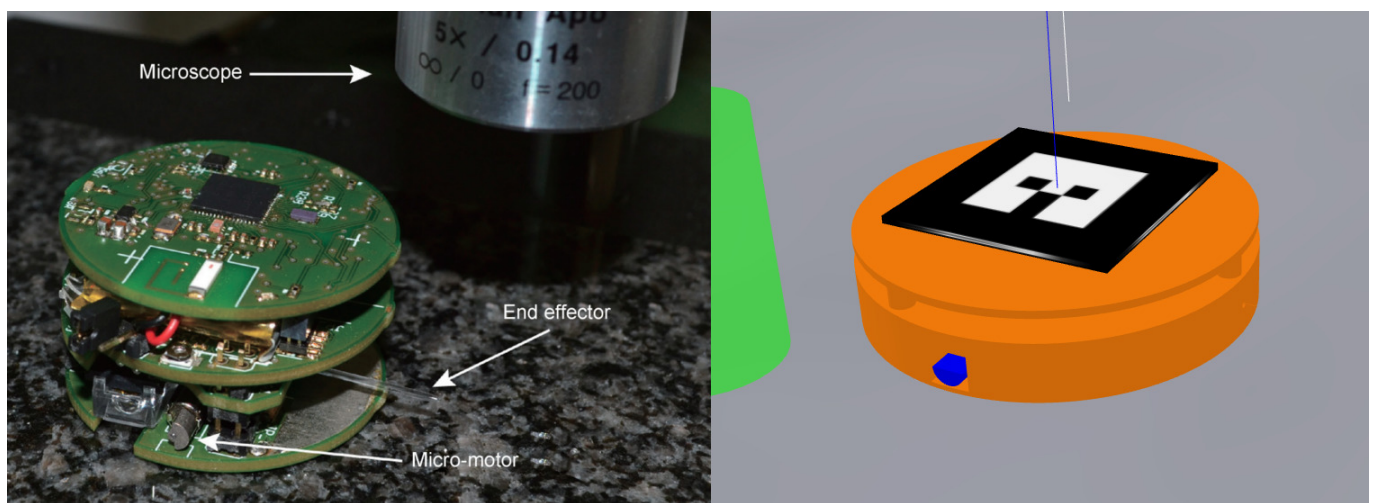


Microbot

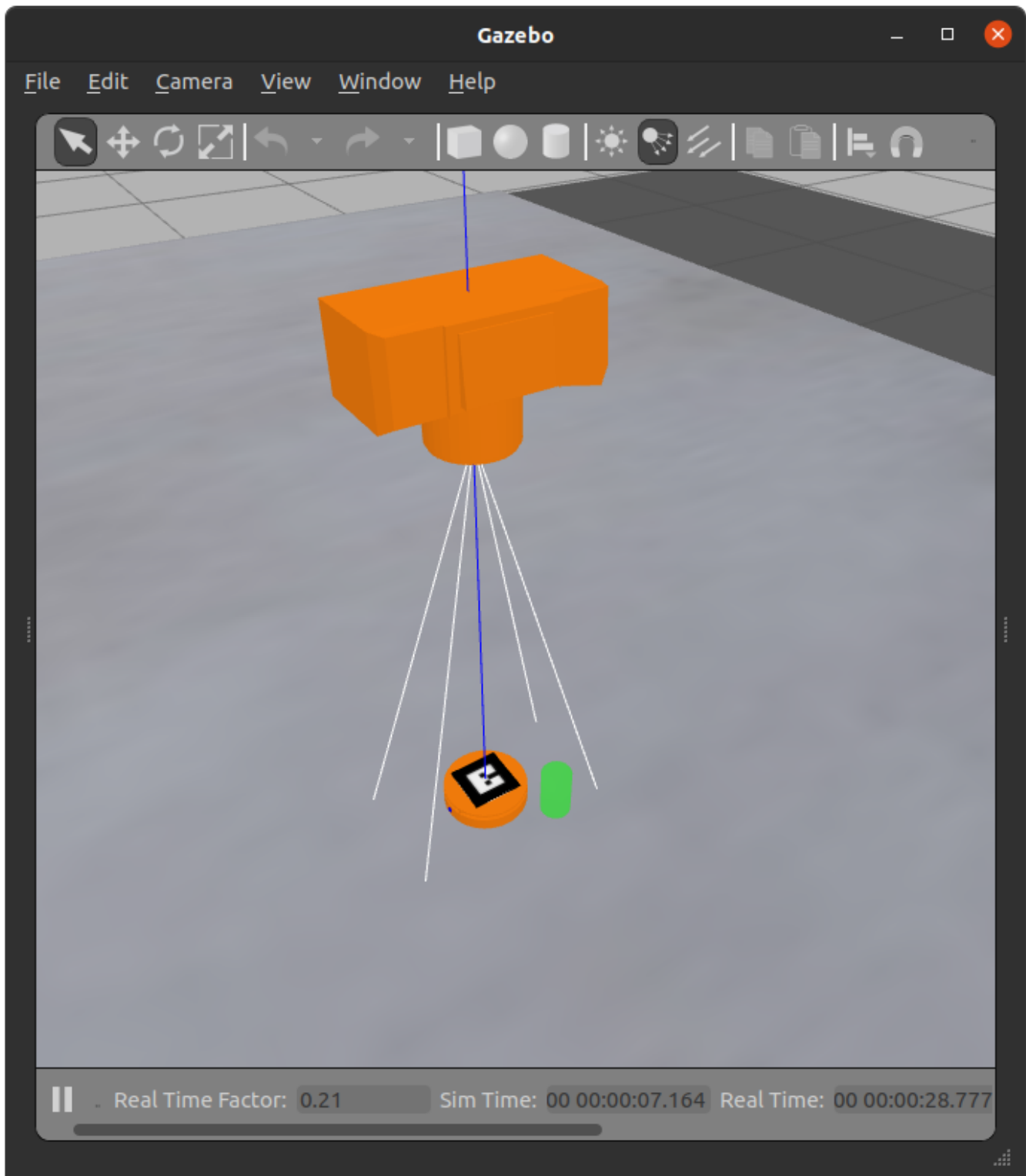
Microbot is an autonomous microrobot, driven by two vibrating micromotors, that is able to perform translational and rotational sliding with micrometer positioning accuracy.

The dynamics, design and simulations of the robot have been studied before by [Kostas Vlachos](#), my supervising professor, in collaboration with other professors. My goal is to simulate the robot for the first time in a physics simulation, develop a path planning and control algorithm and then perform various tests that will possibly lead to improvements on the real robot.

This repository focuses on developing the simulation in Gazebo and controlling the microbot using ROS1 as part of my diploma thesis "Path Planing and Simulation of a Mini-Robot Using Clothoids".



Left, picture of microrobot's prototype. Right, visual representation in Gazebo.



Gazebo sim, camera and goal.

List of related research

Design

- [jdsmc06 - Dynamics, Design and Simulation of a Novel Microrobotic Platform Employing Vibration Microactuators](#)
- [icra206 - Analysis, Design and Control of a Planar Micro-robot Driven by Two Centripetal-Force Actuators](#)

- [tro07](#) - Analysis and Experiments on the Force Capabilities of Centripetal-Force-Actuated Microrobotic Platforms

Control

- [icra07](#) - On the Force Capabilities of Centripetal Force-actuated Microrobotic Platforms
- [med13](#) - Speed Control of Vibration Micro-motors of a Micro-Robotic Platform
- [tase13](#) - Analysis and Motion Control of a Centrifugal-Force Microrobotic Platform
- [etcae15](#) - Vibration-Driven Microrobot Positioning Methodologies for Nonholonomic Constraint Compensation
- [med22](#) - Implementation and Motion Control of a Microrobot Using Laser Sensors