MipApp

Documentation

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# Introduction

## Project Description

MipApp is a simple mobile application for remote control of MiP robots. The application is available for both iOS and Android platforms. The control over the robot is obtained over Bluetooth.

## Mip Robots

**MiP** (short for **Mobile Inverted Pendulum**) is a small, humanoid robot that can express emotions and actively interact while rolling around the room(that’s what the vendor claims).

# Functional Requirements

## User should be able to pick a device to connect to

User should be able to initiate a search for devices and should be able a specific device to connect and interact with.

## User should be able to move the robot forward

User should be able to control the direction of movement of the robot.

## User should be able to move the robot backwards

User should be able to control the direction of movement of the robot.

## User should be turn the robot to the left

User should be able to control the direction of movement of the robot.

## User should be turn the robot to the right

User should be able to control the direction of movement of the robot.

# Technologies and implementation

## Used Technologies

### NativeScript

A JavaScript framework for creating mobile native cross-platform applications with JavaScript and Angular. Runs upon NodeJS and uses the standard Node application structure. Applications are produced for both iOS and Android. The framework is chosen for main development technology because of the relatively smooth workflow which allows fast creation of both Android and iOS application with single code base.

**Technology Stack:**

* **NativeScript**
* **TypeScript**
* **NodeJS**
* **Angular**

### Bluetooth and MiP BLE protocol

The communication with the robot is obtained over the Bluetooth Low Energy Protocol. Every device with Bluetooth v4 and Android OS or iOS is compatible and can be used to control the robot.

The information about the [Mip BLE Protocol](Mip%20BLE%20Protocol) and it’s basic usage can be found on GitHub.

The communication process between the robot and the device is basically sending and receiving sequences of specific bytes which indicate an action.

# User Manual

The current version of the application is basic so it’s usage is straight-forward and intuitive. The application requires Bluetooth to be on in order to work properly.

1. Open application.
2. Turn on bluetooth.
3. Initiate device search.
4. Pick a device to connect with.
5. Control the robot.