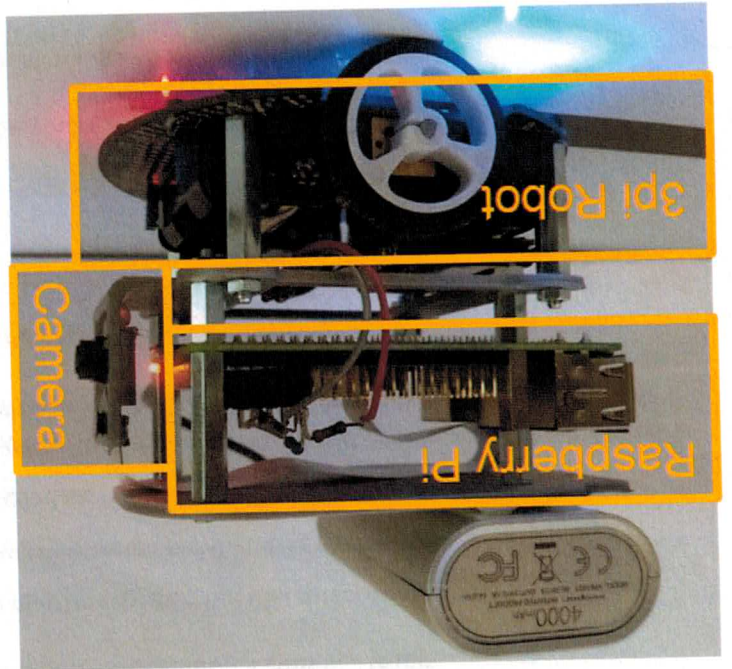


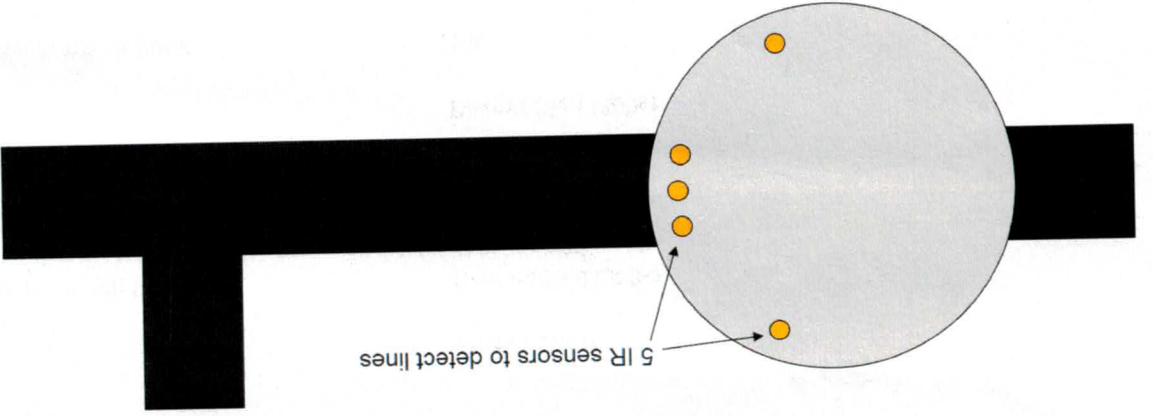
3. Quickstart Guidelines

We do want you to focus on solving the challenge and not waste too much time setting up tools and digging into manuals to learn how to program a robot, how to develop for the 3pi Robot, Raspberry Pi, et cetera. Therefore, this chapter provides you with some quickstart hints and a virtual machine image containing a toolchain setup that you can use to get started quickly. Please also don't hesitate to ask your team supervisor for assistance when you need it.

Each team gets their own RoboCar for testing and preparing for the final challenge. The RoboCar consists of a 3pi Robot that has a Raspberry Pi mounted on its top. At the front of the RoboCar a camera is mounted that is directly attached to the Raspberry Pi. The 3pi Robot and the Raspberry Pi communicate via a UART interface.



The 3pi Robot has two wheels driven independently by two motors allowing it to rotate around its current position. A small ball mounted on the backside makes sure that the 3pi Robot is not tipping (at least not to its back). The 3pi Robot is equipped with 5 infrared brightness sensors on its bottom. These can be used to detect and follow a black line drawn on the ground. It's a good idea to stop when the 3pi Robot lost track of a line to avoid risking any damage due to uncontrolled movements.



3.1. Working with the Raspberry Pi

On top of the 3pi Robot sits a Raspberry Pi of the third generation. It has the following features:

- 1.2GHz 64-bit quad-core ARMv8 CPU
- 802.11n Wireless LAN, Bluetooth 4.1 and Bluetooth Low Energy (BLE)
- 4 USB ports
- 40 GPIO pins