Light seeking robot swarm

Embedded Systems Design and Development: Start report



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Title image:

URL: <http://ak8.picdn.net/shutterstock/videos/8752507/thumb/1.jpg>

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# Goal and function of the project

For fishes in the shallow water a quick detection of a shadow can decide between live and death. With that in mind we build five identical robots which simulate similar behaviour.

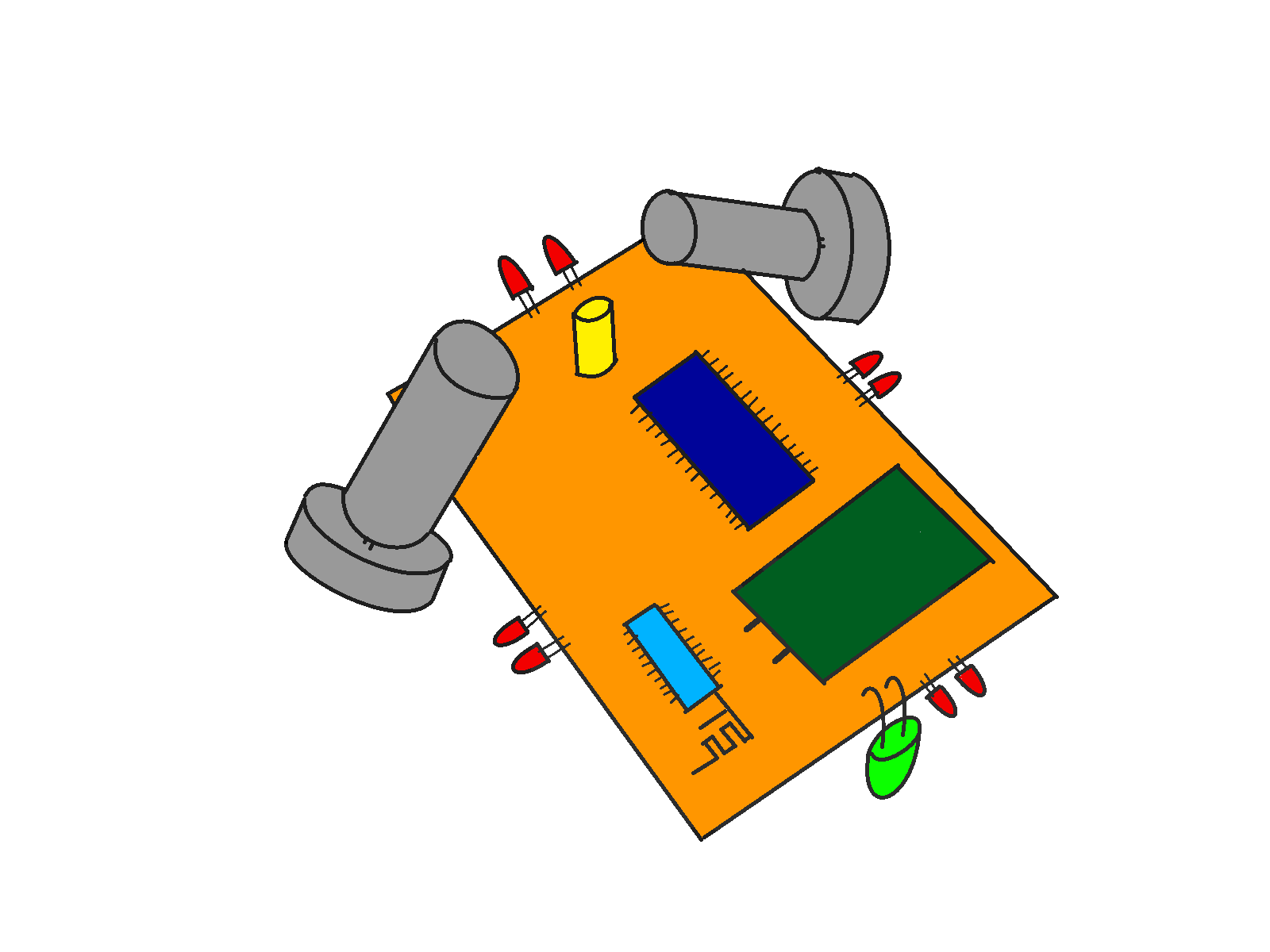
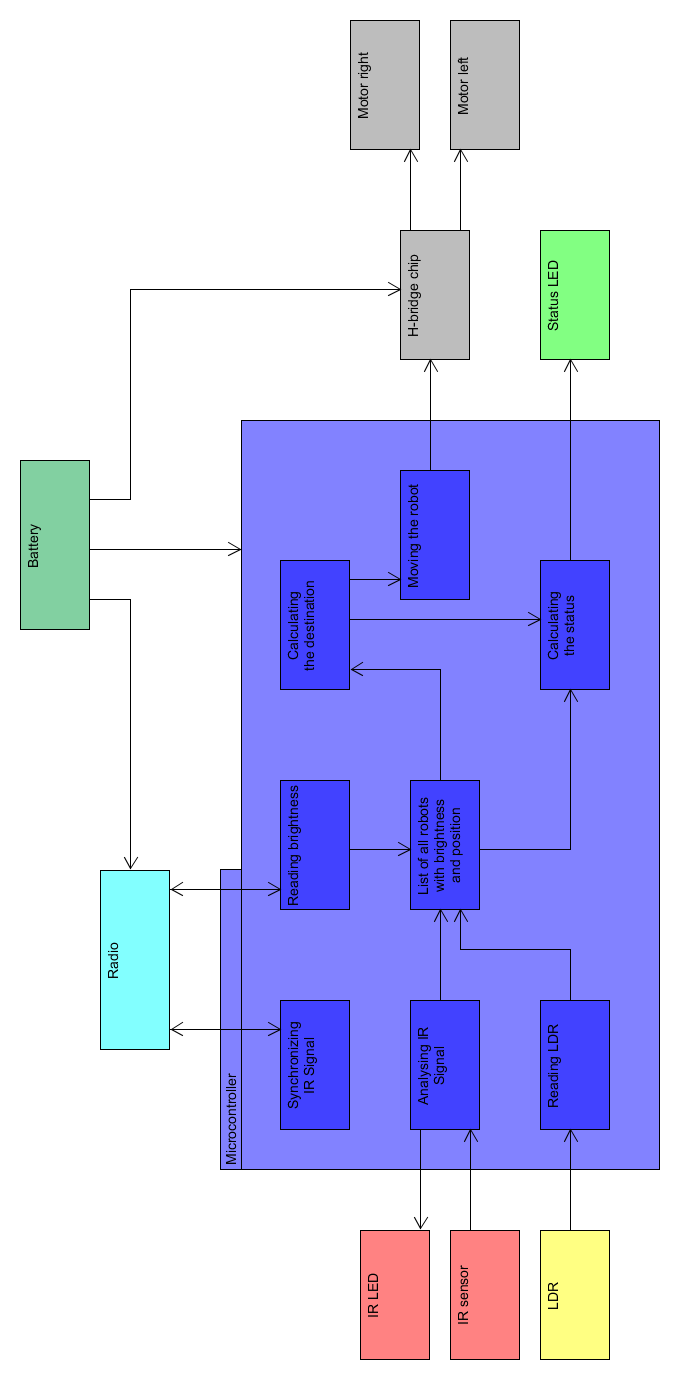
The robots all get placed onto a flat surface. With a LDR each robot measures the brightness above it. For that to work best there has to be a ceiling with a homogeny brightness. With two motors they can move on top of the surface. A RGB LED can be used to show the status of the robot. There are seven small chips mounted on each robot. They contain a IR LED and a IR Sensor. With those the robots measure the rough distance and direction between each other. The robots communicate with each other with the use of a radio. The Microcontroller controls every move of the robot. And the robot is powered by a battery.

Figure 1: A sketch of all the component on the robot.

As a final result, the robots compare the brightness of themselves with the one of the others. If theirs is noticeable darker than one of the others, they move to the brighter one. So if you light with a flashlight onto one of the robots all of them should move to that spot. If the brightness of only one robot is darker than the others it moves to the closest one with a brighter value. Therefore if you cover one or more robots with a black object they move out of the dark spot to another robot. If all the brightness’s are the same they stay where they are.

This project is deliberately too big for us to complete in the time give. We might continue it after the Semester has ended.

# Block Diagram



# Hardware

# Software

# Test concept