



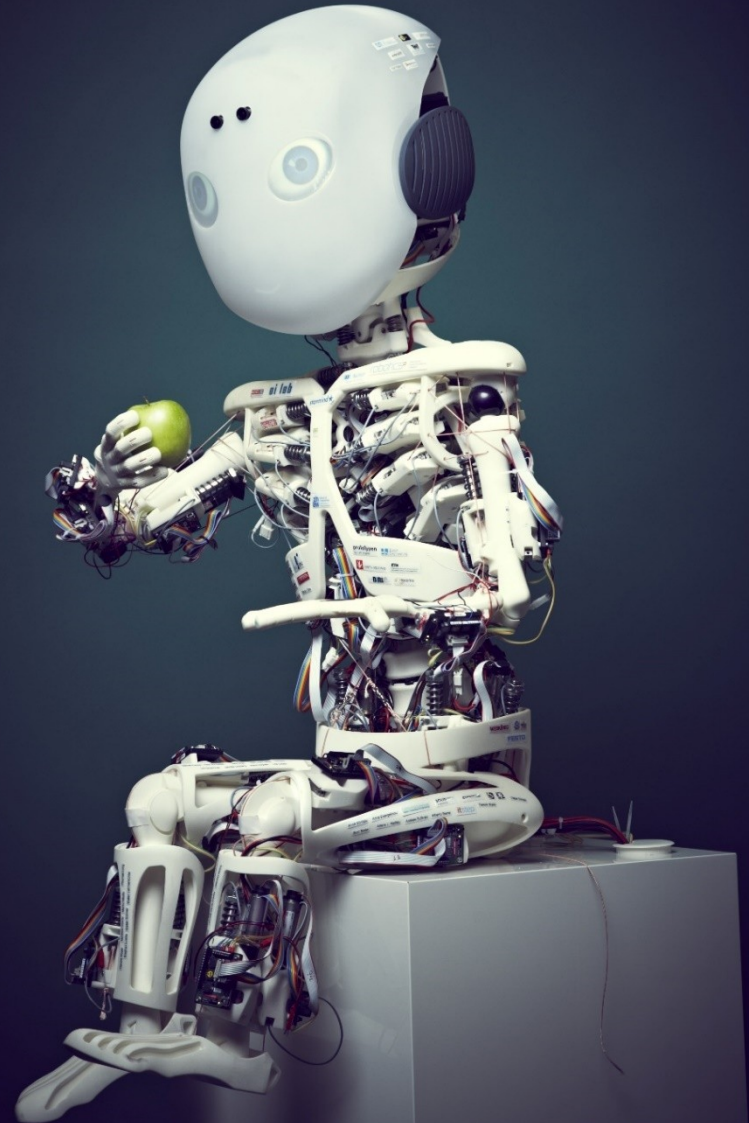
HTC Lighthouse Tracking

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Robotics, Cognition and
Intelligence

Personal Interest

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Project Motivation

- Lighthouse tracking is *cheap* and super *accurate*
- General purpose indoor position tracking which will make Roboy *balance* and *walk*
- Fame and Bitches

How Lighthouse Tracking Works
Base Station Insight



Approach and Tools

- Disassemble the Valve controllers to get our hands on the infrared sensors
- Decode the sensor signals with the Intel Edision and the *MKR1000*
- The sensors provide only the angles. Position tracking is done on the host-PC.
- Build our own Sensors

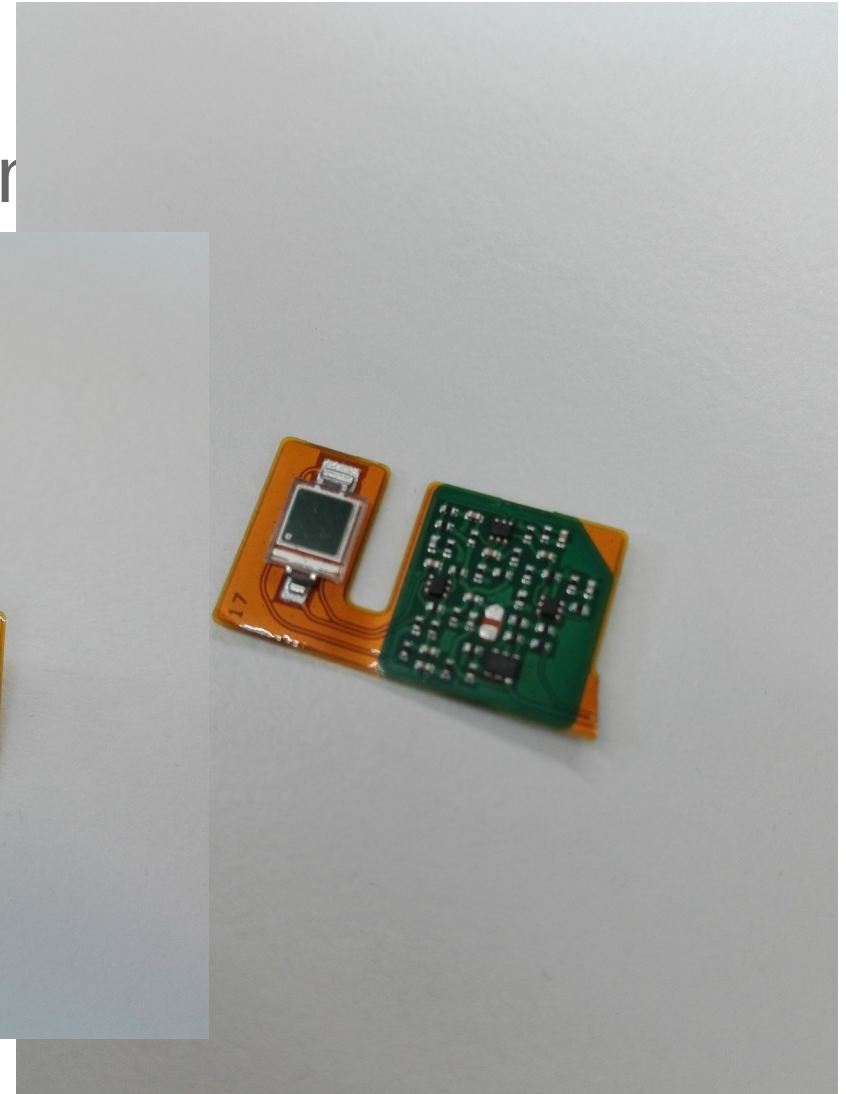
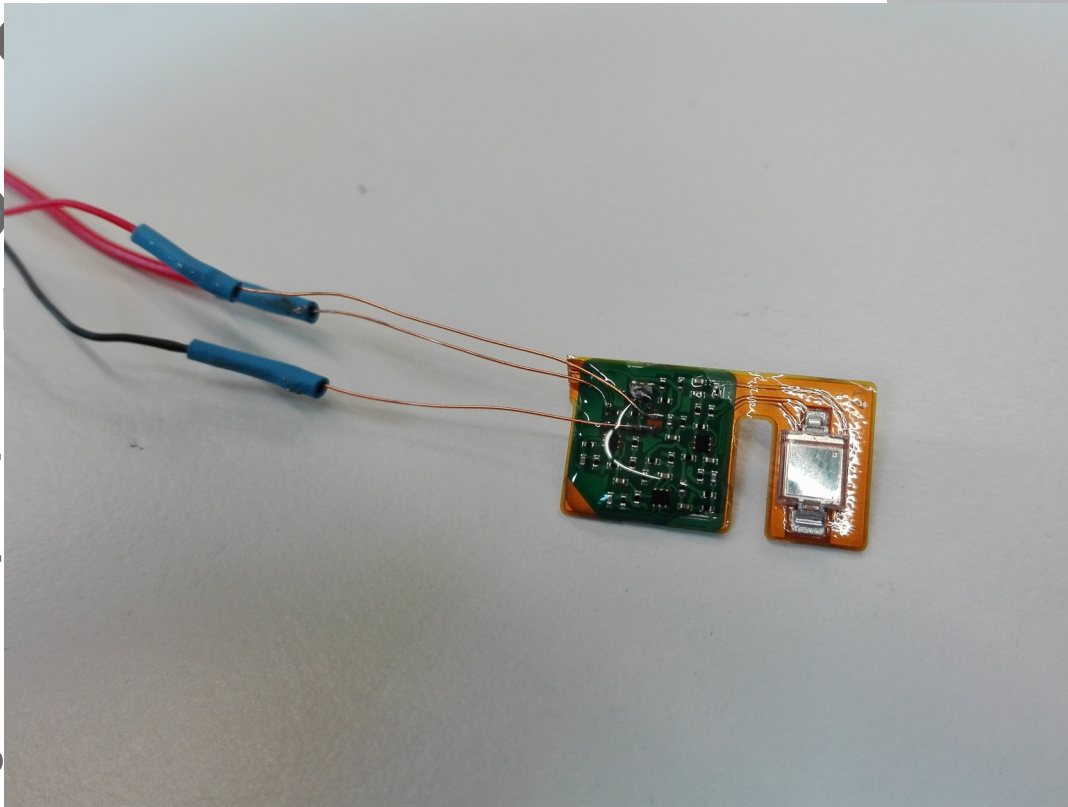
- Disassemble the Valve control

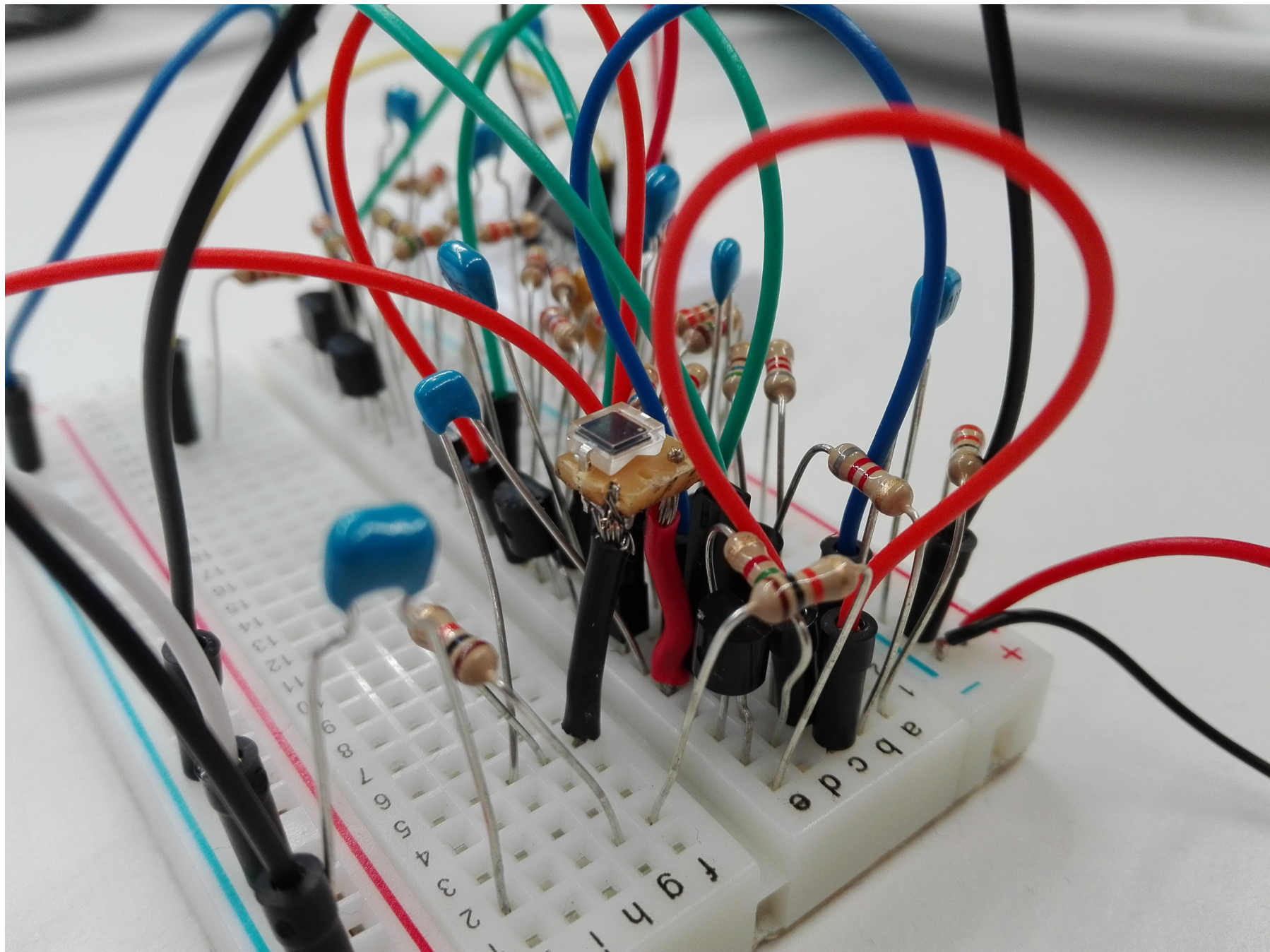
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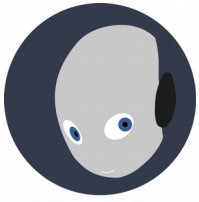
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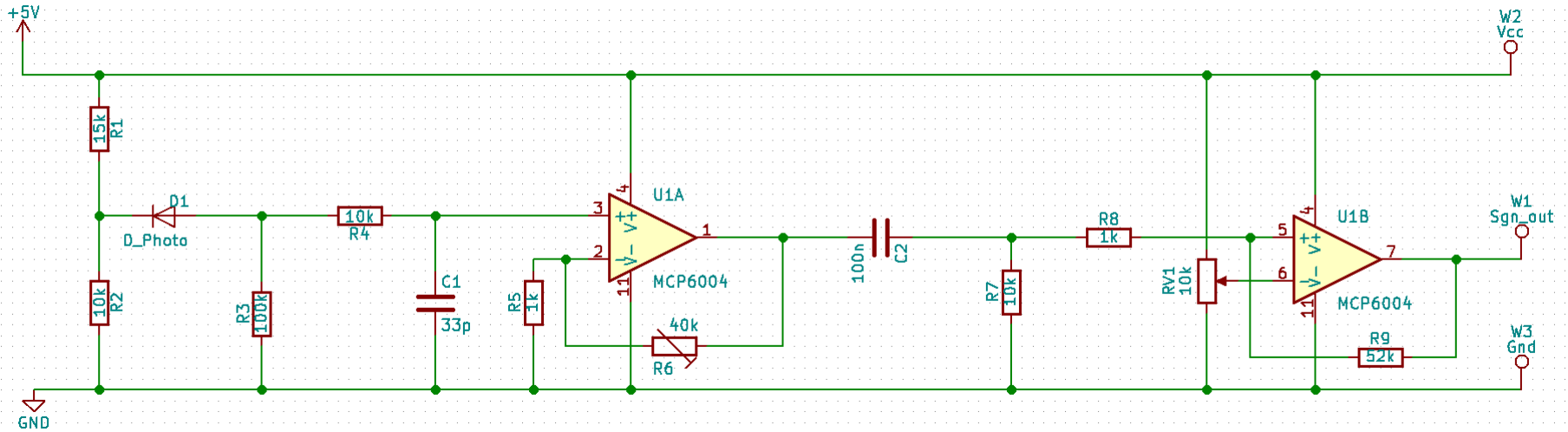






DEVANTHRO
Society

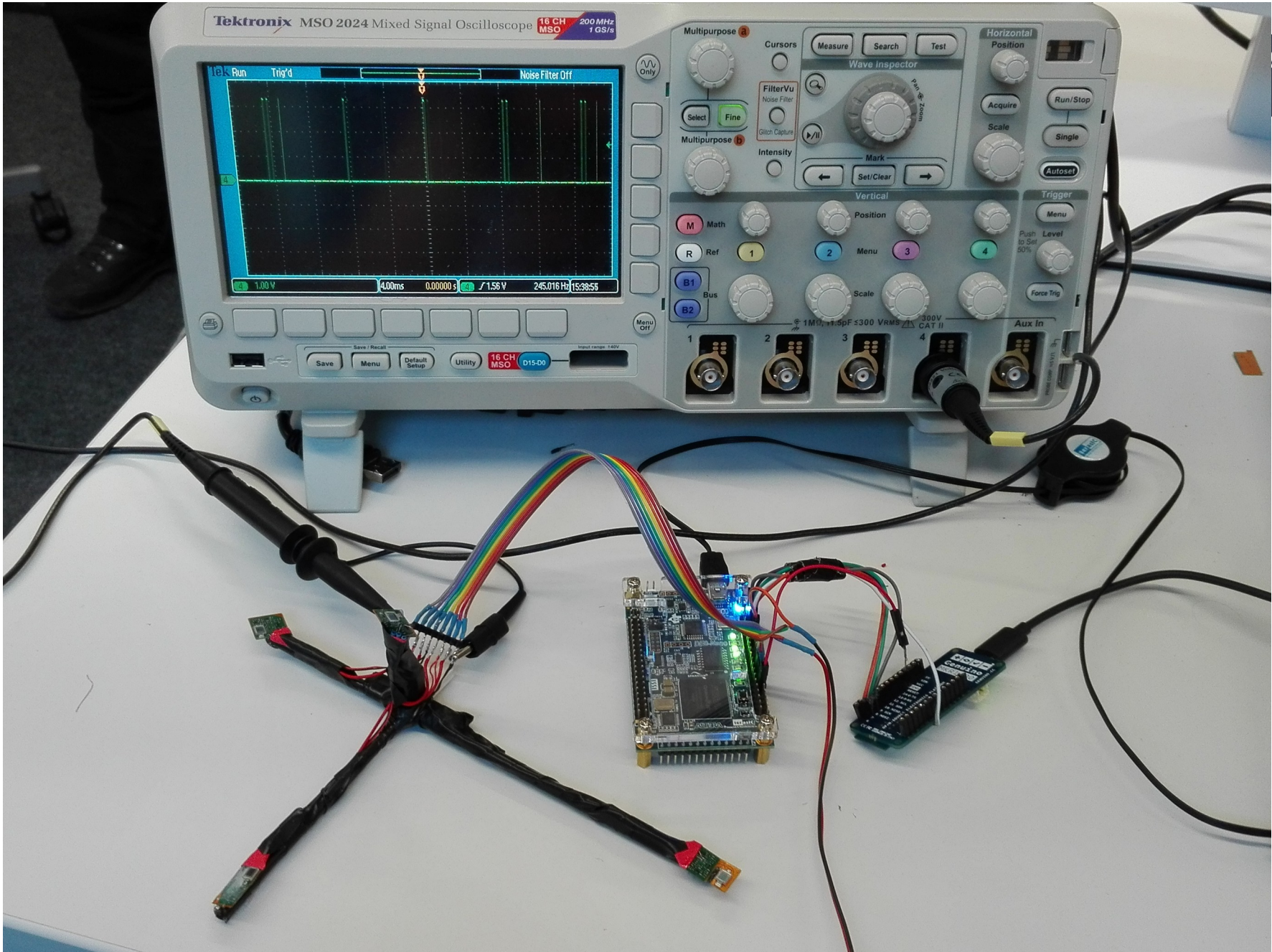
Approach and Tools





Implementation

- For *parallel processing* of the incoming sensor signals we used a FPGA (Cyclone IV)
- Decoded signals from the FPGA are communicated to the MKR via SPI
- MKR transmits sensor data to the host PC via UDP packages (settings are configurable through broadcasting and Google Protobuffers)
- Triangulation, Calibration, Distance Estimation, Relative Pose Correction is done on the host PC





Current Status

Hackaday Project Log:

HTC vive lighthouse custom tracking

HTC Relative Lighthouse Pose Estimation without Open- / SteamVR



Next Steps

- Reduce latency increase stability
- PCB Layout (μ C + FPGA)
- Deploy more sensors
- Get our own sensors working



FINISHED
Thanks yooo