# Sumo Update I

"Search, detect and attack!"

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Update: Sumo Modifications

- Standard Sumo provided with ToF Sensors
- 'Make your own Sumo' is possible
- Sumo has to comply rules (500g, 10x10 cm)
- Lab Sumo
    - only reversible changes are allowed!
    - has to be returned in good shape!
    - ToF sensors need to be protected!
- Git: ToF data sheet, schematics, 3D models, software
    - Instructor shares additional 3D models/software
- Recommendations
    1. Invest time in software and testing
    2. Optimize weight
    3. Use sensors to detect opponent
   4. Do not invest time in hardware modifications

Sumo with ToF Sensors
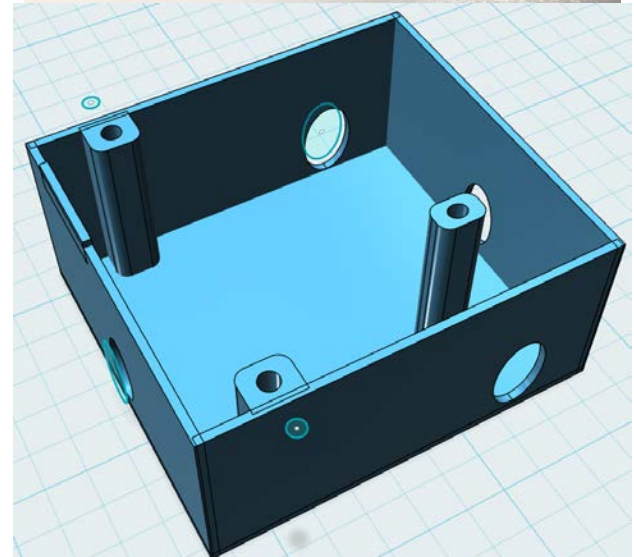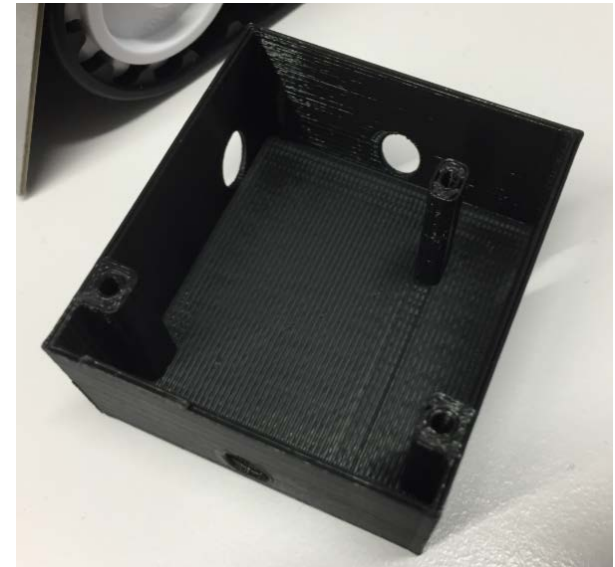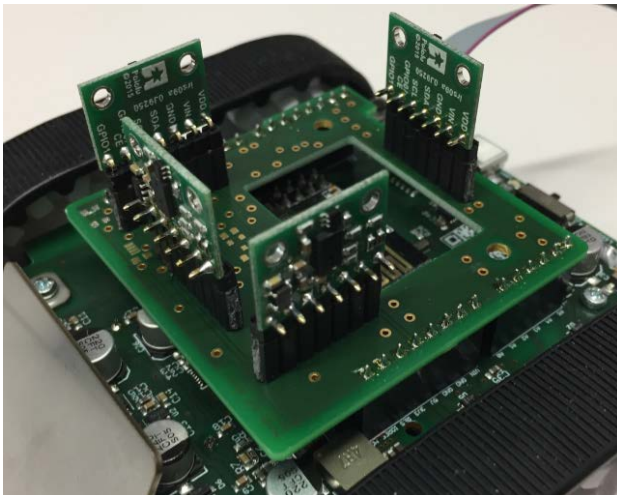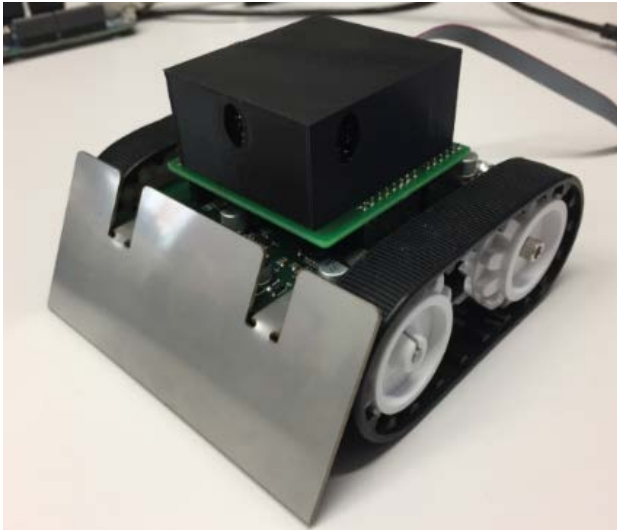
Time of Flight (ToF)

- Principle
  - Send Infrared Light Pulse
  - Measure the time of flight (speed of light!)
- STM VL6180X
  - https://mcuoneclipse.com/2016/12/03/tutorial-stmicroelectronics-vl6180x-time-of-flight-lidar-sensor/
  - Range: 0-10 cm (data sheet), 1mm resolution
  - Operation up to ~20 cm
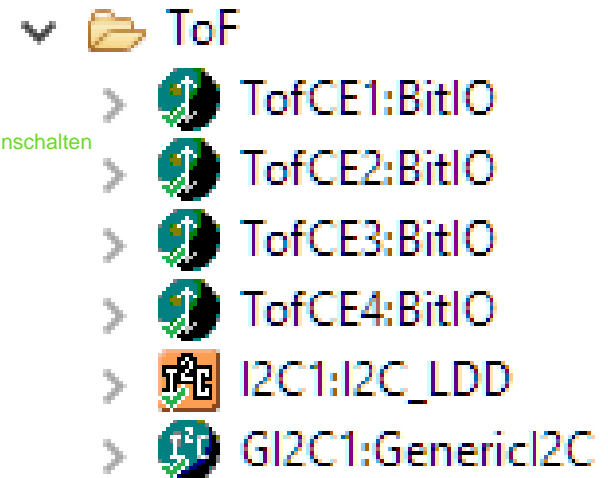 - Scaling: 2x/40@2mm, 3x/60cm@3mm
- Pololu
  - https://www.pololu.com/product/2489

STM VL6180X
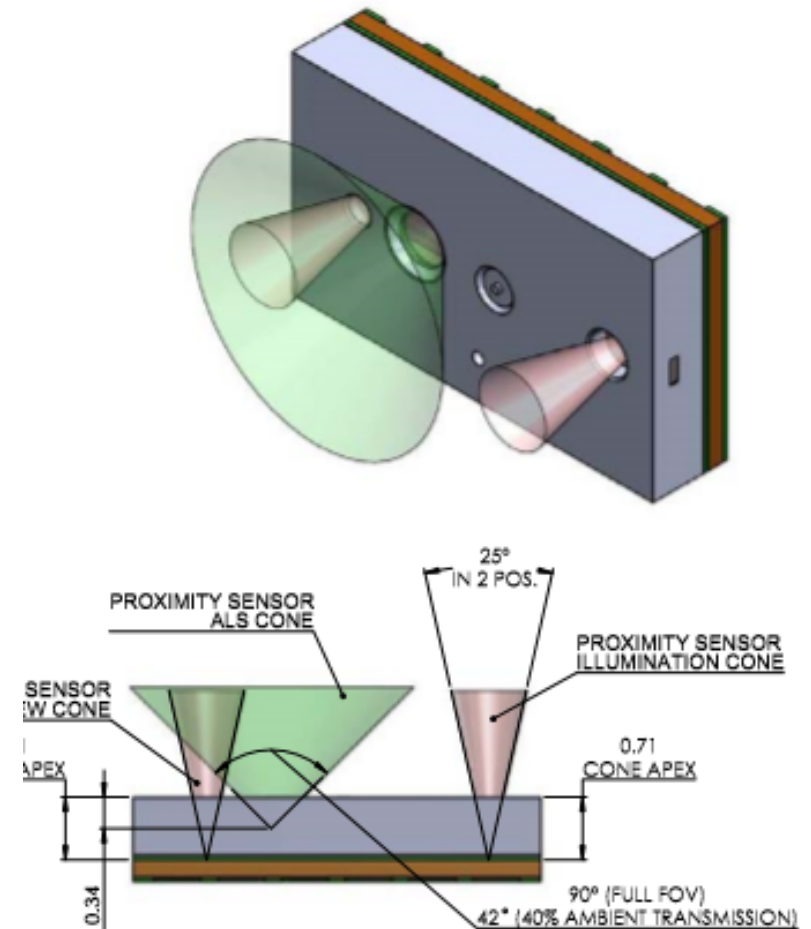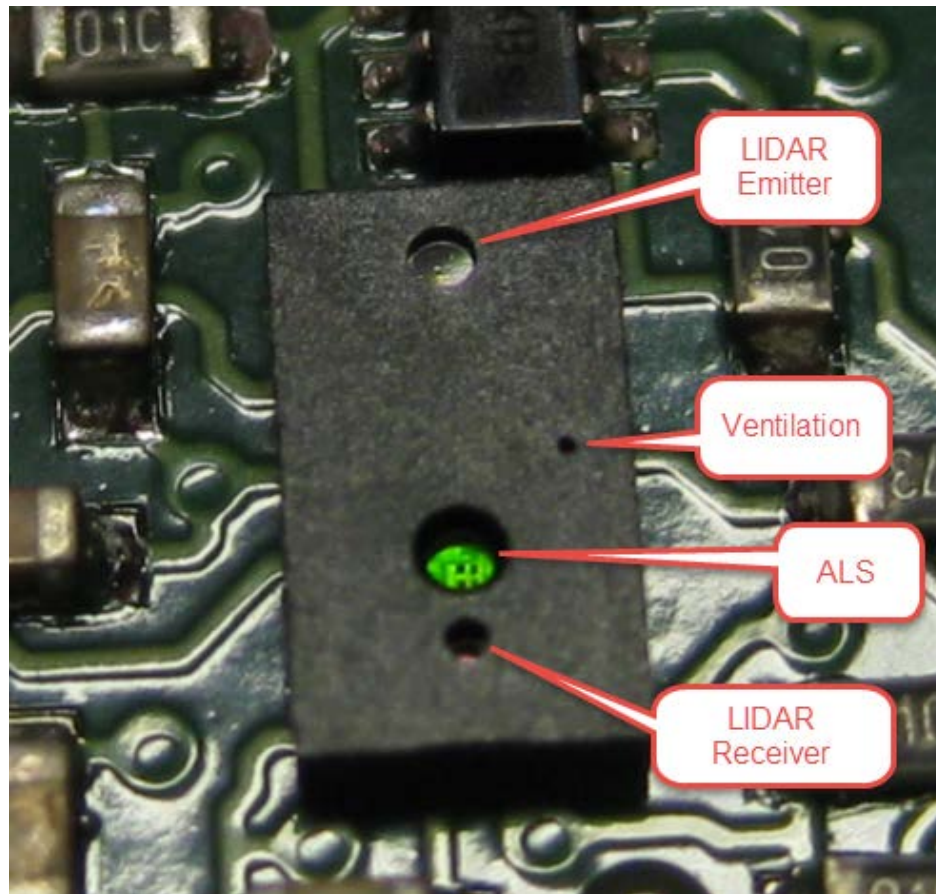
Source: VL6180X Datasheet

Software

- VL6180X.c, .h
- Distance.c, .h
- PL_HAS_DISTANCE_SENSOR
- PL_HAS_TOF_SENSOR   falls Sensor nicht in Betrieb, nicht einschalten
- Shell support

ToF
- TofCE1:BitIO
- TofCE2:BitIO
- TofCE3:BitIO
- TofCE4:BitIO
- I2C1:I2C_LDD
- GI2C1:GenericI2C

```
dist status
distance        :
  range         : front:84 left:90 rear:81 right:125
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