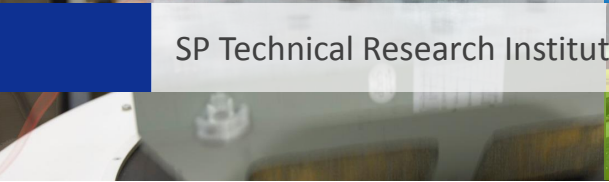
SP Technical Research Institute of Sweden



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The SP RC Car

Benjamin Vedder
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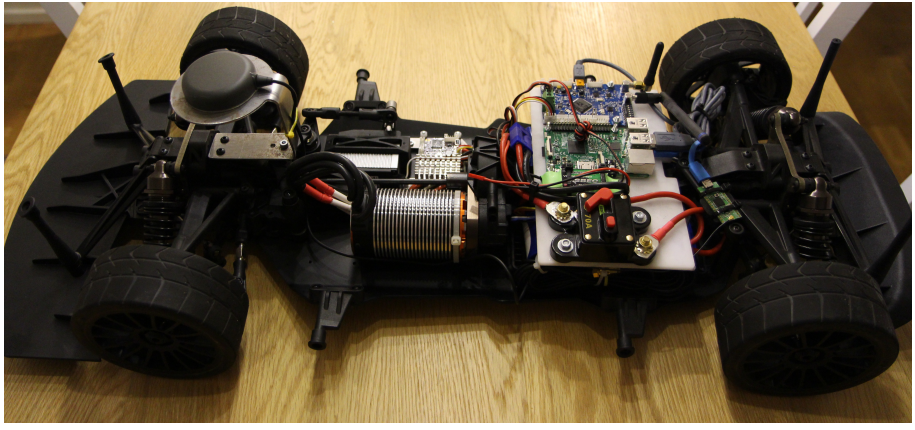
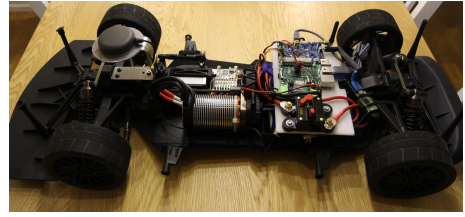
2016-07-06, Darmstadt

The SP RC Car



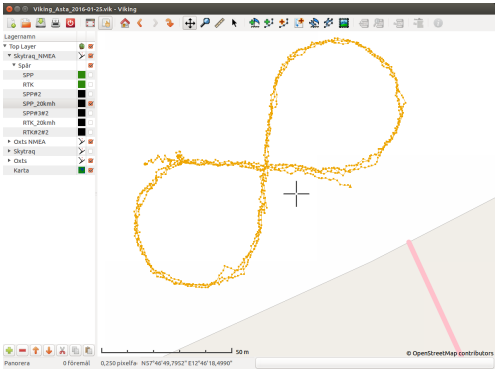
The SP RC Car
Overview

- Positioning:
  - IMU (Accelerometer, Gyroscope, Magnetometer).
  - RTK GPS.
  - Odometry.
- Speed from <1 Km/h to 80 Km/h
- Autopilot.
- Custom user interface.
  - Visualization, remote control, configuration, communication.
  - RTK correction data from different possible sources.
- Fully open source.

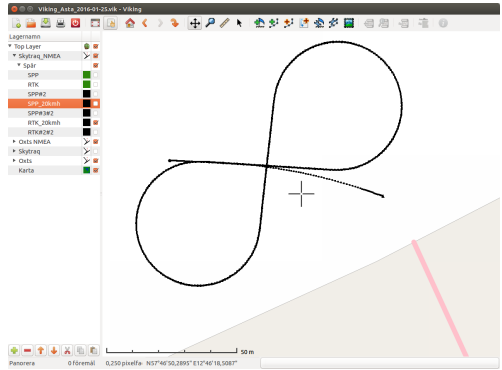


The SP RC Car
RTK GPS for accurate positioning

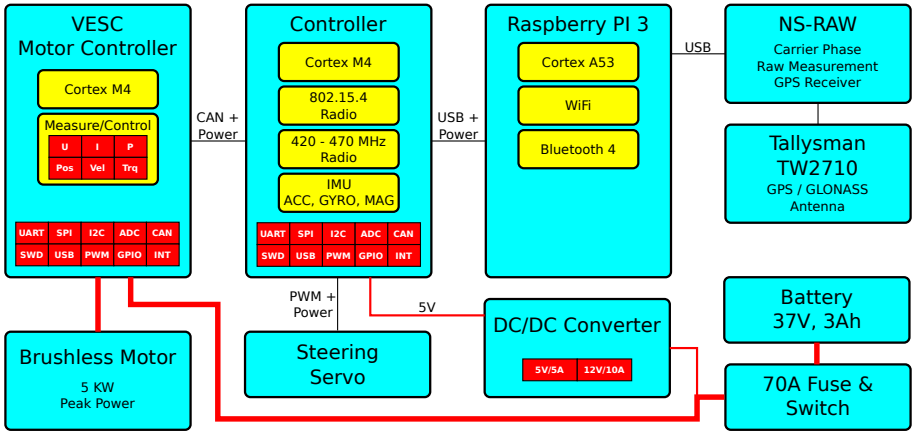
SPP



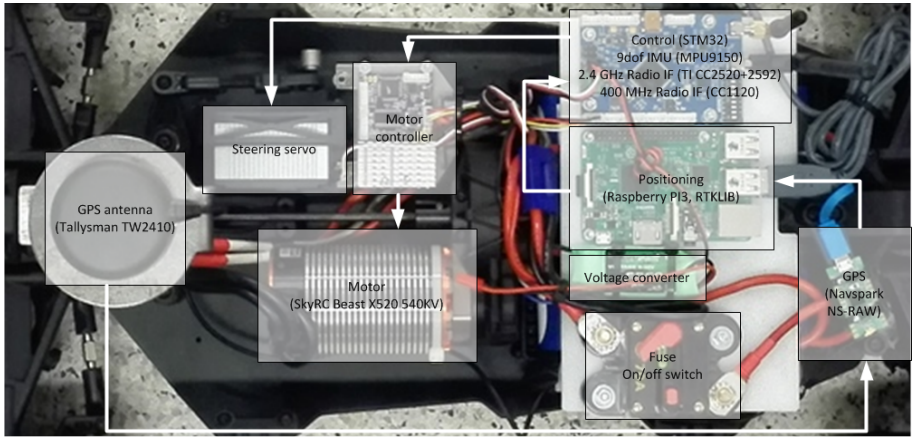
RTK



The SP RC Car
Hardware Block Diagram



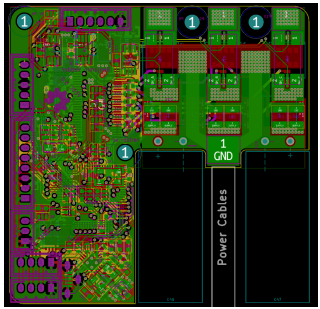
The SP RC Car
Hardware Locations

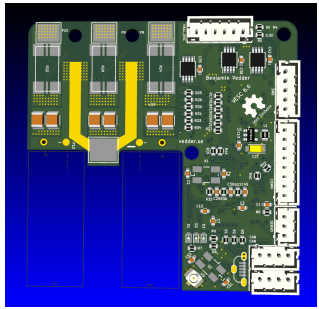


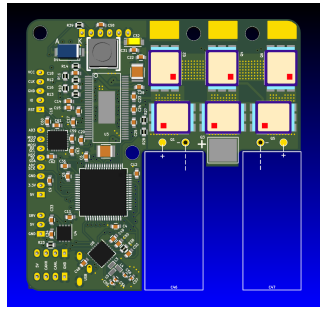
The SP RC Car
VESC Motor Controller

- Benjamins open source and open hardware spare time project developed during the past 4 years.
- 20 000+ lines of C code in 100+ files.

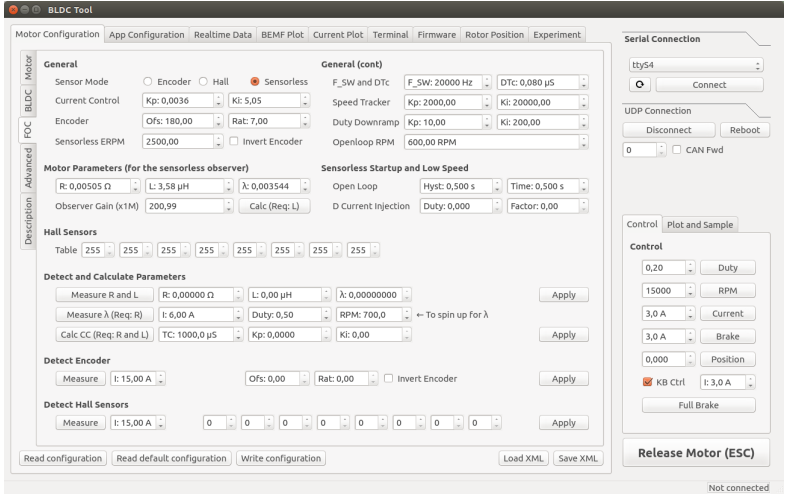
- 14 threads + interrupts and DMA.
- Cont power: 2000W
- Peak power: over 5000W
- Size: 40mm x 60mm and 40g weight.



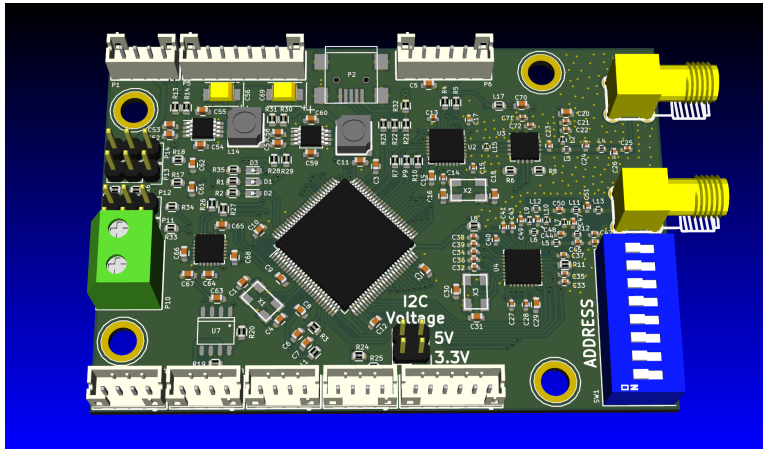




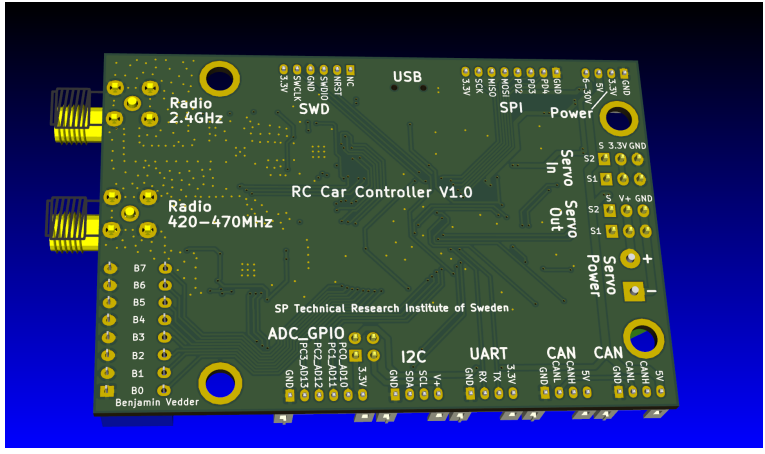
The SP RC Car
VESC - BLDC Tool GUI



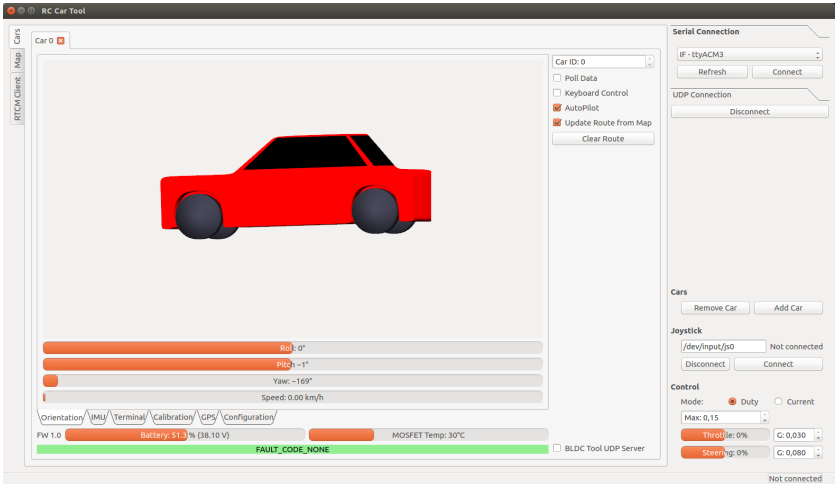
The SP RC Car
Main Controller - front



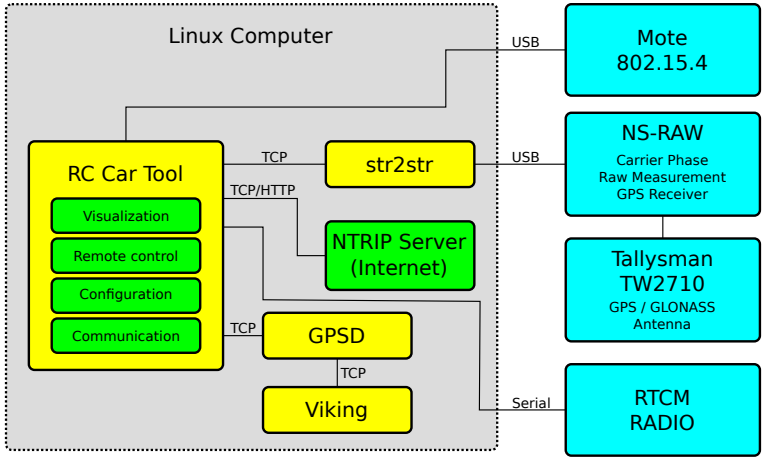
The SP RC Car
Controller - back



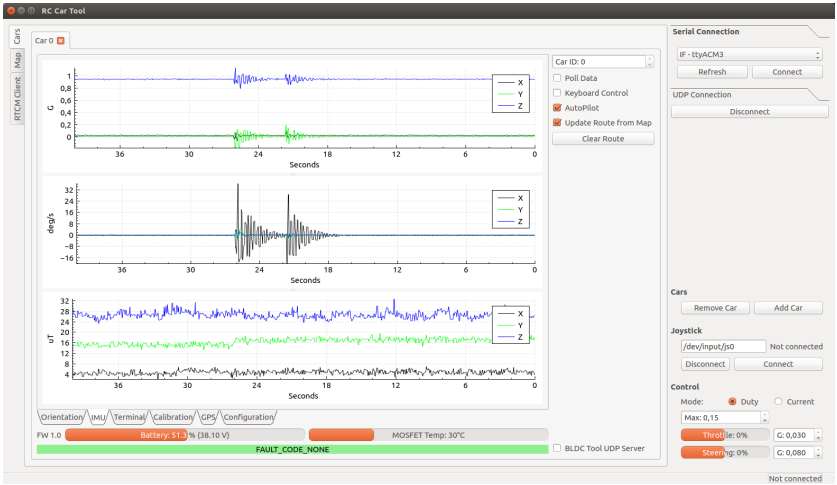
The SP RC Car
RC Car Tool - Main Page



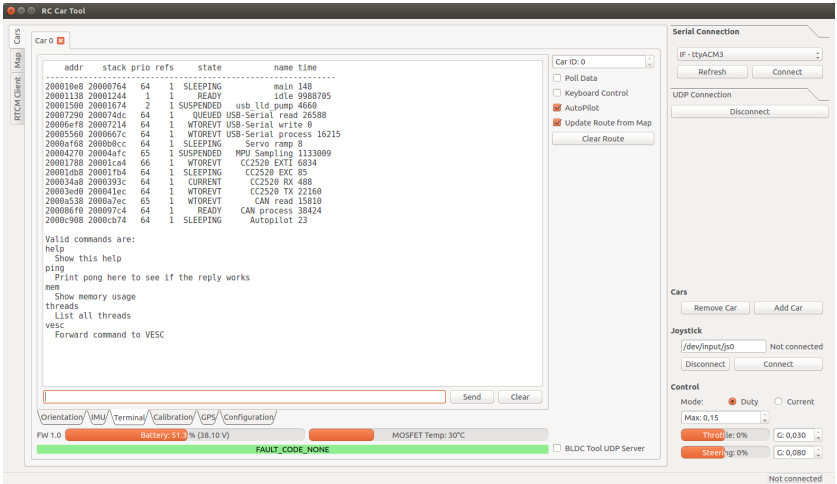
The SP RC Car
Linux Computer Block Diagram



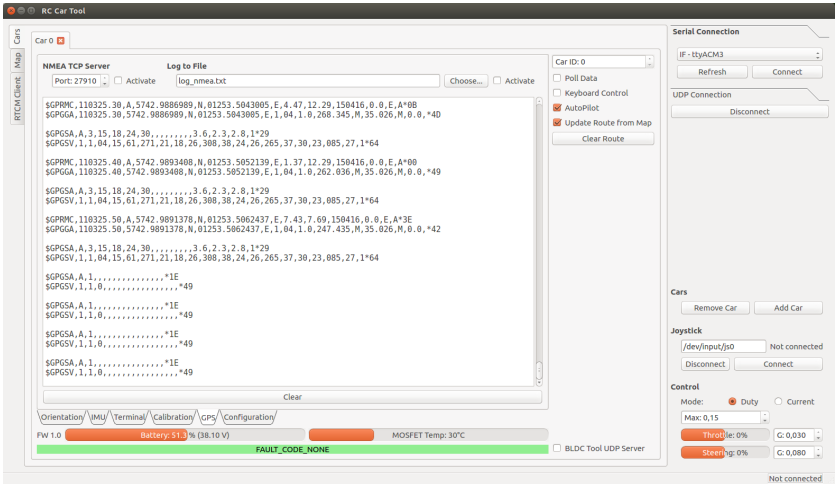
The SP RC Car
RC Car Tool - IMU raw data



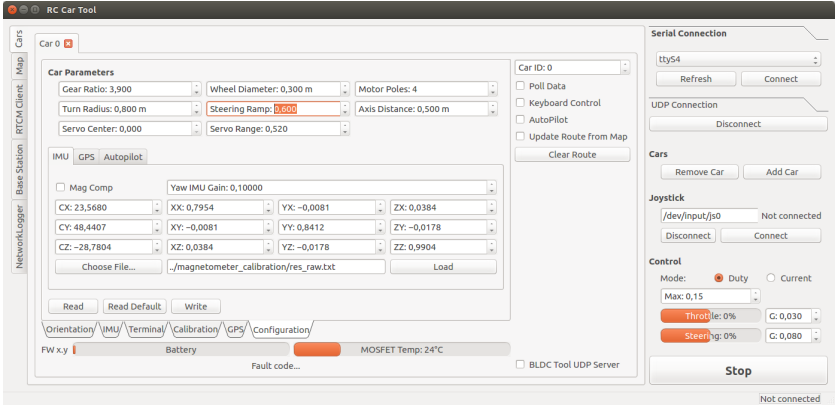
The SP RC Car
RC Car Tool - Terminal



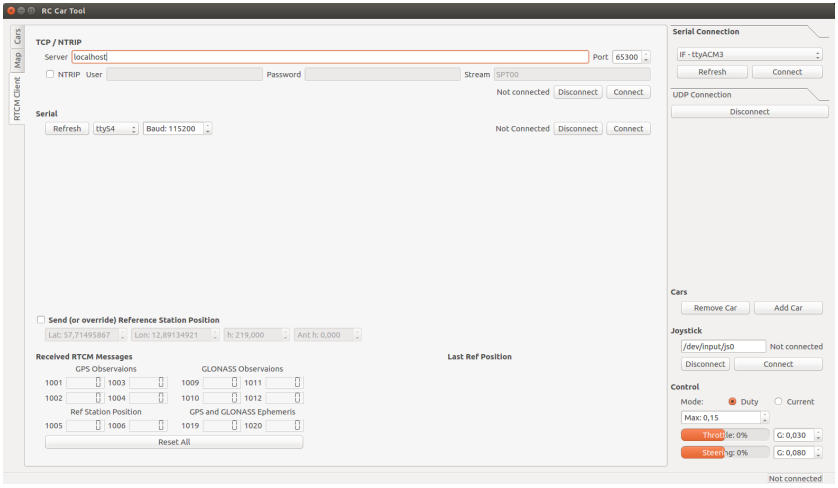
The SP RC Car
RC Car Tool - GPS Data



The SP RC Car
RC Car Tool - Configuration

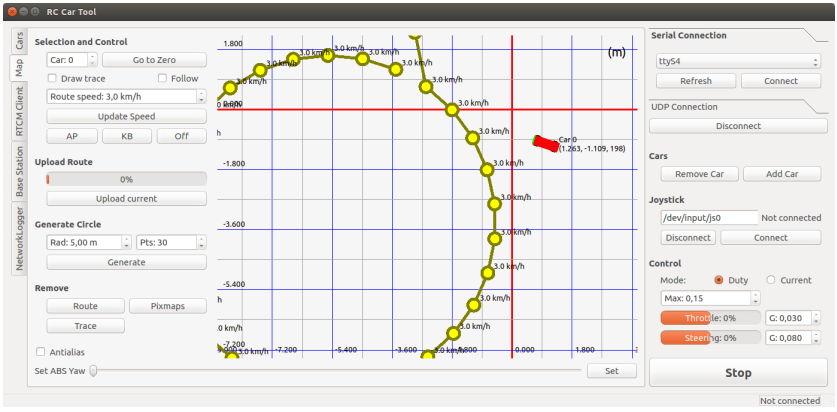


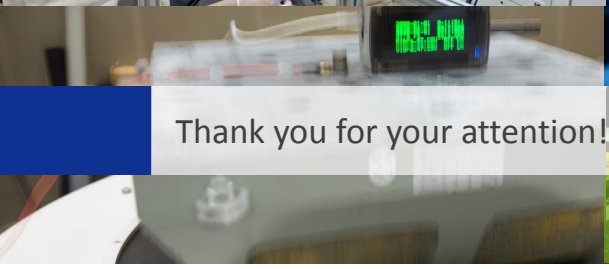
The SP RC Car
RC Car Tool - RTCM correction data



The SP RC Car

RC Car Tool - Real-time plot and track editor for the autopilot





Thank you for your attention!

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