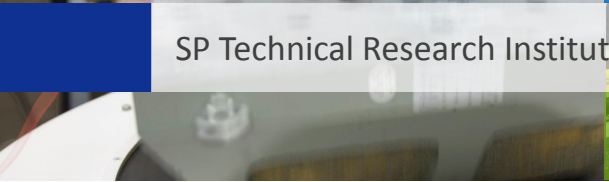
SP Technical Research Institute of Sweden



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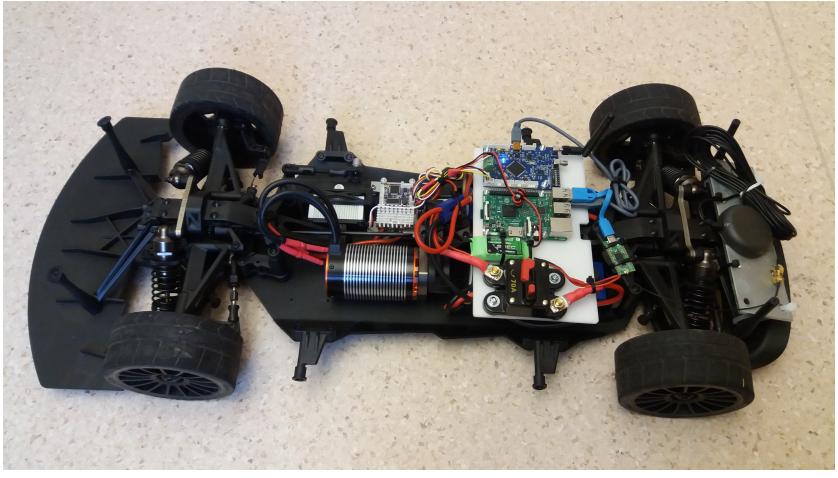
The SP RC Car

Benjamin Vedder
benjamin.vedder@sp.se

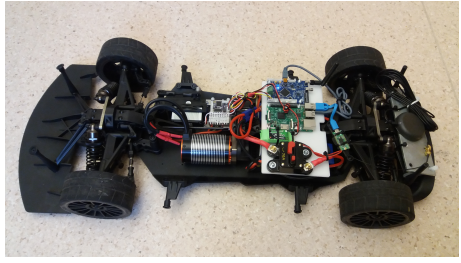
April 21, 2016, Borås

The SP RC Car



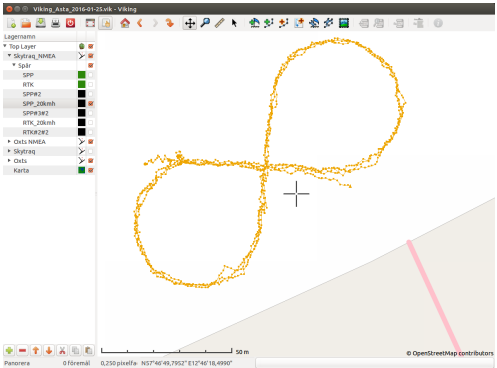
The SP RC Car
Overview

- 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.

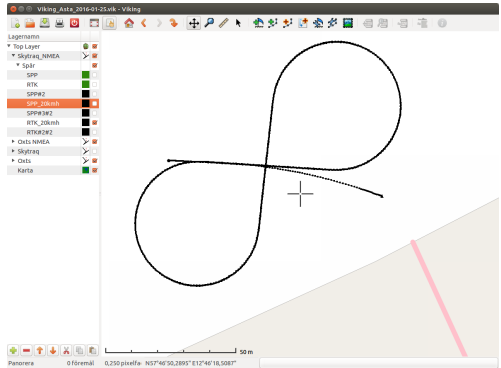


The SP RC Car
RTK GPS for accurate positioning

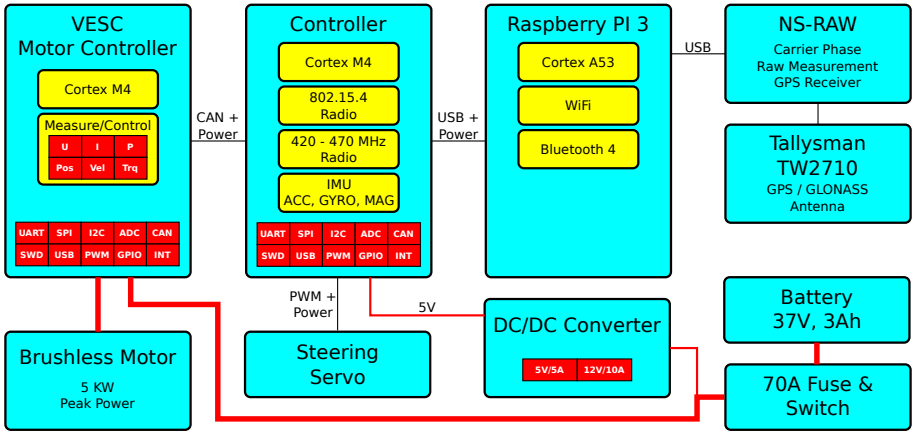
SPP



RTK

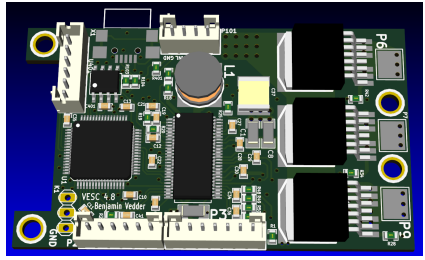


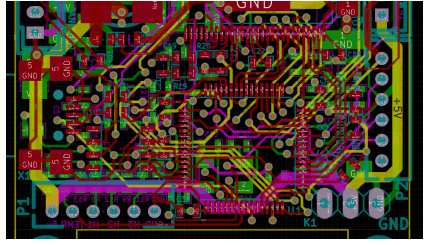
The SP RC Car
Hardware Block Diagram



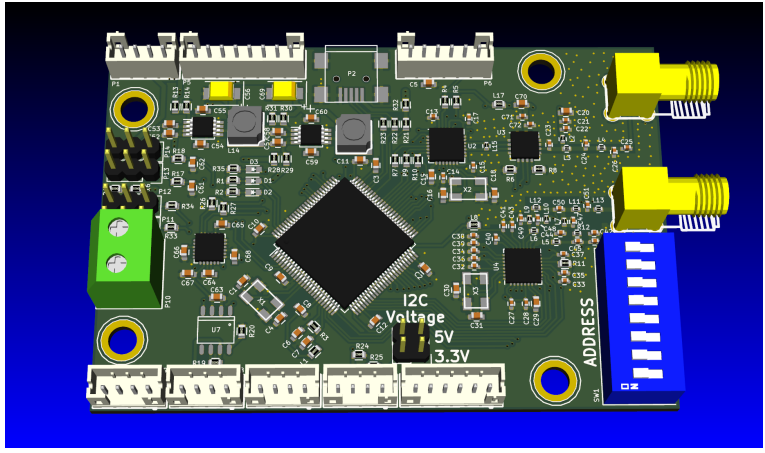
The SP RC Car
VESC Motor Controller

- Benjamins open source and open hardware spare time project developed during the past 3 years.
- 20 000 lines of C code in 100 files.
- 12 threads + interrupts and DMA.
- Cont power: 2000W
- Peak power: over 5000W
- Size: 40mm x 60mm and 40g weight.

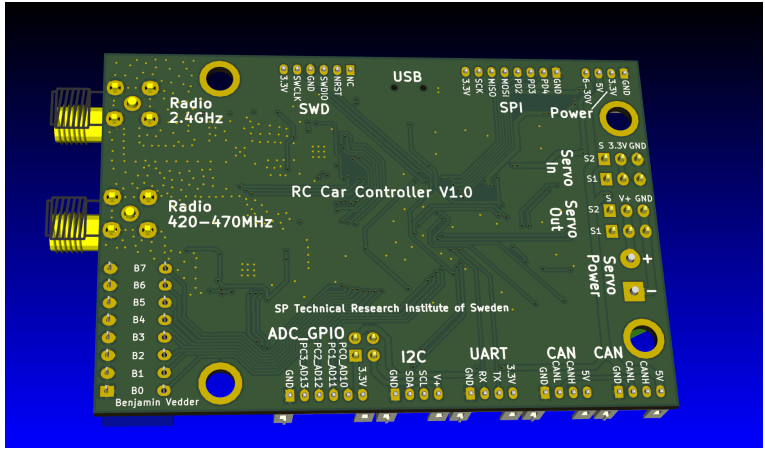




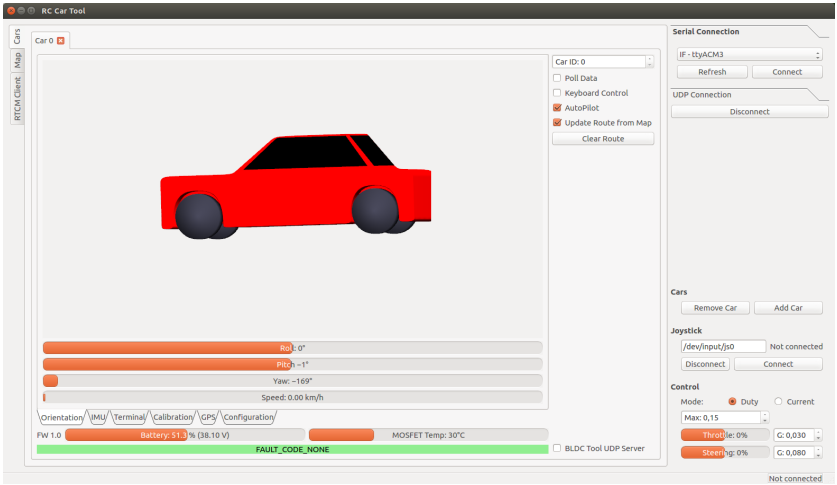
The SP RC Car
Controller - front



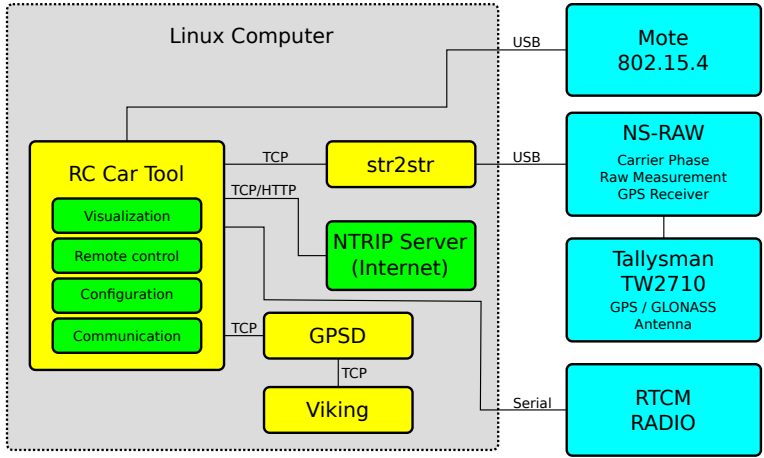
The SP RC Car
Controller - back



The SP RC Car
RC Car Tool - Main Page

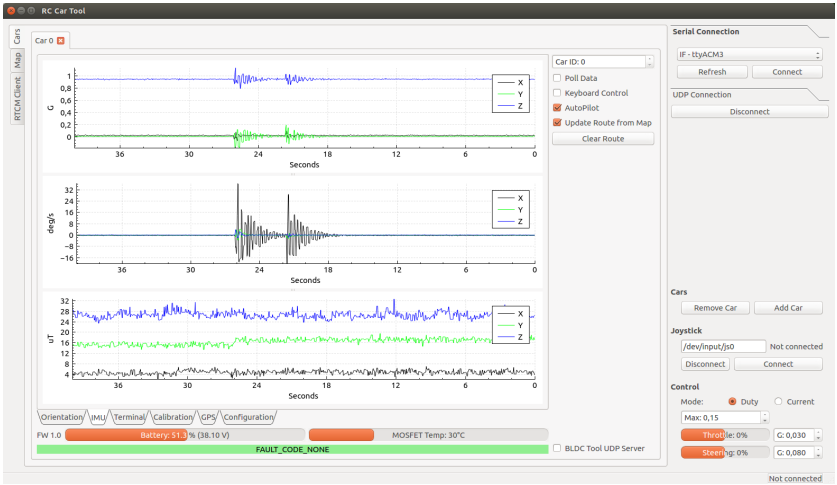


The SP RC Car
Linux Computer Block Diagram

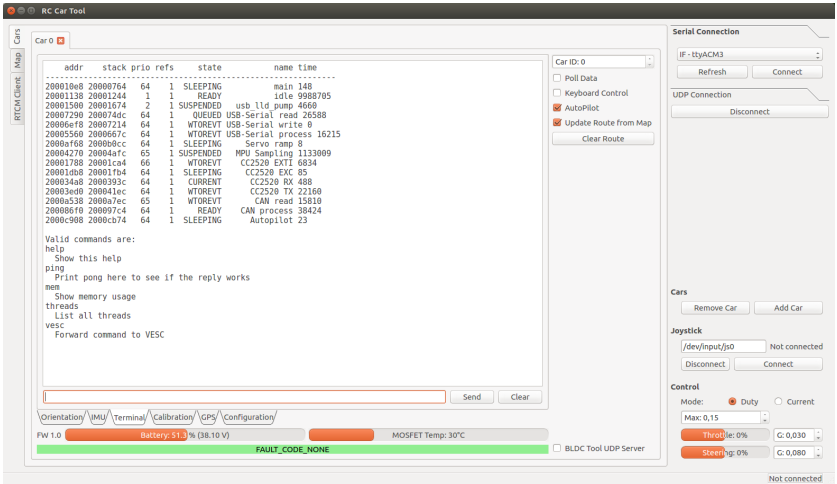


The SP RC Car

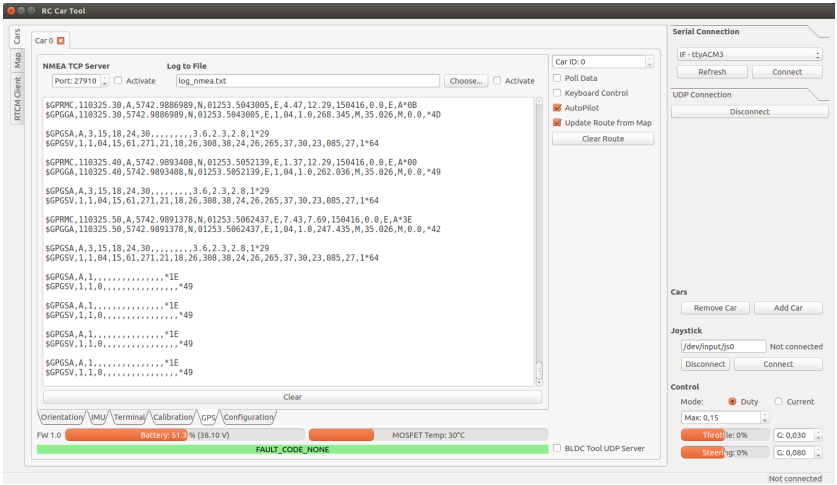
RC Car Tool - IMU raw data



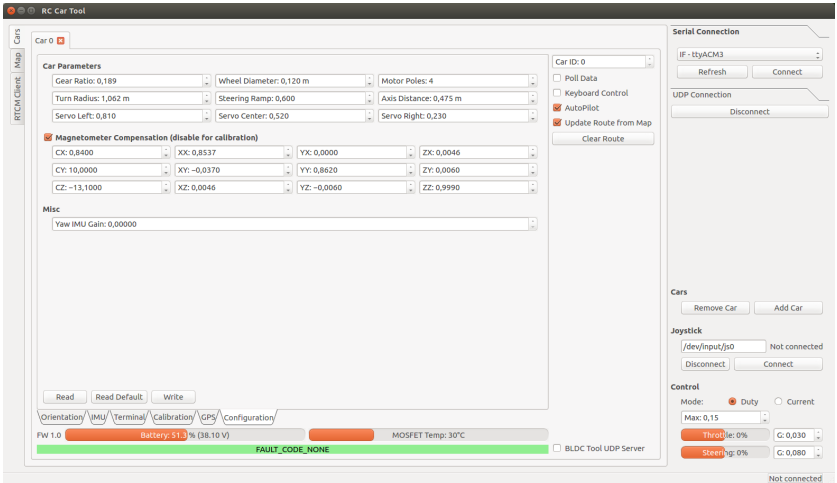
The SP RC Car
RC Car Tool - Terminal



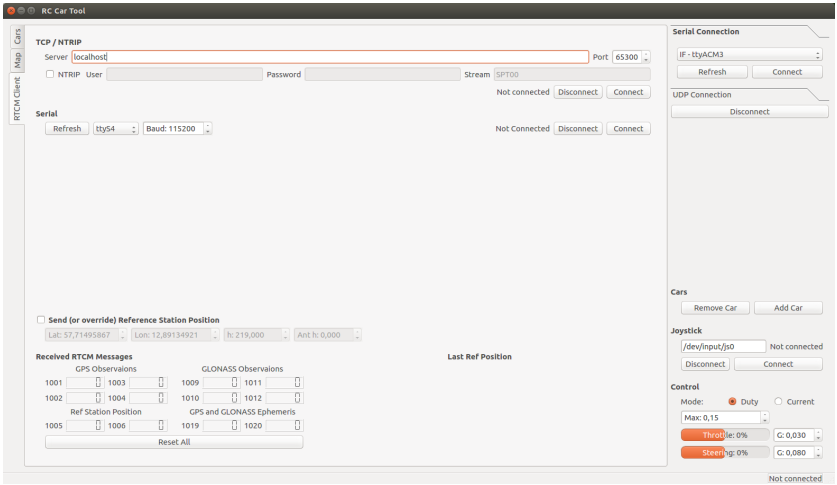
The SP RC Car
RC Car Tool - GPS Data



The SP RC Car
RC Car Tool - Configuration

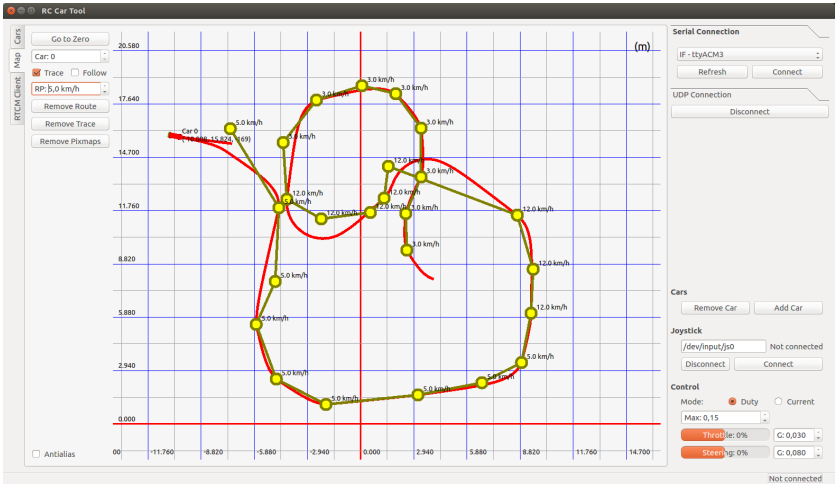


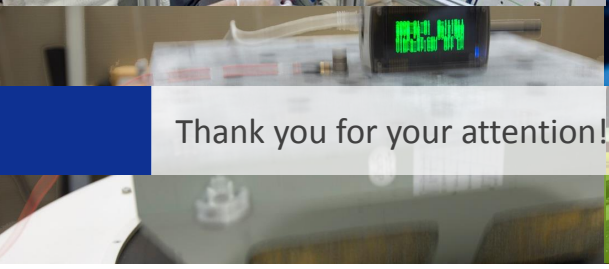
The SP RC Car
RC Car Tool - RTCM correction data



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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