

Motivation - Outdoor robotics with limited cost

For outdoor robotics everybody uses GPS

→ use RTK for better accuracy

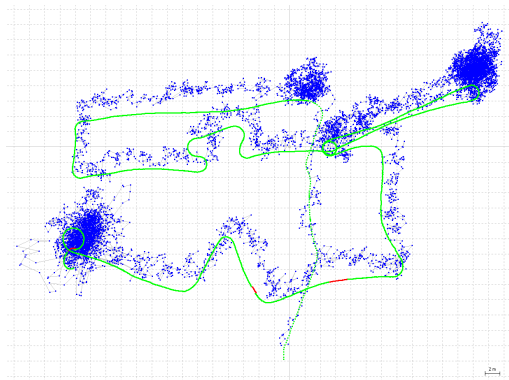
Platform: Outdoor RC-car chassis with Ackermann steering



- ▶ Low-Power PC Pandaboard
 - ▶ Dualcore 1,2 GHz ARM, 1GB RAM, WiFi

- ▶ Using a GPS-RTK solution with base station
 - ▶ RTK basestation connected over wifi-TCP connection

RTK based GNSS localization - GPS-SPP vs. RTK

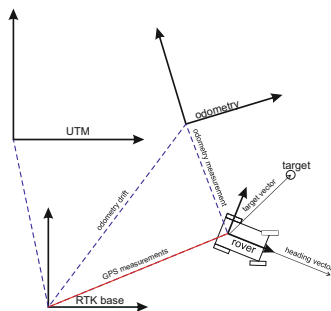


same dataset, blue: GPS single positioning, green: RTK fix, red: RTK float

- ▶ Using GPS L1 *skytraq* receivers for both base station and rover
 - ▶ <http://www.onetalent-gnss.com/ideas/usb-hw-receivers/yuan10>
- ▶ Antenna: Fraunhofer IIS 3G+C
 - ▶ <http://www.navxperience.com/products/>
- ▶ RTKLIB open-source software
 - ▶ www.rtklib.com
- ▶ RTK-approach with pre-measured base station position

GPS-odometry coordinate transform

- ▶ ROS-node
 - ▶ Evaluating GPS measurements quality
 - ▶ Forwarding to coordinate transform algorithm
- ▶ Coordinate transform from global to local



ROS package available:

<http://www.ros.org/browse/details.php?distro=groovy&name=gNSS>