Project Topics

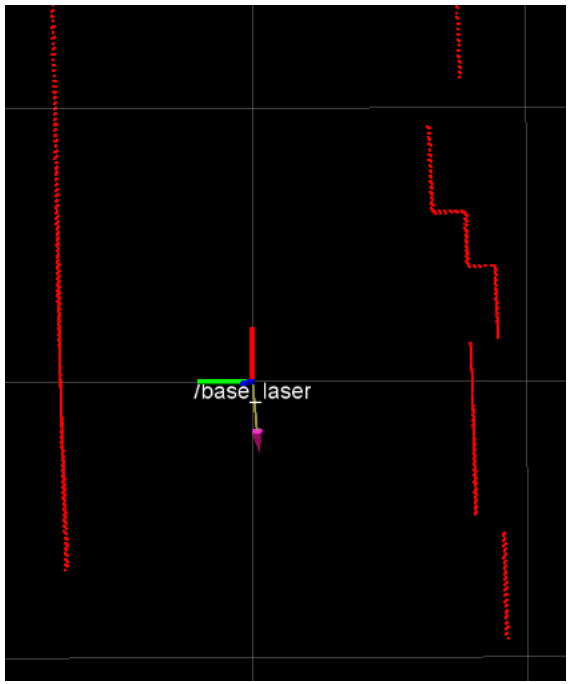
1. Detecting points from RGB images in RGBD data
2. Recognizing known places in laser scan data
3. Building an integrated inertial sensor from consumer parts

Detecting points from RGB images in RGBD data

- Given: camera image
  with marked target points
- RGBD: images + depth
  (-> 3D coordinates)
- Match given image to RGBD image using feature based vision algorithms
- Determine target point in RGBD image -> 3D coordinate of 2D target point

Recognizing known places in laser scan data

- Given: (partial) laser scan and relative target point
- Detect scan in live data
  - Extract lines from live scan and input scan
  - Match line sets
- Determine target point in live data
- Track point for stability



Building an integrated inertial sensor from consumer parts

- IMU = inertial measurement unit
  - 3Dof accelerometer
  - 3Dof gyroscope
  - (3Dof magneto)
  - Filtering algorithm
  - Commercial: $1000 – open end
- Wii-Controllers + pressure sensor
- Microcontroller: Arduino
- Evaluation and comparison