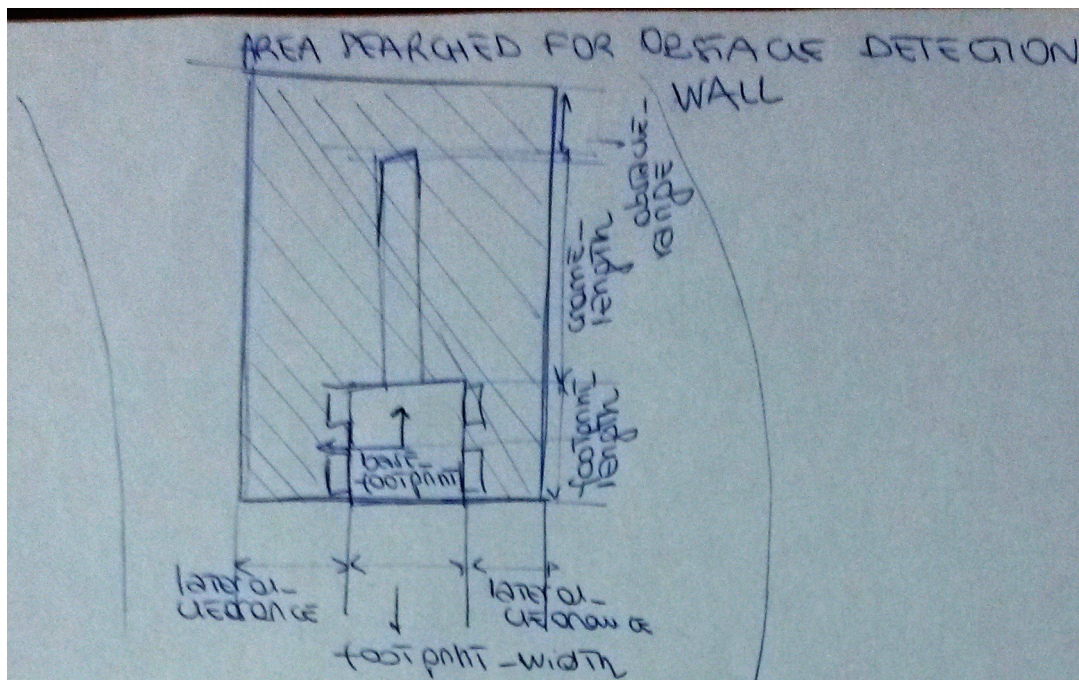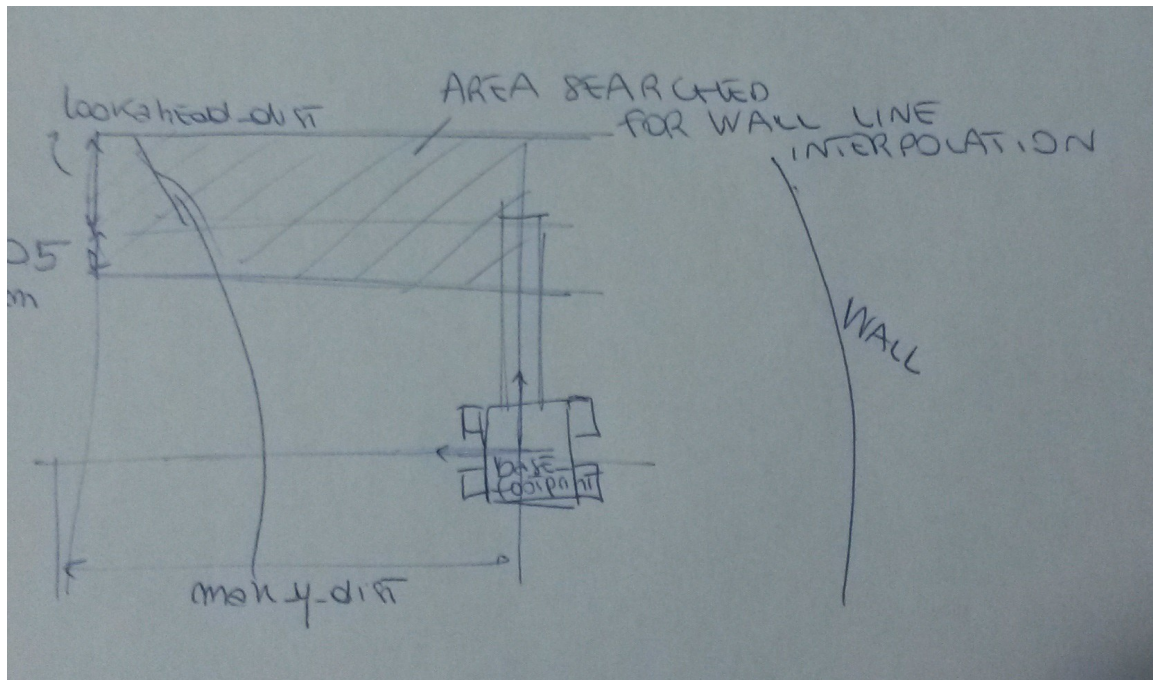PARAMETERS in TunnelMap:

- **footprint_width: 0.60** (SEE PICTURE)
- **footprint_length: 0.70** (SEE PICTURE)
- **crane_length: 3.0** (SEE PICTURE)
- **lateral_clearance: 0.20** (SEE PICTURE. When the robot is approaching the wall -i.e. the difference between robot orientation and wall orientation is higher than 0.25 rad - its value is lowered to 0.05 by default. This is to avoid that the wall is detected as obstacle)
- **obstacle_range: 0.6** (SEE PICTURE. When the robot is approaching the wall, its value is lowered to 0.4 by default)
- **lookahead_distance: 2.0** (SEE PICTURE)
- **max_y_dist: 4.0** (SEE PICTURE)
- **preferred_wall_side:** "LEFT"
- **ransac_threshold: 0.05 .** RANSAC param for wall line interpolation. If the distance of a point from the interpolated wall line is lower than the threshold, the point belongs to the line. In case of many obstacles in the wall, it should be lowered)
- **publish_wall_dist: "true"**
- **pcl_topic: "/scan_cloud"**

PARAMETERS in TunnelPlanner:

- **odom_topic: "/summit_xl/odom"**
- **cmd_topic_vel: "/cmd_vel"**
- **position_source: "ODOM"**
- **desired_freq: 50.0**
- **target_frame: "/base_footprint"**
- **command_type: "Twist"**
- **d_lookahead_min: 3.0** (high value with the grua)
- **d_lookahead_max: 3.5**
- **d_dist_wheel_to_center: 0.3**
- **desired_distance: 1.0**
- **max_speed: 1.2**
- **kr: 0.80 # default 0.20** (higher value to align the robot with the wall orientation)

Launch the simulation:

> roslaunch summit_xl_gazebo summit_xl_tunnel.launch
(Worlds model available: fake_tunnel.world)
TODO: Add the collision tag in summit model with the grua

> roslaunch robospect_planner robospect_planner.launch
(With Rviz)

> rosrun gmapping slam_gmapping scan:=hokuyo_base/scan
(For visualization purposes in Rviz)