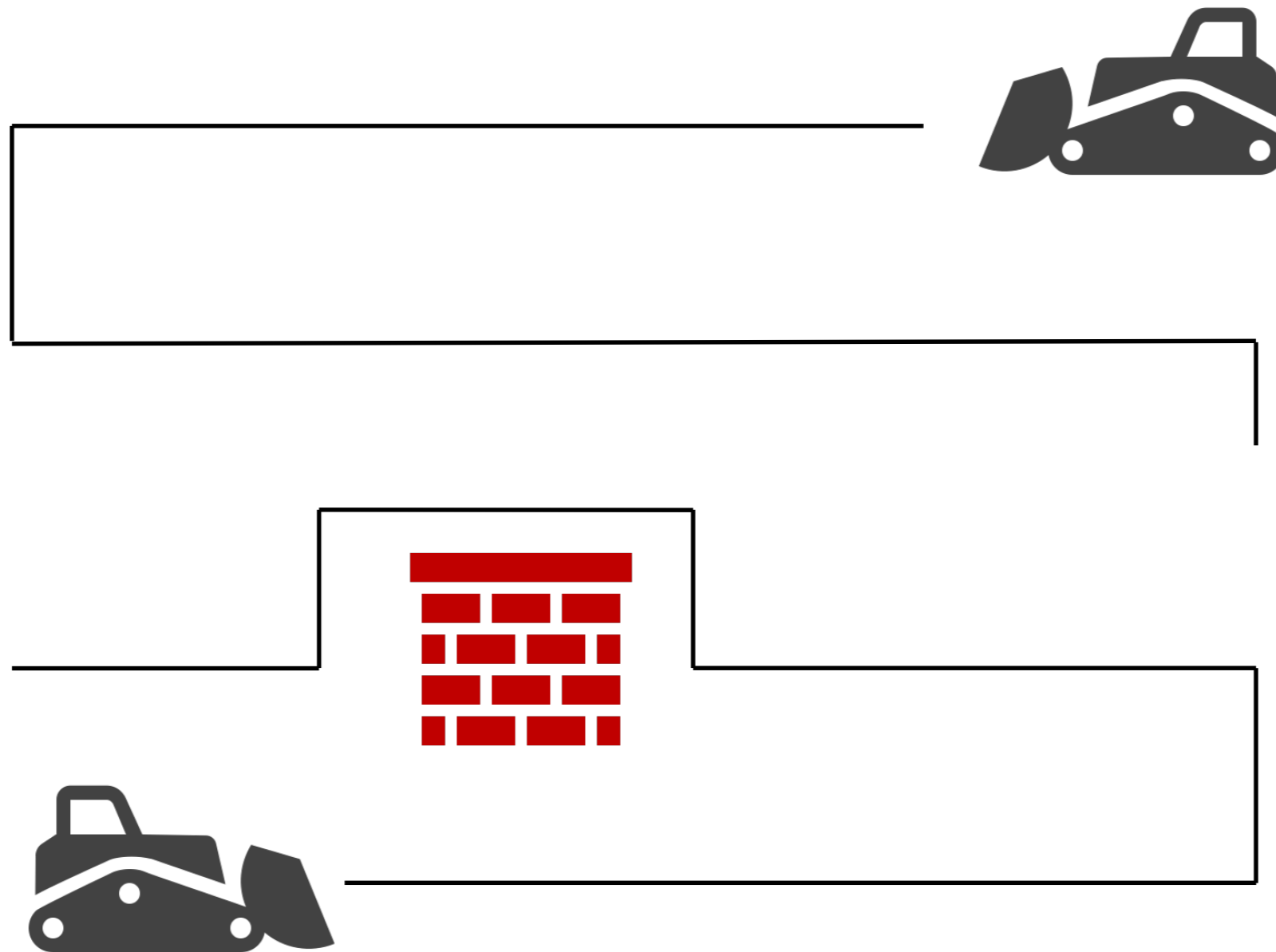


Micron-precision distance measurement using mmWave radars

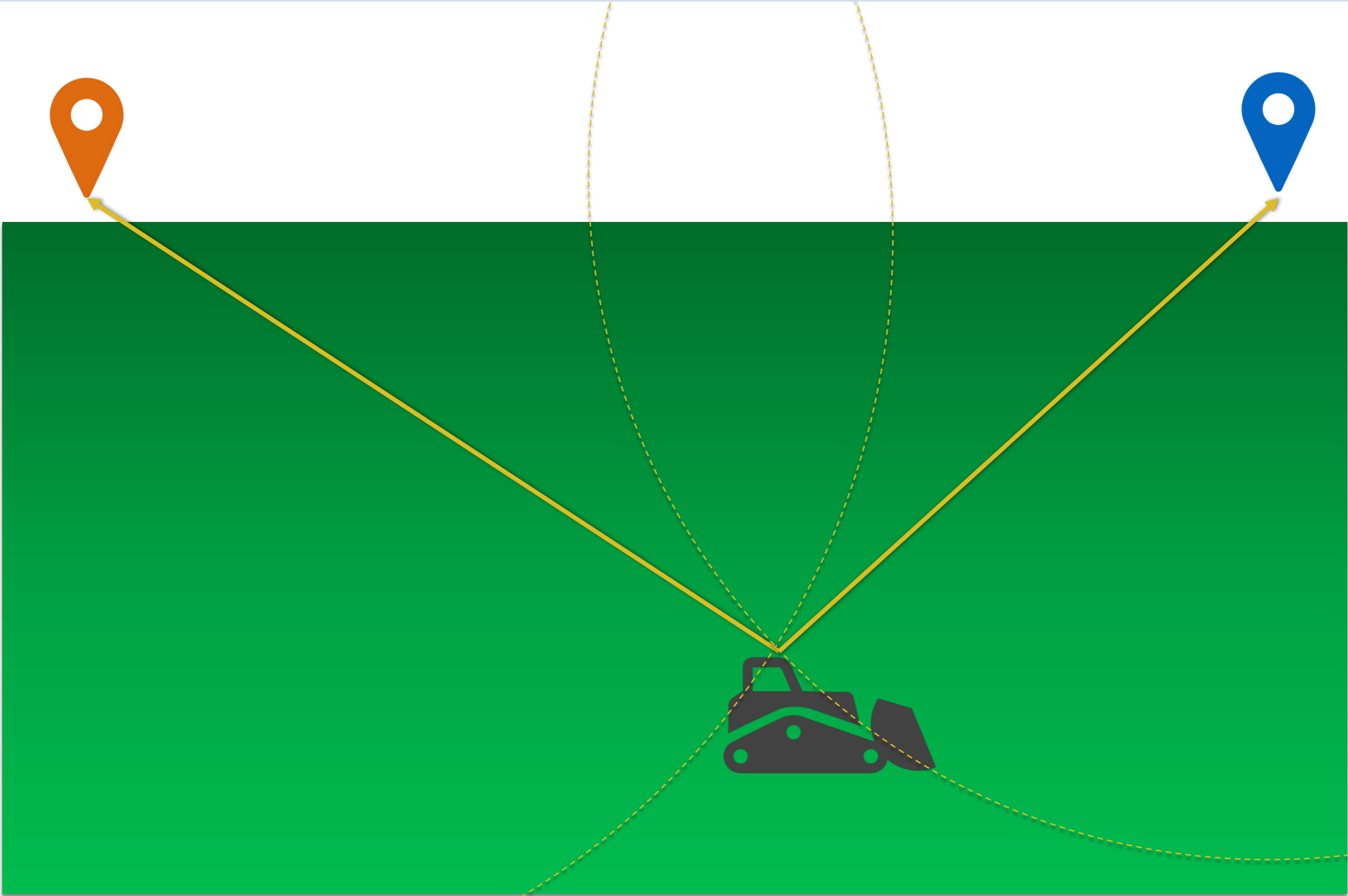
Nikša Orlić, Tomislav Grubeša



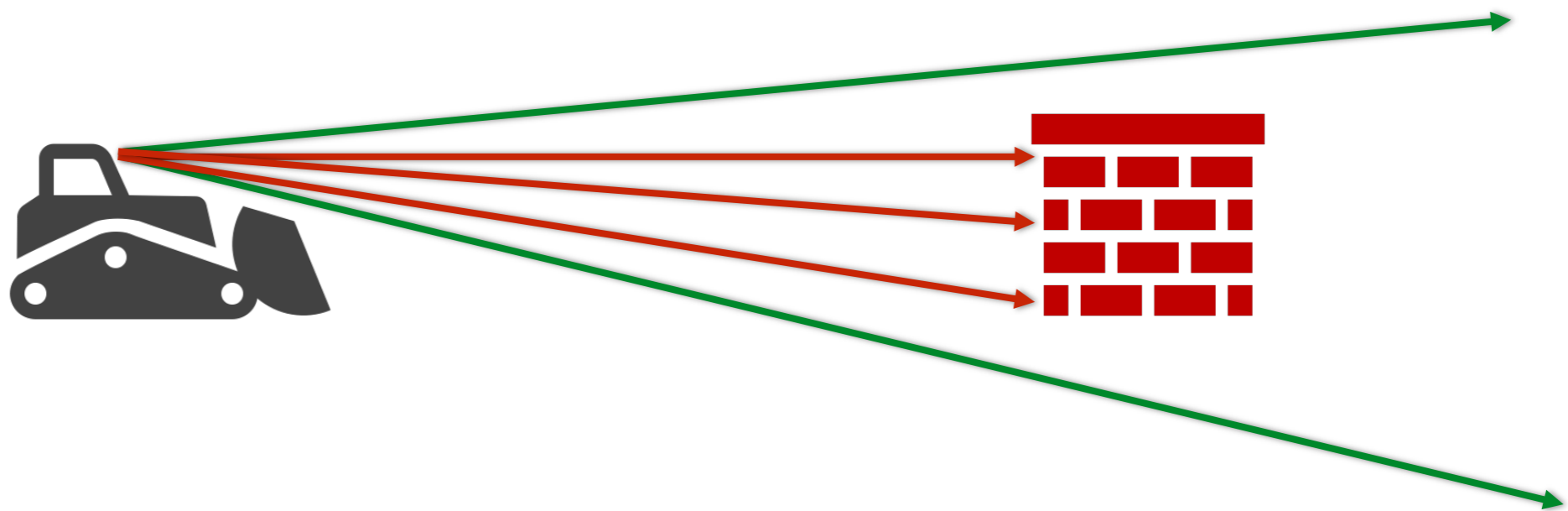
Scenario description



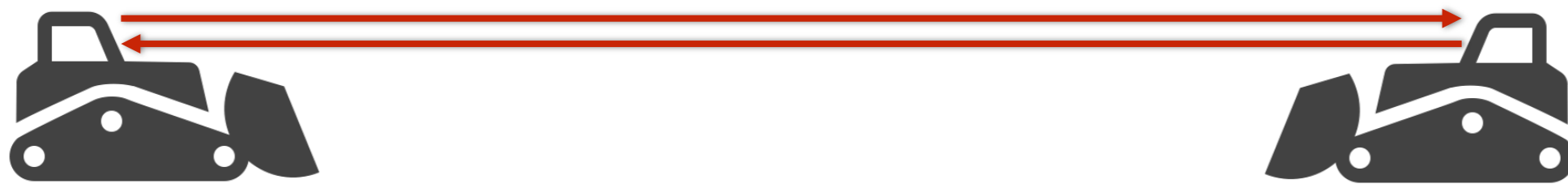
Positioning



Obstacle avoidance



Collision avoidance



Sensor requirements

- Narrow beamwidth
- High accuracy
- High scan rate
- Resistant to jamming
- Stealth

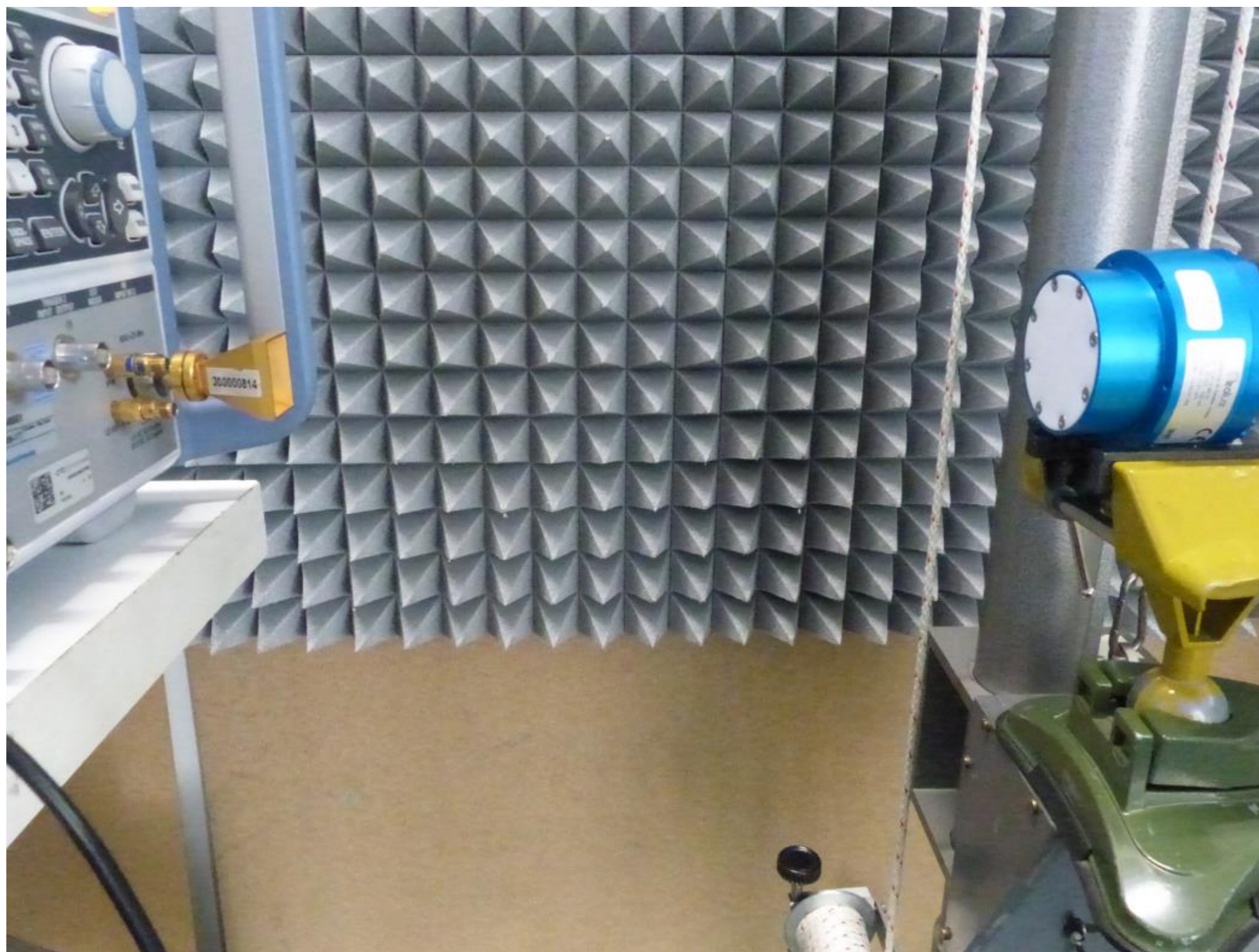
Sensor requirements

- Narrow beamwidth 5°
- High accuracy $25\ \mu\text{m}$
- High scan rate $10\ \text{sps}$
- Resistant to jamming $77 - 81\ \text{GHz}$
- Stealth $77 - 81\ \text{GHz}$

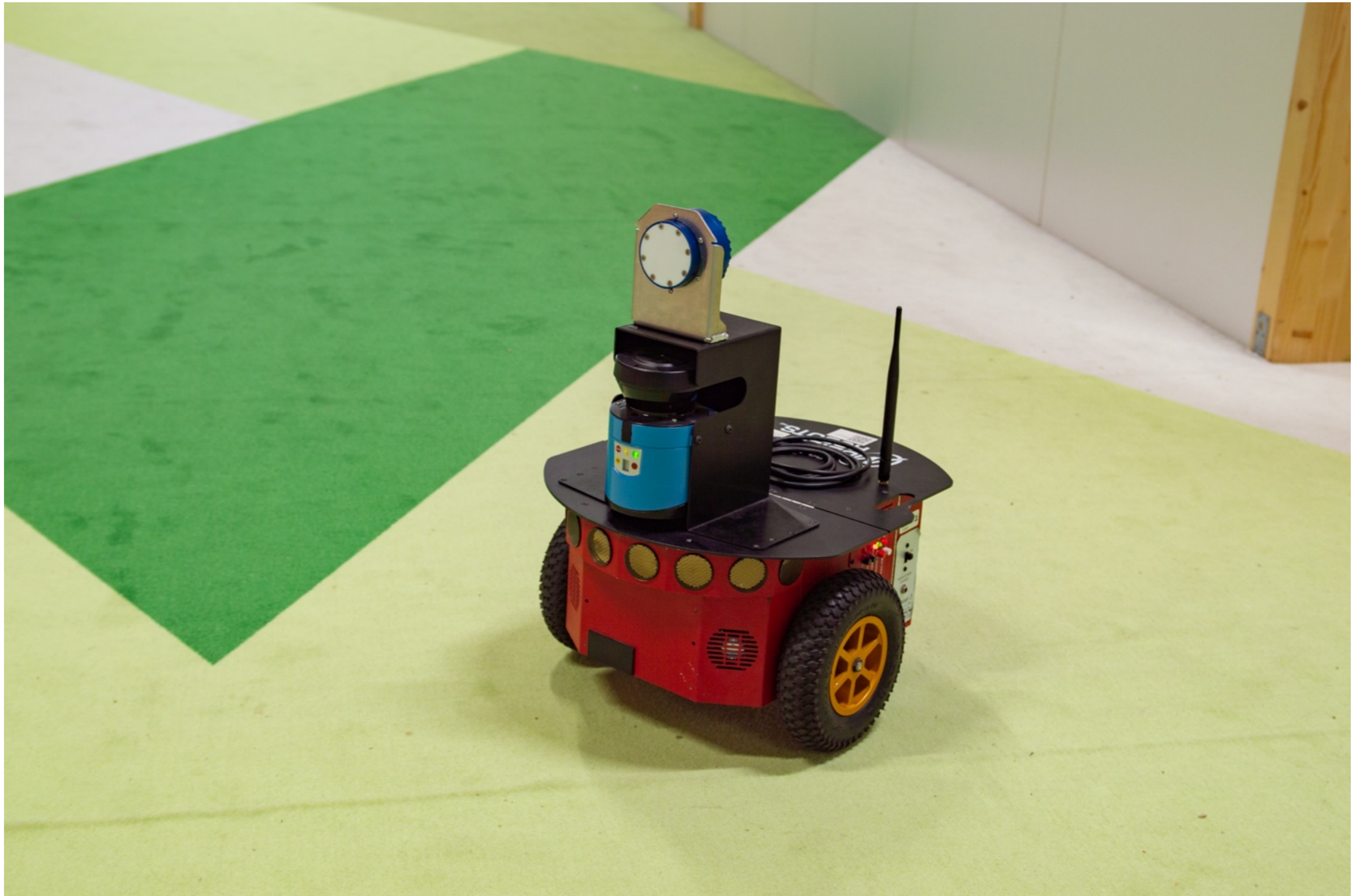
Sensor design



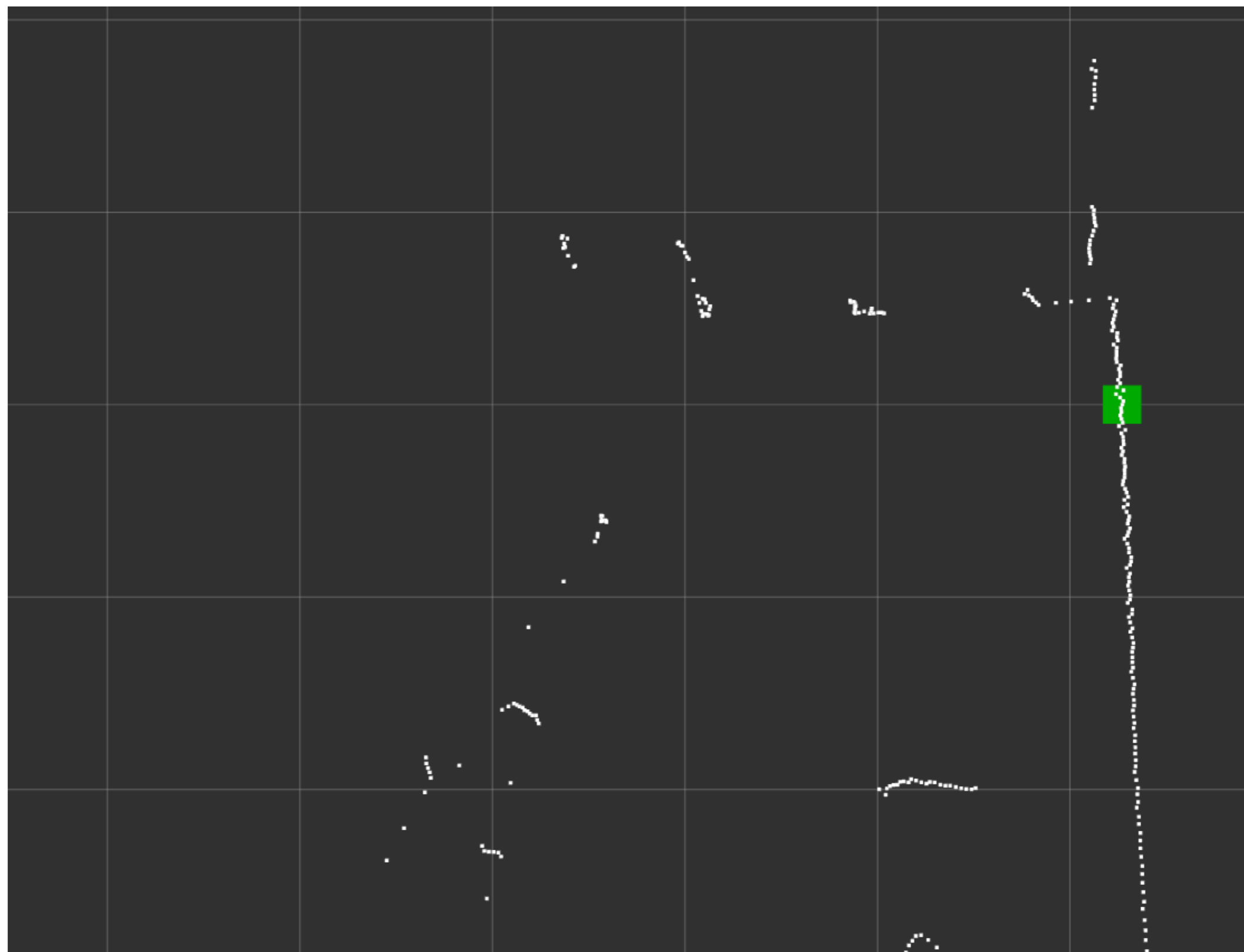
Lab verification



UGV testing



UGV testing results



Thank you!

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