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In cooperation with:
CAPRA ROBOTICS

Case Study
Precise Positioning

At Capra Robotics, we're creating a cleaner environment by eliminating cigarette butts from our cities. Our vision is to create mobile robots to help people everywhere."

Niels Jul Jacobsen, CEO Capra Robotics

Helping People Through Robots

Capra Robotics is a Danish company that solves a nagging hygiene problem common to many global cities; cigarette butts are carelessly strewn everywhere. Their goal is to utilize their robots to locate and remove cigarette butts so that the environment is clean and trash-free.

The Challenge

In Denmark alone, more than 6 billion cigarettes are smoked annually. Removing cigarette butts from grass or gravel surfaces is arduous labor. Large machine sweepers cannot locate and eradicate these tiny bits of trash easily. Human labor is time and cost-intensive.

Products used
- Starling®
- Skylark™
- PGM

Butty is Capra Robotics' small robot equipped to navigate autonomously and remove unsightly and toxic cigarette butts. This cigarette eliminator uses AI for trash detection, sensors for navigation and is also equipped with a suction unit to absorb the butts into its inbuilt trash container. Additionally, it has a mobile platform to monitor its activity. Precision navigation is essentially a prerequisite for Butty's success.

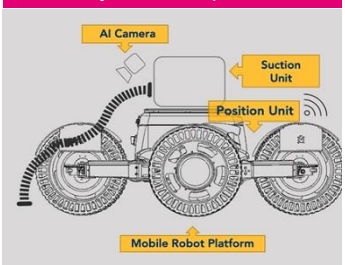
The Solution Tested with PGM and Skylark Cloud Services

Precise Positioning provides autonomous navigation accuracies of <4cm, with its sweet spot hovering between 5cm and 15cm. The engineers installed a Precise Positioning Evaluation Kit into Butty and took it for several test drives. The PGM (Precision GNSS Module) Receiver sends a continuous stream of high accuracy position data to Butty's control system, i.e., to its Robot Operating System (ROS) system situated centrally inside Butty.

Figure 1: PGM Receiver, 50.95 x 30 mm Mini PCIe

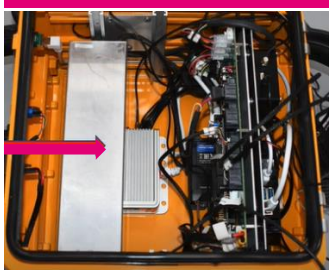
Figure 2: PGM Evaluation Hardware 115 x 82 x 34 mm

Butty's main components



Test drive

PGM Hardware inside the robot



The Result and Next Steps

The results showed that an increase in performance compared to standard GNSS was achieved with Precise Positioning and GNSS corrections. This higher-level precision improves the robot's velocity. Capra Robotics plans to work with Precise Positioning in the future for autonomous navigation of its robots.

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swift NAVIGATION

Watch Capra Robotics' view on Precise Positioning here

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