

Case Study Precise Positioning



Precise localization is needed for our autonomous field robot, to ensure open field navigation that allows the robot to accomplish precision farming tasks.”

Josef Franko, Co-founder AI Land



Agriculture 4.0: Autonomous Field Service Robots

AI Land is a German company promoting automation and digitalization for the agricultural sector. They offer innovative solutions in the fields of R&D, product development, systems engineering, design, and services with a focus on robotics.

The Challenge

Today's farmers face many challenges, such as the steadily growing global population, a shortage of skilled farm workers in many countries, a growing demand and regulation for a more sustainable and safer provisioning of pesticides and fertilizers, and increasing electrification and automation of agricultural machinery.

The Solution

AI-Land's autonomous field robot, ETAROB, aims to decrease monotonous and physically demanding fieldwork with automation and integrated digitization. It automates farm work that is repetitive, labor-intensive, physically exhausting, and costly. The compatibility of the robots sensor module with various attachment tools enables it to be adapted to any work process, such as weed control, fertilization, or harvesting.

GNSS Precise Positioning allows AI-Land to determine their field robot's absolute position with increased accuracy. This information is crucial to enable a secure geofence around the field so the robot can operate safely and efficiently. With the PGM (Precision GNSS Module) setup installed in ETAROB, GNSS correction data help the robot to navigate in the defined farm area, allowing farmers to realize the full potential of digital, precision farming.

The Result and Next Steps

With Precise Positioning, ETAROB received open field navigation accurately, allowing it to manage its path and perform automated tasks. Together with odometry, IMU data, and plant pattern recognition, the robot recognized the pesky weeds and accomplished selective weeding.



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



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

