

HAL ROBOTICS: MOBILE ROBOTICS ON A CONSTRUCTION SITE

Getting mobile robotics on to the construction site

HAL Robotics are a robotic software company based in London and Paris who develop robust solutions, with highly flexible interfaces, for programming, simulation and monitoring industrial machines.

To facilitate research of their Construction and Manufacturing Enabled by a Mobile Robotic Arm (CAMERA) project - a collaborative research project between HAL Robotics, InnoTecUK, ABB Robotics and Skanska - HAL Robotics needed a tracking system to locate their platform and work surfaces within a construction site facsimile.

The issue

HAL Robotics got in touch with Target3D knowing they needed high-accuracy tracking with full 6DoF pose for multiple objects in the scene - some dynamic and others static. Unique to this project was the fact the data (Pose and Identity of each object) needed to be captured and treated within HAL Robotics' own software. Furthermore, it was important to be aware of their constrained budget which needed to be used for testing different technologies and purchasing the final system.

The solution

Target3D recommended and sourced the Multi Camera Flex 3 OptiTrack system, ideal as it allowed a setup to be tested and validated with just a few cameras which could then be added to to create a larger capture volume. It worked at a sufficiently high

frame rate to ensure that mobile objects were constantly tracked and sub-millimetre accurate solution enabled HAL Robotics to send control commands to their pioneering robotic platform.

YouTube link: [▶ Mobile Robot for Construction - CAMERA Project](#)

OptiTrack's NatNet SDK made access to the required data relatively simple, with HAL Robotics creating a simplified system around NatNet to make reading identified poses, in HAL Robotics Framework compatible formats, from rigid bodies a few lines of code.

The result

HAL Robotics were able to complete the research funded project to prove the capability of programmable robots to perform functions in assembly for the construction industry and were awarded another grant to develop the concept further along with the InnoTecUK, ABB, Skanska, BRE and Skyjack.

Everything went smoothly in both deliveries and temporarily replacements for defective cables were provided to ensure we could continue working despite the longer lead times on replacements from the US. Target3D were great to work with and provided support and expertise throughout the different stages of the project.

- Sebastian Andraos

Target3D's real time tracking systems are the world's choice for low latency, precision 6DoF tracking for ground and aerial robotics (UAV's).

Contact us to see how we can help you stay on target with robotics tracking.