SCANIA ROFA CARRIER LIFT PLATFORM MONITORING SYSTEM

Scania Productions Zwolle is a leader in lean manufacturing with a production capacity around 200 trucks per day. To achieve such a result, the production line uptime must be very close to 100%, with a current figure around 97%. To further improve the facilities capacity and ensure flawless production times, Scania's intention is to further improve his uptime by introducing predictive maintenance analysis on the major parts of the production line. Previous analysis by Scania, together with the research group Ambient Intelligence of Saxion and Windesheim, revealed that a major thread of this uptime lies in the reliability of the RoFa carrier used to move the truck chassis throughout the factory during the assembly process. To identify system status, errors and malfunction causes of this carrier, it is eminent that detailed data on the performance of the carrier must be collected and transmitted to a cloud platform for further predictive maintenance analysis. One of the identified problems in carrier availability is the working of the hydraulic lifting module that carries the truck during its assembly process. As a part of this research project, a Generic Sensing Platform (GSP) has been previously developed, which it is responsible of collecting sensor data at the carrier and transmit to an external cloud platform. The core of the GSP is built around a Raspberry Pi embedded computer with external sensors attached, running a modular software architecture based on gRPC framework and google protocol buffers.

PROJECT DESCRIPTION

The main goal of this assignment is to research and developed sensor solutions that will be incorporated into the GSP to measure the behaviour of the RoFa carrier lifting platform, monitoring its height and hydraulic pressures, that will help to evaluate the platform and hydraulics weight loads during the assembly process. This assignment will be in close cooperation with the mechanical research department of Hogeschool Windesheim, students and researchers.

During this assignment you would be working on:

- Research and develop a system to measure the height of the carrier platform, as well as system hydraulic pressures, during carrier operation.
- Integrate the sensing platform as part of the Saxion GSP solution .
- Research about algorithms to estimate platform weight load based on collected sensor data.
- Build and test the developed sensor solution in a live carrier in the production line without influencing the production process.

PRACTICAL INFORMATION

- **Profile:** Electrical engineering, applied computer science student/s with knowledge of embedded systems, sensor technologies, programming and passionate about solutions to real live problems.
- **Assignment**: The assignment will be carried out at Scania Production Zwolle with the technical coaching from the Ambient Intelligence research group and Scania members.
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