Challenge 1: Sensry

Challenge: AI-based (eMotor) predictive maintenance solution on a RISC-V powered multi-sensor platform incl. visualization

Sensry offers IoT platforms, which are comprised of up to 20 (or more) different sensor measurands (9-axis accel, gyro, magnetic), 3-axis vibration, temperature, humidity, barometric pressure, light, sound, and air quality, incl. air quality index, CO2 and VOC. Sensor data can be processed by up to 1+8 RISC-V cores, giving ample processing power for very sophisticated algorithms, like AI and ML. In addition, Sensry's platforms provides all current available secure elements so that sensors based on these platforms can be 100% cyber security protected.

3 Key Facts about the Challenge

Technical Challenges

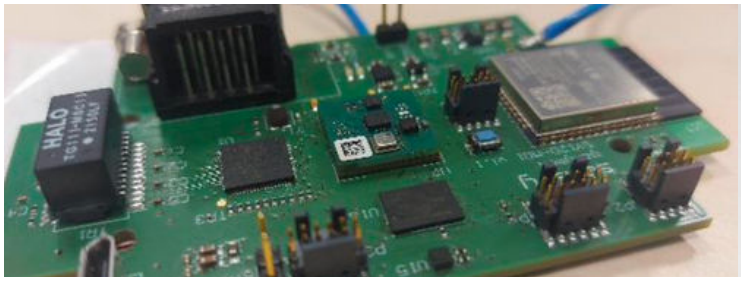
In Predictive Maintenance all kinds of machinery are monitored, any abnormalizes detected and maintenance scheduled before a defect will lead to a stillstand of the production. Electrical motors are one kind of these machineries. A solution shall be implemented to monitor these, favorable programmed in Python, taking vibration, sound, temperature, and other measures into consideration, making use of sensor correlation to challenge any sensor variations, of sensor fusion, to combine information from several sensors for an even better prediction, and of AI/ML models to predict - all running on the embedded 1+8 RISC-V cores under FreeRTOS. Visualization shall be added using the open-source Thingsboard IoT platform.

Why is it important

Having the multi-sensor hardware developed over the last years, now it needs to get proper software support to unfold all of its capabilities. This project will be one of the first approaching that and will be the starting point of many more in that direction.

Mentor & Industrie Experte

Mario, Sven and Dirk driving the actual and the future development of that platform and are especially interested in advanced usage of the ample processing power coming with the multi-sensor system for various applications.



Why you should apply and what you will learn

In this project you will learn about IoT, IoT platforms, (multi-sensor) sensors and advanced algorithms like sensor fusion, used partly already today but for sure massively in the future. You will get in touch with Python, the most used language in AI/ML today and you will get your first hands on the RISC-V technology, which is going to replace the actual ARM processor dominated systems during the next years.