Clausthal University of Technology
Institute for Informatics
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Project in Advanced Cyber Physical Systems
WS 2024/25

This document describes the project task for the lecture Advanced Cyber-Physical Systems in winter semester 2024/25.

The project consists of the measurement of frequencies generated by a fictive machine. These frequencies are relevant (for any analysis) in the range from 0 to 400 kHz. After an interval for measurement, the stored data will be analysed by a Fourier transformation algorithm (which is NOT part of the project).

The focus in this project is set exclusively to the measurement itself. The following tasks have to be solved:

- Define a minimum measurement frequency for an AD converter to be chosen. Please observe the Nyquist criterium for the conversion speed.
- Please inform yourself about some parameter of ADC that are relevant.
- Please find at least two AD converters (these must be real!) that fulfil this conversion speed requirement with a nominal conversion bit width of 12 bit (real at least 10 bit), look for availability and price, and compare them in some characteristics (for decision makers)
- Check the available ADCs with 14- and 16-bit resolution (only one of each) for their features incl. price and availability and insert them in your table. Please observe: it is not guaranteed that these are available!

Expected Results

The result shall be a paper for decision makers, which includes

- A description of the task
- A description of the observed and analysed features of ADCs
- A table for comparison of the different ADCs
- A recommendation for use of one of these ADCs

Date of delivery: January 13th, 2025 (hard deadline)

The project may be done in groups of at most 3 persons (recommended: 2).