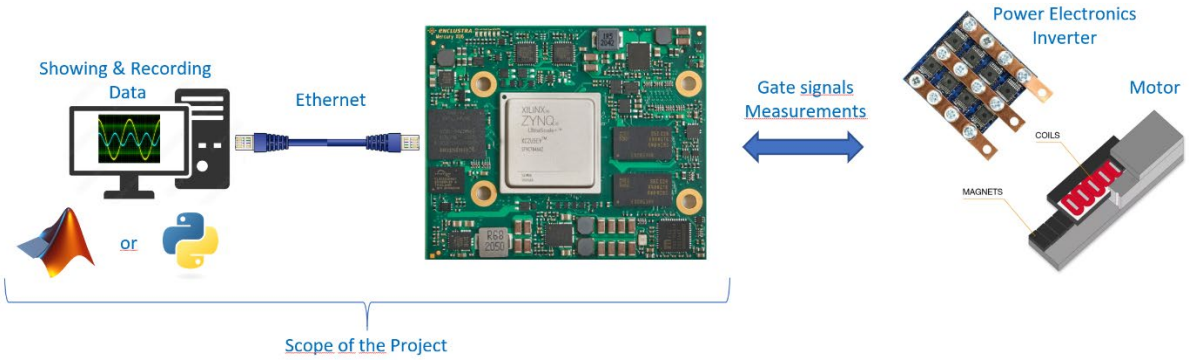
universität innsbruck

innsbruck Drive and Energy Systems Laboratory

Bachelor Thesis @InstitutFürMechatronik

SoC-Based Integrated Oscilloscope for Future Drive Systems



Background: Modern drive systems are digitally controlled, making the monitoring of their voltages and currents essential for operational analysis. This project aims to develop an integrated oscilloscope system, utilizing the Enclustra XU6 SoC controller board. Through Ethernet, the SoC will transmit key data parameters, such as duty cycles and measured currents, to a PC. On the PC, a system will be implemented in either MATLAB or Python to visualize and record this data, enabling real-time monitoring and detailed analysis of drive system performance.

Objectives: Develop software on the SoC to transmit specified data over Ethernet. Design PC software to receive and process the incoming data. Create an application on the PC for real-time data visualization and storage.

Approach: The project begins with familiarizing yourself with the SoC programming environment (Vivado) and understanding the project specifics. All necessary hardware, including the SoC board and PC, will be provided. This is a hands-on project, where everything will be implemented and tested.

Tools/Software: C, interest in VHDL, Phython/Matlab

Prerequisites: This project is designed for students with experience in embedded programming.

Application and Supervision:

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