Performant Trace Recording with Streaming Mode

Oscilloscope Trace Recording requires quick data processing, low-level driver API handling, high level post-processing, all highly configurable for scientific applications. To increase performance on the oscilloscope side, it is important to use the streaming mode, that is near real-time recording from the scope. This creates tight constraints for data processing on the computer side, as Samples will arrive with 1.2 GBit/s.

In this thesis, you will continue development of a skeleton application for this task, written in Rust.

Prerequisites

The following list of prerequisites is neither complete nor binding, but shall give you an idea, what the topic is about.

- Sufficient knowledge in a System-Level Programming language such as C/C++/Rust etc. as a baseline for programming abilities
- Basic to intermediate knowledge of Rust, to be able to actually enhance the status quo in Rust. Learning on the job is possible, probably.
- In the optimum case experience with (Side-Channel) Trace Measurement, to understand the environment of the program

Contact

If you are interested in this topic, don’t hesitate to ask for an appointment via alex.hepp@tum.de

Please include a grade report and a CV, so I can evaluate different focus areas to fit your experience.

Advisors

Alexander Hepp