

The Erlangen National High Performance Computing Center (NHR@FAU) is looking for a

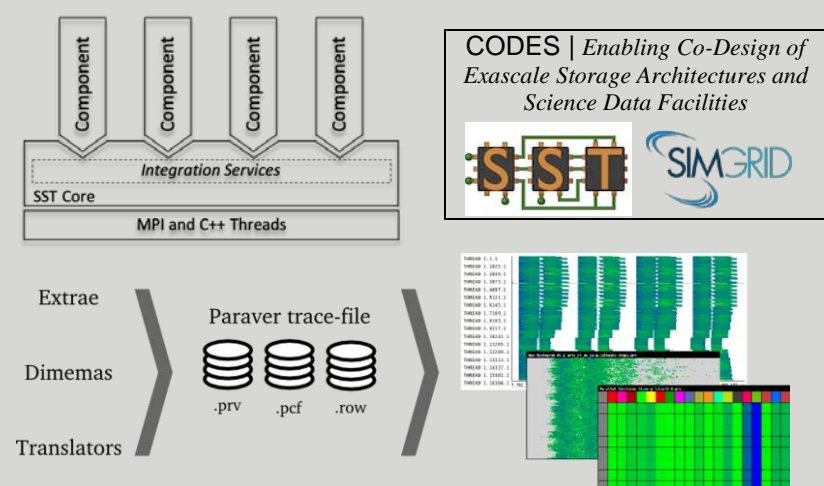
Bachelor/Master thesis student for

Evaluation of Variant Message-passing Simulators for Performance Analysis of Distributed Applications

The thesis will be hosted and supervised by the research division at Erlangen National High Performance Computing Center (NHR@FAU), which is led by Prof. Dr. Gerhard Wellein (Department of Computer Science, FAU).

Tasks

Message-passing simulators aim to predict the runtime for large-scale parallel applications in an efficient manner. Beyond simply simulating applications, many simulators (like CODES and SST) also provide middleware implementing MPI semantics within the simulator, allowing different MPI implementation or collective algorithms to be tested with separate flexible libraries. Some simulator frameworks can replay MPI traces (offline trace analysis) and some emphasize online skeleton applications as simulation drivers.



Within the bachelor/master thesis, the focus will be in the following areas:

- Getting familiar with existing simulator frameworks (CODES, SST, Paraver, SimGrid) using available documentation, e.g., training guides, tutorial slides, etc.
- Feature evaluation of simulators via analysis of micro-benchmark tests and proxy applications
- Performance evaluation of simulation frameworks via accuracy comparison of the simulations with measurements on real clusters

Required skills

- Student of (computational) engineering or computer science
- Profound knowledge of C/C++ and the Linux OS
- Basic knowledge of code parallelization with MPI and OpenMP
- Basic knowledge of both node- and cluster-level performance engineering is preferable
- Nature of work: Theory (35%), Conception (35%), Implementation (30%)

Please direct any inquiries or applications to

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