

TDDD89 Planning Report:

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1 Preliminary title

Real time visulization of MPI utilization in the C++ MPI library

2 Problem description

MPI(Message Passing Interface) is a standardized interface for message-passing between computers and is mostly used for distributed computing on large parallel computers. There is a need for a real time platform independent visualization tool that can be used to analyze how well the computing is being performed. There exists tools that do this post-mortem such as mpe and VAMPIRE. Some tools that do this in real time but are not up to date such as XMPI.

The expected result should be base framework with some limited functionality and documentation on how to further develop the functionality since development of a complete tool will probably take more time that can be spend during this thesis.

3 Approach

The first phase will be to read up on how the MPI is used and read all of the relevant documentation that exists.

The second phase will be test and use the current available softwares to see how they are used and their downsides and upsides.

The third phase will be to read relevant literature of academic nature on how a optimized implementation should be implemented.

The forth phase will be to start implementing

During this whole time there will be time spent on the actual thesis.

4 Literature base

- Using MPI - 2nd Edition: Portable Parallel Programming with the Message Passing Interface (Scientific and Engineering Computation)
- <http://www.mcs.anl.gov/research/projects/mpi/usingmpi2/>
- <http://www.cs.usfca.edu/~peter/ppmpi/>
- <http://moss.csc.ncsu.edu/~mueller/cluster/mpi.guide.pdf>
- <http://dl.acm.org/citation.cfm?id=898758>
- <https://www.vampir.eu/>
- <http://www.mcs.anl.gov/research/projects/perfvis/software/MPE/>
- https://wiki.mpich.org/mpich/index.php/MPE_by_example

5 Time plan

5.1 Pre-study

Activity	Duration	Finished	Dependencies	Comment
Planning	One day	6-11-15	None	This document
Create all latex templates	Couple of hours	13-11-15	None	Setup reference
Reading MPI documentation	One week	20-11-15	None	Also testing
Testing MPI tools	Three days	25-11-15	MPI doc	Document during
Reading academic literature	Two weeks	9-12-15	None	Document during
Thesis draft	Three days	12-12-15	academic lit.	None

Table 1: Pre-study time plan

5.2 Experimental

Activity	Duration	Finished	Dependencies	Comment
Implementation	Six weeks	6-02-16	Pre-study	None

Table 2: Implementation time plan

5.3 Writing

Activity	Duration	Finished	Dependencies	Comment
Writing thesis	Two months	6-4-16	Implementation	None

Table 3: Writing time plan

6 Relevant courses

- TDDB68 Processprogrammering och operativsystem
- TDDD20 Konstruktion och analys av algoritmer
- TDDD56 Multicore- och GPU-Programmering
- TDDD89 Vetenskaplig metoder
- TDDD25 Distribuerade system
- TDDD38 Avancerad programmering i C++
- TDDC78 Programmering av paralleldatorer - metoder och verktyg