Alternative High Performance Benchmarks

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Abstract

Benchmarks for High-Performance clusters generally focus on floating-point intensive calculations. Few of these address data intensive graph operations, a class of computation rapidly growing in demand. As an alternative to standard floating-point benchmarks, a new benchmark, the Graph 500 has been proposed. The benchmark employ's multiple implementations with the intention to identify desecrate performance aspects via the comparative results, however a PGAS model has yet to be developed. This project focuses on understanding what capabilities a UPC Graph 500 implementation may offer. Specifically: 1. the UPC expressibility for irregular graph operations of Graph 500 and 2. simple performance testing of the efficiency of UPC with runs up to 1024 cores.

Random Access

When performing graph operations, random access to memory and random process communication are generally very common. This test looks at how well a UPC Graph 500 implementation of may handle these operations. To do so, we implement a dot product employing randomized access and communication.

ALGORITHM
Having issues getting usepackage{program} to function properly with beamer

GRAPH of Results

Discussion of the results.....

Linked List Traversal

The colors of the blocks and their headings and texts can be changed easily by redefining the beamercolors. Therefore you can use all colornames defined by the xcolor package or you can define your own colors. Some nice colors are already defined within the *cpbgposter* style.

Sequential Vertices, Sequential Processes
picture

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Sequential Vertices, Random Processes
picture

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Random Vertices, Sequential Processes
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Random Vertices, Random Processes
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GRAPH of Results

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Discussion of the results.....

Multi Process Linked List Traversal

The colors of the blocks and their headings and texts can be changed easily by redefining the beamercolors. Therefore you can use all colornames defined by the xcolor package or you can define your own colors. Some nice colors are already defined within the *cpbgposter* style.

Sequential Vertices, Sequential Processes
picture

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Sequential Vertices, Random Processes
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Random Vertices, Sequential Processes
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Random Vertices, Random Processes
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GRAPH of Results

GRAPH of Results

GRAPH of Results

GRAPH of Results

Discussion of all Results

Since the beamer package is used, basically all latexbeamer functions are supported [2]. The *cpbgposter* style comes with some special features:

- **Poster Frame**
  A jacobs university blue frame surrounding the whole poster and the title is drawn automatically
- **Poster Title**
  The title, authors, institute and the jub logo are placed automatically at the top of the poster. You can define them easily with the commands:
  `\title{...}`
  `\author{...}`
  `\institute{...}`
  The frame around the Title is also adjusted automatically to fit the number of lines in the title
- **Blocks**
  Up to now there are two different block environment. The standard block:
  `\begin{block}{Caption}`
  `.......`
  `\end{block}`
  This creates a block with justified text and a fancy underlined green title. And then there is the alerted block:
  `\begin{alertblock}{Caption}`
  `.......`
  `\end{alertblock}`
  With this environment you can create a nicely framed block.
- **Bibliography**
  The default beamer bibliography style was also tweaked so that you can use the standard bibliography commands.
  `\begin{thebibliography}{#}`
  `environment contents`
  `\end{thebibliography}`

Conclusion and Future Work

To compile you poster a current version the following a packages are required

- latexbeamer
- pgf (Tikz)
- beamerposter

All those packages are contained in the TexLive distribution, which is also installed on our office computers. They should also be available in MikTeX if you have to work on a windows machine.

Remarks

- There are some warning messages due to the large font scaling. Ignore them!
- Sometimes the borders and frames look weird after compiling. Compile again, and it will be fine!

References

[1] http://www-i6.informatik.rwth-aachen.de/~dreuw/latexbeamerposter.php

[2] http://www.ctan.org/tex-archive/macros/latex/contrib/beamer/doc/beameruserguide.pdf

[3] http://www.ctan.org/tex-archive/help/Catalogue/entries/pgf.html