CS421 Project Proposal

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We are planning to do graph analysis, specifically ranking web pages using Google's Pagerank algorithm.

Basic parallel paradigm

The graph of the model web will be analysed in parallel by distributing the work done on different graph nodes to different workers. There is a need to handle the inter dependencies created between graph nodes from different workers.

Plan

We've planned to implement the Shared Memory model ourselves in CUDA and subsequently profile it. For the Distributed Memory model, we are going to evaluate the implementation given here.

For the CUDA implementation, here is a paper which we will roughly follow - http://www.hipc.org/hipc2011/studsym-papers/1569513051.pdf

Dataset

- For correctness check, we will use real datasets like the ones given here.
- We will be generating random graphs for large dataset (using tools like igraph)

Expected Contribution

What different team members are expected to contribute -

- **Kanak** - Will majorly work on implementing the Shared memory model on CUDA. Also, help Shraddheya in evaluating the distributed model as needed.
- **Shraddheya** - Will majorly work on profiling the distributed memory model code. Also, help others in CUDA model as needed.
- **Harshith** - Will majorly work on implementing the Shared memory model on CUDA. Also, help Shraddheya in evaluating the distributed model as needed.
- At the end, we will explain each other what we did so that everyone knows everything