

GSoC2011

Introduction

Apache Hama is a Google's Pregel-like, a distributed computing framework based on Bulk Synchronous Parallel.

- [Google Summer of Code™ 2011 Frequently Asked Questions](#)

Idea List

1. Evaluation of Hama BSP communication protocol performance

The goal of this project [HAMA-358](#) is performance evaluation of RPC frameworks (e.g., Hadoop RPC, Thrift, Google Protobuf, ..., etc) to figure out which is the best solution for Hama BSP communication. Currently Hama is using Hadoop RPC to communicate and transfer messages between BSP workers.

By this project, students will have learned how to evaluate components in the design phase.

- A list of prerequisite:
 - Understanding of Bulk Synchronous Parallel model
 - Understanding of RPC (remote procedure call)
- Programming skills:
 - Java and Shell scripts
 - 2d plotting programming
- The estimated duration for this project: 12 weeks
- The level of difficulty: High

2. Development of Shortest Path Finding Algorithm

The goal of this project [HAMA-359](#) is development of parallel algorithm for finding a Shortest Path using Hama BSP.

By this project, students will have researched the development of a Message-Passing based parallel algorithm and learned Bulk Synchronous Parallel model.

- A list of prerequisite:
 - Understanding of the Hama BSP programming model
 - Understanding of Graph theory
- Programming skills:
 - Java Programming
- The estimated duration for this project: 12 weeks
- The level of difficulty: High

3. Runtime Compression of BSP Messages to Improve the Performance

In this project [HAMA-367](#), we investigate BSP message data compression in the context of large-scale distributed message-passing systems to reduce the communication time of individual messages and to improve the bandwidth of the overall system.

- A list of prerequisite:
 - Understanding of the Bulk Synchronous Parallel and Message-Passing model
- Programming skills:
 - C or Java Programming
- The estimated duration for this project: 12 weeks
- The level of difficulty: High