Sprint Report #4

February 10, 2016

Team Overview

Project

ARM Cluster

Members

- Andrew Hoover
- Christine Sorensen

Sponsor

Dr. Christer Karlsson

Meeting Times

Tuesdays and Thursdays at 1:00pm

Work Times

Tuesdays and Thursdays at 10:00am

Sprint Overview

Work for this sprint included:

- Graph Benchmark Results
  - Ran LINPACK on a one to eight devices and recorded results.
  - Graphed the speeds using Python libraries
- Compare Cluster to i7
  - Installed LINPACK on Dr. Karlsson's i7 named Red Queen
  - Ran the test and recorded the gigaflops on four to eight cores.
- Created LINPACK as debian package for Arm.
- Researched USB communcation.
  - No method for USB communication was found for USB 3.0.
  - USB 2.0 was determined to be too slow to be feasible.
- Researched GPIO communication.
  - Communication by using the file system in /sys/class/gpio was demonstrated to work.
  - WiringPi for ODroid was installed.
  - The kernels on the devices were updated to be able to use WiringPi.
  - Communication in C using WiringPi and the GPIO pins was demonstrated to work.

- MICS conference.
  - Wrote the abstract for our research to deliver to MICS.
  - Reviewed the abstract with our client.
  - Peer reviewed the abstract with antoher local team attending MICS.
  - Submitted the abstract to MICS.

Deliverables

- Graphs of total gigaflops performed depending on amount of devices used.
- Debian package of LINPACK for Arm.
- Found USB communication to not be feasible.
- Able to send bits over GPIO between ODroid devices.
- MICS abstract.

Activities

Andrew Hoover

- Created LINPACK debian package.
- Ran LINPACK on differing amount of devices in the cluster and saved the results.
- Installed LINPACK on Dr. Karlsson's i7 to compare to the cluster.
- Researched USB communication.
- Debugged WiringPi.
- Spent some more time debugging WiringPi.
- Was able to get WiringPi to work for C.
- Updated kernel's of ODroids.
- Edited sprint report.

Christine Sorensen

- Wrote MICS abstract.
- Wrote Python code to graph LINPACK results.
- Created documentation.
- Researched GPIO communication.
- Talked to faculty about GPIO and instuctional uses for the cluster.
- Debugged WiringPi.
- Spent some more time debugging WiringPi.
- Was able to get WiringPi to work for C.
- Wrote initial sprint report.

Work that is carried over into Sprint 5 is as follows:

- Use protocols for data transfer over GPIO.
- Benchmark those protocols and compare to Ethernet.
- Continue working on MICS.

Backlog

- MICS presentation.
- Design Fair