Parallel computing and parallel algorithm

Homework 1

Due date: 00:00 on April 4th, 2019

Minyi Guo
Chentao Wu

Spring 2019

Note: You MUST do the homework by yourself. You are permitted to get help ONLY from the TAs and instructors.

Problem 1:

MPI programming:
Use MPI_SEND and MPI_RECV to implement the MPI_ALLGATHER function, and compare the performance of your implementation and the original MPI implementation.

Problem 2:

MPI programming:
Initialize a random 1024 *1024 matrix.
2.1 Implement the matrix multiplication function.
2.2 Using a 4 * 4 kernel to do the pooling operation for the matrix.
2.3 Using a 4 * 4 kernel to do the convolution operation for the matrix.

Problem 3:

MPI programming:
We will provide one folder which contains 100 small files and one folder which contains 1 big file.
Implement the wordcount algorithm respectively for the two situations and print the results to the screen.

Submission

Submit your homework

The program you are to submit is the **.c/.cpp** which should have name like "hw1_1.c/hw1_1.cpp". You SHOULD write a report in **pdf** format for your program to briefly describe how to use your program and your idea. Then, put these files in a folder and make a package named "11803391XXXX_Name_hw1.zip".

Due Date

00:00 on April 4th, 2019

Submit your compressed file to the FTP website.