

Zhi (George) Qiao

Teaching Assistant at University of North Texas. IT Specialist.

george.qiaozhi@gmail.com

Summary

Dedicated technology professional seeking a research and development internship for Data Analysis to utilize my skills in Distributed System, High Performance Computing and Computer Security for the growth of organization and myself.

Experience

IT Graduate Assistant at The International Center for English, Arkansas State University

March 2013 - December 2014 (1 year 10 months)

Graduate Assistantship. Duty including System Admin, Database Admin, Windows Server and Computer laboratory maintenance; Web developing with C#/ASP.Net; Hardware troubleshooting and Tech Support.

Research Assistant at Secure & Scalable Systems Laboratory, Arkansas State University

September 2012 - December 2014 (2 years 4 months)

- Customizable GPU MapReduce. A configurable MapReduce framework built on top of the GPU runtime that constructed with CUDA/Thrust and C++. Intend to handle complicated, data-interdependent MapReduce job.
 - Attribute Based Encryption acceleration. Hardware acceleration for a crypto system that merges the Role based Access Control and Encryption in the Multi-GPU cluster environment.
-

Organizations

Institute of Electrical and Electronics Engineers (IEEE)

Graduate Student Membership

January 2012 to Present

Publications

MR-Tree: A Customizable GPU MapReduce Framework

ProQuest/UMI October 31, 2014

Authors: Zhi (George) Qiao

Abstract -- The MapReduce programming model has been criticized for a long time for its lack of flexibility to apply on many difficult scientific computations. Currently, several approaches try to conduct a more flexible MapReduce framework, but some of them are required to run on a particular platform, others have a lack of support to GPU environments. In this thesis, we present MR-Tree, a customizable GPU MapReduce framework. In MR-Tree, users can configure each task's data I/O behavior, so computations that have strong data dependency will no longer hold back the MapReduce runtime. Moreover, MR-Tree also features

configurable workflow. Users can arrange the task nodes in several different ways to handle complicated MapReduce jobs. We will discuss the customization for MR-Tree to handle intricate, iterative, long-running and regular MapReduce applications.

Survey of Attribute Based Encryption

SNPD 2014 April 25, 2014

Authors: Zhi (George) Qiao, Shuwen Liang, Spencer Davis, Hai Jiang

Abstract—In Attribute Based Encryption, a set of descriptive attributes is used as an identity to generate a secret key, as well as serving as the access structure that performs access control. It successfully integrates Encryption and Access Control and is ideal for sharing secrets among groups, especially in a Cloud environment. Most developed ABE schemes support key-policy or ciphertext-policy access control in addition to other features such as decentralized authority, efficient revocation and key delegation. This paper surveys mainstream papers, analyzes main features for desired ABE systems, and classifies them into different categories. With this high-level guidance, future researchers can treat these features as individual modules and select related ones to build their ABE systems on demand.

Pipelined Multi-GPU MapReduce for Big-Data Processing

Computer and Information Science 2013 June 17, 2013

Authors: Yi Chen, Zhi (George) Qiao, Spencer Davis, Hai Jiang, Kuan-Ching Li

Abstract -- MapReduce is a popular large-scale data-parallel processing model. Its success has stimulated several studies of implementing MapReduce on Graphic Processing Unit (GPU). However, these studies focus most of their efforts on single-GPU algorithms and cannot handle large data sets which exceed GPU memory capacity. This paper describes an upgrade version of MGMR, a pipelined multi-GPU MapReduce system (PMGMR), which addresses the challenge of big data. PMGMR employs the power of multiple GPUs, improves GPU utilization using new GPU features such as streams and Hyper-Q, and handles large data sets which exceeds GPU and even CPU memory. Compared to MGMR, the newly proposed scheme achieves a 2.5-fold performance improvement and increases system scalability, while allowing users to write straight forward MapReduce code.

Accelerating MapReduce framework on multi-GPU systems

Cluster Computing 2013 May 2013

Authors: Yi Chen, Hai Jiang, Kuan-Ching Li, WonWoo Ro, Zhi (George) Qiao, Jean-Luc Gaudiot

Abstract -- Graphics processors evolve rapidly and promise to support power-efficient, cost, differentiated price-performance, and scalable high performance computing. MapReduce is a well-known distributed programming model to ease the development of applications for large-scale data processing on a large number of commodity CPUs. When compared to CPUs, GPUs are an order of magnitude faster in terms of computation power and memory bandwidth, but they are harder to program. Although several studies have implemented the MapReduce model on GPUs, most of them are based on the single GPU model and bounded by a GPU memory with inefficient atomic operations. This paper focuses on the development of MGMR, a standalone MapReduce system that utilizes multiple GPUs to manage large-scale data processing beyond the GPU memory limitation, and also to eliminate serial atomic operations. Experimental results have demonstrated the effectiveness of MGMR in handling large data sets.

MGMR: Multi-GPU Based MapReduce

Grid and Pervasive Computing 2013 May 9, 2013

Authors: Yi Chen, Hai Jiang, Zhi (George) Qiao

Abstract -- MapReduce is a programming model introduced by Google for large-scale data processing. Several studies have implemented MapReduce model on Graphic Processing Unit (GPU). However, most of them are based on the single GPU and bounded by GPU memory with inefficient atomic operations. This paper intends to develop a standalone MapReduce system, called MGMR, to utilize multiple GPUs, handle large-scale data processing beyond GPU memory limit, and eliminate serial atomic operations. Experimental results have demonstrated MGMR's effectiveness in handling large data set.

Projects

Customizable GPU MapReduce Framework

April 2014 to Present

Members: Zhi (George) Qiao

A configurable MapReduce framework built on top of the GPU runtime that constructed with CUDA/Thrust and C++. Intend to handle complicated, data-interdependent MapReduce job.

Attribute Based Encryption

January 2014 to Present

Members: Zhi (George) Qiao, Shuwen Liang, Hai Jiang

Attribute Based Encryption (ABE) is a Cryptographic scheme that utilize attribute set as unique identity to ensure confidentiality. ABE combines Access Control and Confidentiality in one scheme and also ease the effort of key management and good for sharing data among parties, it is ideal to apply to cloud environment and withstand the upcoming Cloud Security Challenge.

Pipelined Multi-GPU MapReduce

December 2011 to August 2013

Members: Yi Chen, Hai Jiang, Zhi (George) Qiao

MapReduce system which runs user-defined problems across GPU cluster. C++, CUDA, pthread, socket

USB I/O interface for Data Acquisition (DAQ) Embedded System

January 2011 to May 2011

Members: Zhi (George) Qiao

(B.S Thesis Project) USB disk is an easy use, widespread storage devices. This project designed a USB disk read - write circuitry based on CH376 chip. In hardware design portion, project based on Atmege16 as micro-controller unit (MCU); use CH376 file management chip as USB bus interface chip. CH376 can be articulated to MCU with parallel port bus, SPI bus and USART bus. Realized Computer read and write the MCU's ROM. Also can realize the MCU read or write the files in USB disk. The thesis paper made detail introduction in design of the connection between Atmege16 and CH376 chip, given out the Schematic and PCB. In the part of software, the paper gives the detail design of USB underlying communication programs and procedures. This paper finally designed the USB disk read - write Circuitry based on CH376 Chip.

It gives better solution in data acquisition system (DAQ) of low power waste, high speed, portability and generality.

Courses

Master of Science (MS), Computer Science

Arkansas State University

Distribute System

Data Security

Computer & Network Security

High Performance Computing

Database System

Computer Networking

Operating System

Computer Architecture (Advanced)

Analysis of Algorithms (Advanced)

Parallel Processing

Compiler

IT Graduate Assistant

The International Center for English, Arkansas State University

FERPA Training

dotCMS Training

Languages

English (Professional working proficiency)

Mandarin (Native or bilingual proficiency)

Skills & Expertise

Distributed Systems

MapReduce

Parallel Computing

Unix Shell Scripting

C++

CUDA

GPU

System Administration

Database Administration

Computer & Network Security

Cryptography

Attribute Based Encryption
Embedded Systems
Microsoft SQL Server
PostgreSQL
Automatic Control
PCB design
Windows & Mac operating systems
Networking
C
MySQL
PowerPoint

Education

University of North Texas

Doctor of Philosophy (Ph.D.), HPC, Resilience and Failure/Error Management, Distributed System, Computer&Network Security., 2015 - 2019

Arkansas State University

Master of Science (MS), Computer Science, 2011 - 2014

Grade: GPA 3.9/4.0

Beijing Normal University, Zhuhai

Bachelor of Science (BS), Electrical and Electronics Engineering, 2007 - 2011

Grade: GPA 3.4/4.0

Activities and Societies: Student Association. International Educating and Marketing Association.

Interests

Distributed System, Data Analysis, Mobile Technology, Investing, Swim, Skiing.

Volunteer Experience

Regional Program Organizer at 1kg

September 2007 - September 2008 (1 year 1 month)

As the regional organizer at Beijing Normal University Zhuhai, I lead a team heading to central elementary school at Yang Shuo, Guangxi Prov., known as its tourism scenic and also the poverty areas, with the donation collected from Zhuhai City. The donation including more than 5,000 books and study utilities. We use the donation to help the elementary school set up their first library.

Zhi (George) Qiao

Teaching Assistant at University of North Texas. IT Specialist.

george.qiaozhi@gmail.com



[Contact Zhi \(George\) on LinkedIn](#)