

Research Interests

- Medical Imaging
- Parallel Processing
- Distributed Computing
- Big Data

No 110, West Madi Farshadi,
Ostandari St.
Esfahan,
Iran

Education

- Isfahan University of Technology, Esfahan, Iran – B.S. in Software Engineering - 2010 ~ 2015 (expected) - GPA: 14.92/20
- Shahid Ejei High School (National Organization for Development of Exceptional Talents), Esfahan, Iran - High School Diploma in Mathematics

Journal Paper

- **S.Bateni, Z. Emrani, H. Rabbani, A New Parallel Approach for Accelerating the GPU-based Execution of Edge Detection Algorithms for Medical Images**

This is a journal paper revised and re-submitted several time. It is based on the project "GPU Edge Detector" and its different approach to running the Canny Edge Detector without DFS (Depth-First Search). Also a parallel implementation of the Roberts Cross is proposed.

Experiences

Research

- **Member of the Game Theory and Mechanism Design (GTMD) Research Laboratory- Isfahan University of Technology - 2014 - Present**

Under the supervision of Professor Manshaei. Working on the application of Game Theory in Bioinformatics.

- **Summer Intern at IPM (Institute for Research in Fundamental Sciences) - HPC Group - Summer 2013**

Member of IPM Team C in MEMOCODE 2013 Design Contest

- **Research Assistant - Medical Image and Signal Processing Research Center - Isfahan University of Medical Sciences - 2012 - 2014**

Under the supervision of Professor Rabbani. Working on several clustering and image processing algorithms in an attempt to improve medical diagnosis.

Thesis

- **Location-Aware Recommender System on Apache Mahout**

This project was under the supervision of Professor Ghadiri. Using the IDRescorer attribute, we have proposed a method to add location awareness to the existing User-based and Item-based recommenders available in Apache Mahout.

Selected Projects

- **Multithreaded DNS Tester**

This is an application written in C# with advanced and standard multithreaded structure to test the multithreaded capability of new DNS servers. Also a stress test is added to flood the server with thousands of requests.

- **Configuring Two DNS Servers for IUT**

In this project, I was assigned to renew the internal and external structure of the DNS server in our university. I proposed and configured two Bind 9 servers on FreeBSD.

- **GPU-UPGMA**

It is an implementation of UPGMA (Unweighted Pair Group with Arithmetic Mean) on GPU using CUDA-C, written from scratch. It is noticeably faster than other implementations running on CPU.

- **GPU-FCM**

FCM (Fuzzy C-Means) is ported to GPU using CUDA-C.

- **GPU Edge Detector**

This is a real-time interface for all the famous edge detection algorithms. It runs on both CPU (using OpenCV) and GPU (using CUDA). It has the ability to change its input and change the important variables (e.g. sigma) and see the results online.

- **Apache Hadoop Cluster and Apache Spark**

In this project, a Hadoop + Spark cluster in full distributed mode is compiled from scratch and configured.

Working

- **Editor at Signbit - signbit.iut.ac.ir (formerly signbit.ir) - 2012 - 2013**

Written some articles about Parallel Programming and CUDA in Persian.

- **Chief Editor - cuda.iut.ac.ir - 2012 - Present**

There are a total of 4 comprehensive tutorials on Parallel Programming and CUDA written in Persian.

- **Mobtakeran Co. - Isfahan Technology Valley - 2011**

I was the instructor on the course titled "Introduction to CUDA and GPU Computing"

Teaching Experience

- Teaching Assistant - C/C++ Course for Computer Engineering and IT students - 2010
- Teaching Assistant - C/C++ Course for Engineering Students - 2010
- Introduction to CUDA and GPU computing - IT Center - Isfahan University of Technology - 2010
- Introduction to CUDA and GPU computing - Signal and Image Processing Research Center - Isfahan University of Medical Science - 2012
- Lecturer on CUDA Programming (and hands-on) - Workshop on "Introduction to Parallel Programming" - IUT Parlab - 2013
- Introduction to CUDA - HPC Course for Graduate Students - 2014

Membership

- Parlab - IT Center - Isfahan University of Technology - parlab.iut.ac.ir
- Linux Lab - IT Center - Isfahan University of Technology

Selected Courses

- Digital System Design (17/20) - Lab (18.9/20)
- Data Structures (18/20)
- Database Systems (18.2/20)
- Operating Systems (18.1/20) - Lab (17.75/20)
- Algorithms (16.01/20)
- Software Engineering Lab 1 (19/20) - 2 (18/20)
- Microprocessors (16/20)
- Advanced Computer Networks (16/20)

Professional Skills

Distributed Computing and Big Data

- Hadoop, Spark, Mahout
- Microsoft HPC Cluster

Programming Languages:

- General: C/C++, C#, Java, Swift
- Parallel: NVIDIA CUDA (C), OpenCV (library), OpenMP (API), POSIX Pthread (library), MapReduce (model)
- Functional: Scala

Software

- IDE: Microsoft Visual Studio, Eclipse, Xcode, Qt (+libraries)
- Framework: .NET, Java

Operating Systems

- Linux: Mint, Ubuntu, RedHat Based (Fedora, CentOS)
- BSD: MacOSX, FreeBSD
- Windows

GRE:

Verbal Reasoning: 158 - Quantitative Reasoning: 169 - Analytical Writing: 3.0

Languages

English:

TOEFL iBT Score: 108 - Reading: 30 - Listening: 30 - Speaking: 20 - Writing: 28

Persian:

Native Fluency

Arabic:

Reading Competence

References

Mohammad Hossein Manshaei
Assistant Professor
Department of Electrical and Computer
Engineering
Isfahan University of Technology
Esfahan, Iran
manshaei.iut.ac.ir
manshaei@cc.iut.ac.ir
+98 - (31) - 3391 - 9067

Hossein Rabbani
Associate Professor
Department of Biomedical Engineering
School of Medicine
Isfahan University of Medical Sciences
Esfahan, Iran
<http://people.duke.edu/~hnr4/>
h_rabbani@med.mui.ac.ir
+98 - (31) - 3792 - 2474

Masoud Reza Hashemi
Associate Professor
Head of IUT IT Center
Department of Electrical and Computer
Engineering
Isfahan University of Technology
Esfahan, Iran
hashemi.iut.ac.ir
hashemim@cc.iut.ac.ir
+98 - (31) - 3391 - 5395

Nasser Ghadiri
Assistant Professor
Department of Electrical and Computer
Engineering
Isfahan University of Technology
Esfahan, Iran
nghadiri.iut.ac.ir
nghadiri@cc.iut.ac.ir
+98 - (31) - 3391 - 9058