Arash Pourhabibi-Zarandi

pourhabibi@cse.shirazu.ac.ir
http://arash.pourhabibi.info
+98 (939)343-9383

RESEARCH INTERESTS

Distributed Systems, Cloud Computing & Software Engineering
My research interest relies on cloud computing and its abstraction levels from top to bottom; how to efficiently build a Software as a Service (SaaS) and deploy it on a cloud provided platform (PaaS) which is running on virtualized hardware (IaaS). The usage of new multi-core CPUs and modern GPUs as the infrastructure of cloud and distributed computing; and NoSQL systems as the backbone of its big data computations.

EDUCATION

M.Sc. in Software Engineering
Shiraz University, Shiraz, Iran   *2013 - 2015 (Expected)*
- Accepted in the M.Sc. program without university entrance exam, as the exceptional student in the department.
- **Ranked First:** Achieving the highest GPA **(19.89/20)** among all M.Sc. students.
- **Related Courses:** Advanced OS, Advanced Computer Architecture, Multicore Programming, Parallel Algorithms, Grid Computing, Software Architecture, Text Mining

B.Sc. in Computer Engineering (Software Engineering)
Shiraz University, Shiraz, Iran   *2009 - 2013*
- **Ranked First in CS related Courses:** Achieved the highest GPA in **CS courses (18.88/20)** among all B.Sc. students.
- **Ranked Third:** Achieved the third highest **overall GPA (17.56/20)** among all B.Sc. students.

Diploma in Mathematics and Physics
National Organization for Development of Exceptional Talents(NODET), Kerman, Iran 2005-2009

AWARDS & ACCOMPLISH-MENTS

Ranked **second** in the **Java** section of the First Iran Programming Skill Challenge, held by Sharif University of Technology and Tehran University's Faculty of Entrepreneurship.   *Summer 2014*

Accomplishment with Distinction in University of Maryland's online **Developing Innovative Ideas for New Companies**: The First Step in Entrepreneurship course with score of **100%**
Taught by Dr. James V. Green at Coursera   *January 2015*

Accomplishment in IIT Delhi's online **Web Intelligence and Big Data** course
Taught by Gautam Shroff at Coursera   *December 2013*

Accomplishment in UC Berkeley's Online **SaaS I** and **SaaS II** courses with scores of **94%** and **92%**
Taught by David Patterson, Armando Fox at EdX   *Summer 2013*

Awarded as the **Best Undergraduate Student** in Computer Engineering
Shiraz University   *June 2013*

Nominated for the **Best Mobile Application** for S.A.H.A. (iPhone Application for Phone Bill Management) at the First Iran Mobile Innovation Awards, held by Sharif University of Technology, Tehran, Iran.   *February 2012*

Stanford's Online **Introduction to Databases** course with score of **294/323**
Taught by Jennifer Widom   *October - December 2011*

LANGUAGES   Persian *(Maternal)*
English *(Advanced)* - TOEFL iBT score: 100(R:29, L:27, S:23, W:21)   *October 2013*

EXPERIENCE   *Shiraz University*   *2010 - 2013*
Member of CSE Department Network Administration Team, proposed and implemented new services
for the department such as CMS (Content Management System).

Internship at Shiraz University CERT Center (ShirazAPA)   *2010 - 2011*
Programmer and Researcher on "Update Manager" project.

Freelance Java and iOS Programmer and founder of Mobile Programming group in Shiraz University
under the supervision of Dr. Farshad Khunjush

SELECTED   More information on these and my other projects is available on my homepage.
PROJECTS

- **BigKernel (M.Sc. Thesis)**   **Present**
It's a joint research project with Reza Mokhtari under supervision of Prof. Michael Stumm
at the University of Toronto. It's based on a scheme, named BigKernel, that provides pseudo-
virtual memory to GPU applications and is implemented using a 4-stage pipeline with automated
prefetching to optimize CPU-GPU communication and optimize GPU memory accesses. It's
based on a proposed compile-time system that takes a BigData application as input and modi-
fies it to automate the CPU-GPU data communications and improve the overall performance of
the application. We are developing the compiler tool using the LLVM infrastructure.

- **Software Transactional Memory on GPUs**   **Present**
A research project with my colleague Ali Faraji regarding the parallelism problems dealing with
data access on Graphics Processing Units. We are trying to implement and analyse pure Software
Transaction Memory environment on GPUs in order to evaluate the efficiency from both perfor-
mance and cost views. The projects output will be a library which helps GPU programmers to
take the abstraction to a higher level. All common problems like lock handling, race conditions
and deadlock will be handled automatically using the ideas which originally came from Database
Management Systems and lead to a Hardware Transactional Memory on Intel Haswell CPUs.

- **Pure P2P File Sharing Application Written in Java**   **Fall 2011**
In this application each peer can add other peers to its peer list and then asks its peer list for a
file name. Each peer then replies whether he has the file or not. If the file is available the asking
peer will receive the file from others. For writing this application, I first wrote a general purpose
P2P Framework in Java then I wrote a file sharing application on top of it which uses an UDP
flooding feature for finding peers.

- **Online Judge System with Code Similarity Written in Java**   **Fall 2010**
The goal was to create a system for online exams of C Programming course, so that the students
can see the questions and submit their answers over the network and to self-check their answers.
It uses the code similarity algorithms used in Plagiarism Detecting Applications to calculate how
much the submitted code is similar to the one that the instructor had submitted.

- **Steganography Written in C**   **Spring 2010**
Its a text based menu-driven application written in C and it can hide a text file in a Bitmap
image and extract it back from the image. It's based on the paper *Adaptive Data Hiding in Edge
Areas of Images With Spatial LSB Domain Systems* and can hide up to 15 bits in each pixel of
an image.

PUBLICATIONS
- Design and Implementation of a scheme for BigData Processing on GPU   *In Preparation*

- Official Persian translation of "Engineering SaaS: An Agile Approach Using Cloud Computing" written by Armando Fox and David Patterson. It is going to be published soon by the help of Nima Towhidi and under supervision of Dr. Ahmad Towhidi.

TECHNICAL SKILLS

Programming Languages: Python, C, Java SE, SQL, Objective-C, Ruby, Shell Scripting
Programming Models, Platforms & Frameworks: LLVM, MPI, OpenMP, CUDA, PThreads, MapReduce, Ruby On Rails
Operating Systems: OS X, Linux, Windows

TEACHING EXPERIENCE

Grid Computing
- *Teacher Assistant supervised by Dr. Gholamhossein Dastgheybifard*   *Spring 2014*

Software Architecture
- *Teacher Assistant supervised by Dr. Mostafa Fakhrahmad*   *Spring 2014*

GPU Programming
- *Teacher Assistant supervised by Dr. Farshad Khunjush*   *Fall 2013*

Design & Implementation of Programming Languages
- *Teacher Assistant supervised by Dr. Mohammad-Reza Mousavi*   *Spring 2013*

Database Laboratory
- *Teacher supervised by Dr. Ali Hamzeh*   *Spring 2015, Spring 2014, Spring 2013*

Fundamentals of Computer and Programming Using Python
- *Teacher Assistant supervised by Dr. Ahmad Towhidi*   *Fall 2012*
- *Teacher Assistant supervised by Dr. Farshad Khunjush*   *Fall 2010*

Principles of Programming Using C
- *Teacher Assistant supervised by Dr. Ali Hamzeh*   *Spring 2012, Spring 2011*

Advanced Programming Using Java
- *Teacher Assistant supervised by Dr. Ali Hamzeh*   *Fall 2011*

EXTRA-CURRICULAR ACTIVITIES

BreakTime In University   Summer 2010 - Summer 2014
BreakTime In University is a three-day conference consists of up to 50 different workshops which has been held by a group of university students from the summer of 2007 at Shiraz University. Around 300 talented high schoolers attend this event every summer and its goal is to help them know their skills and potentials, how they can be creative and innovative and how they can work better in teams . In addition to these, they become familiar with university, different study majors and how to become successful researchers. I had the chance to be a part of the organization team for five years and had different responsibilities in preparation and program committees.

Internet and Technical Services Assistant
16th *CSI International Symposiums on Computer Architecture & Digital Systems and Artificial Intelligence & Signal Processing, Shiraz University, Shiraz, Iran*   *May 2012*

REFERENCES
Dr. Farshad Khunjush (khunjush@cse.shirazu.ac.ir)
Prof. Armando Fox (fox@cs.berkeley.edu)

Last Update: March 2015