

## Skills

**Actively used:** Algorithm design and problem solving, Java 7, Cassandra 2.0 (NoSQL schema design, SSTable, Paxos), Apache Java Commons libraries, Mockito and Hamcrest unit testing frameworks, Jersey RESTful Web Services framework, git, mvn, Jenkins and Sonar build frameworks, Virtualization (Oracle VirtualBox, VMWare), Linux Shell Scripting, Google Gson, Google Guava (learning), gradle (learning), groovy (learning)

**Distributed Technologies:** Cassandra 2.0, ccm (Cassandra Cluster Manager), OpsCenter Cassandra Monitoring Tool, pacemaker/corosync clustering framework for setting up a High Available solution, developed a Single Sign-On authentication system using EhCache and JGroups

**Healthcare standards:** IHE, DICOM, HL7, MINT, Auditing

**Others:** Worked with Debian build toolchain (contributed in packaging open source projects, e.g., <https://tracker.debian.org/pkg/fonts-sil-scheherazade> for Debian Linux), C/C++, PostgreSQL, MATLAB, L<sup>A</sup>T<sub>E</sub>X, python (learning), Java OSGi programming model, Shiro Security Framework, Bouncy Castle Cryptography library, JPA (Hibernate), JMeter and NewRelic (functional load and performance testing)

## Education

- **University of Waterloo - Cheriton School of Computer Science** Waterloo, ON  
*Master of Computer Science - Bioinformatics* 2009 – 2012
- **University of Waterloo - Department of Combinatorics and Optimization** Waterloo  
*Master of Mathematics - Quantum Computing* 2006 – 2008
- **Sharif University of Technology - Department of Computer Engineering** Tehran, Iran  
*Double Degree*
  - Bachelor in Software Engineering
  - Bachelor in Hardware Engineering

## Work Experience

- **Karos Health** Waterloo, ON  
*Software Engineer* 2012 – Present
  - Collaborated in the research, design and implementation of a scalable Cassandra (NoSQL) based archive for Healthcare clinical data. The implemented Cassandra based<sup>1</sup>High Available solution is scalable, fault-tolerance, and two order of magnitudes faster than similar solutions based on relational databases.
  - Designed and implemented an Authentication/Authorization module supporting Single Sign-On in a distributed environment
  - Collaborated in the design and implementation of a JPA-like object mapping API for Cassandra 2.0 database (main developer)
  - Collaborated in the development of Karos healthcare solutions including Vault, Navigator, Connect, and co-op supervising

*Software Engineer Intern* 2011 – 2011

  - Collaborated in the design and prototyping of a cloud-based auto discovery clinical device registration and configuration management system based on OSGi model
- **Tetherless Computing Lab - Cheriton School of Computer Science** Waterloo  
*Research Associate* 2008 – 2009
  - Collaborated in the analysis, design and implementation of KioskNet delay-tolerant networking system

<sup>1</sup><http://www.karoshealth.com/2014/10/08/database-technologies-to-manage-big-data-in-healthcare/>

## Teaching Experience

- **Teaching Assistant, University of Waterloo**
  - Discrete Mathematics and Algorithms, Combinatorics, Logic and Computation, Introduction to Computer Science, Unix Consulting, Calculus, Linear Algebra
- **Teaching Assistant, Sharif University of Technology**
  - Discrete Structures, Design and Analysis of Algorithms, Data Structures and Fundamentals of Algorithms
- **Teaching in workshops for preparation of national Mathematical Olympiad, Iran**
  - Designed problems, Taught in annual workshops for preparation of national Mathematical Olympiad competitions
- **Instructor, Chemical Engineering Department, Azad University, Tehran, Iran**
  - Introduction to Programming and MATLAB.

## Competitions

- **First Rank**, Iranian National Graduate Entrance Examination in Computer Science, Spring 2005
- **Silver Medal**, 17th Iranian National Olympiad in Mathematics, Summer 1999

## Publications

- Hooman Mohajeri Moghaddam, Baiyu Li, Mohammad Derakhshani, Ian Goldberg: SkypeMorph: protocol obfuscation for Tor bridges. ACM Conference on Computer and Communications Security 2012: 97-108
- S. Guo, M. Derakhshani, M.H. Falaki, U. Ismail, R. Luk, E.A. Oliver, S. Ur Rahman, A. Seth, M.A. Zaharia, S. Keshav, Design and implementation of the KioskNet system, Computer Networks: The International Journal of Computer and Telecommunications Networking, Volume 55 Issue 1, January, 2011

## Other Activities

- Technical support of Aftab Magazine (an online magazine by Iranian Students in University of Waterloo): <http://www.aftab-magazine.com> 2007 - 2010
- Committee member of Partov Iranian Cultural group in University of Waterloo 2008 - 2013
- Interested in analyzing films from the perspective of Jungian/Freudian psychoanalysis, maintains a wiki website in Persian language on lectures on the topic:  
<http://www.khorshid.info/ravankavi-va-farhang/>