

# Mohammad Dashti

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## Education

- 2017 **École Polytechnique Fédérale de Lausanne (EPFL)**, School of Computer and Communication Sciences, PhD. in the field of Database Systems, Switzerland. PhD thesis advisor: [Prof. Christoph Koch](#)  
*Thesis:* Program Analysis and Compilation Techniques for Speeding up Transactional Database Workloads.
- 2012 **Sharif University of Technology**, Computer Engineering Department, MSc. in Information Technology Engineering, Tehran, Iran, GPA: 19.19/20. M.Sc. thesis advisor: [Prof. Jafar Habibi](#)  
*Thesis:* Development of a Framework for Software Architecture Extraction of Existing Software Projects.
- 2010 **Sharif University of Technology**, Computer Engineering Department, BSc. in Information Technology Engineering, Tehran, Iran, GPA: 18.14/20

## Core Experience

2018-present Self-employed Computer Scientist, Yazd, Iran

2012-2018 **DATA lab at EPFL**, Lausanne, Switzerland, Postdoctoral Researcher, and worked on the following projects:

- ✦ **DBToaster** ([dbtoaster.org](http://dbtoaster.org)): an SQL-to-native-code compiler. It generates lightweight, specialized, embeddable query engines for applications that require real-time, low-latency data processing and monitoring capabilities. I am an active contributor to this project and *made it 100x faster*.
- ✦ **FS-Store**: I *built* a transaction processing system that exploits compilation techniques to optimize transaction programs for achieving the performance comparable to the hand-optimized low-level code.
- ✦ **Lightweight Modular Staging (LMS)** ([github.com/epfldata/lms](https://github.com/epfldata/lms)): a compilation framework that provides a library of core components for building high performance code generators and embedded compilers in Scala. I am a contributor to this open-source project.
- ✦ **Multi-Version Concurrency Control with Closures (MV3C)**: I *designed* a novel concurrency control technique and *implemented it in Scala and C++*. MV3C is best suited for high contention scenarios, as it has an efficient conflict resolution and transaction repair mechanism.

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2016 **Microsoft Research**, Redmond, Washington, USA (3-month internship, May – August 2016)

**Research intern** in the [Orleans Project](#), a framework that provides a straightforward approach to building distributed high-scale computing applications. Mentored by [Dr. Phil Bernstein](#), *I designed and implemented the indexing and query functionality for project Orleans*.

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2007-2012 **Sharif Processors of Yazd Company**, Tehran, Iran

**Co-founder** of an enterprise software development company that analyzes, designs and implements information systems. For several projects, I did the whole software development life-cycle, from customer acquisition and requirement analysis to development and maintenance.

- ✦ **End-User Report Builder (EURB)** ([github.com/mdashti/EURB](https://github.com/mdashti/EURB)): a web-based software tool for end-users to build and format their reports from their distributed databases. *I am the main developer and maintainer of this project*. The copies of this project were sold to several customers including the Ministry of Education in Iran.

## Publications

- Amir Shaikhha, Mohammad Dashti, and Christoph Koch. “*Push vs. Pull-Based Loop Fusion in Query Engines*”. Accepted for publication in the Journal of Functional Programming, 2018.
- Mohammad Dashti, Sachin Basil John, Amir Shaikhha, and Christoph Koch. “*Transaction Repair for Multi-Version Concurrency Control*”. SIGMOD 2017.
- Philip A. Bernstein, Mohammad Dashti, Tim Kiefer, and David Maier. “*Indexing in an Actor-Oriented Database*”. CIDR 2017.
- Milos Nikolic, Mohammad Dashti, and Christoph Koch. “*How to Win a Hot Dog Eating Contest: Distributed Incremental View Maintenance with Batch Updates*”. SIGMOD 2016.
- Amir Shaikhha, Yannis Klonatos, Lionel Parreaux, Lewis Brown, Mohammad Dashti, and Christoph Koch. “*How to Architect a Query Compiler*”. SIGMOD 2016.
- Aleksandar Vitorovic, Mohammed Elseidy, Khayyam Guliyev, Khue Vu Minh, Daniel Espino, Mohammad Dashti, Yannis Klonatos, and Christoph Koch. “*Squall: scalable real-time analytics*”. VLDB 2016.

- Tiark Rompf, Kevin J. Brown, HyoukJoong Lee, Arvind K. Sujeeth, Manohar Jonnalagedda, Nada Amin, Georg Ofenbeck, Alen Stojanov, Yannis Klonatos, Mohammad Dashti, and Christoph Koch. “*Go Meta! A Case for Generative Programming and DSLs in Performance Critical Systems*”. SNAPL 2015.
- Tiark Rompf, Nada Amin, Thierry Coppey, Mohammad Dashti, Manohar Jonnalagedda, Yannis Klonatos, and Martin Odersky, “*Abstraction Without Regret for Efficient Data Processing*”. Data-Centric Programming Workshop 2014.

## Technical Skills

Programming Languages	Java, Scala, C/C++, C# (.NET), JavaScript, HTML, CSS, SQL, PHP, Python
Web Dev	Spring, Hibernate, Symfony, jQuery, ExtJS
Databases	Relational: Oracle DB, MySQL, PostgreSQL / NoSQL: HBase, Microsoft DocumentDB
Tools	Hadoop, Yarn, Spark, SVN, Git, Maven, LaTeX, JUnit, Apache Ant, JDBC, Cordova/PhoneGap

## Honors

- 2012 Awarded **EPFL Graduate Fellowship** in recognition to my academic excellence.
- 2012 Recipient of the **Permission to Develop a Software Project as Mandatory Public Service** from Iran’s “National Elites Foundation”.
- 2010 Awarded **Exceptional Talent Fellowship** for the M.Sc. Program in Information Technology Engineering from Computer Engineering Department of Sharif University of Technology
- 2007 **First Place** in the first **Sharif Java Challenge**, Sharif University of Technology.
- 2006 **First Place** in the **National Skills Competition**, Major: Information Technology.

## Additional Experience

2009-2012 **Intelligent Information Solutions Center**, Tehran, Iran

Worked as the **head JavaEE developer** on the following main projects:

- ◆ **Project.net**: an open source JavaEE project management software. I was *the main developer* in a private branch of this project that planned, developed, maintained and localized the project and handled the special requirements from commercial customers of the system. In addition, I developed several DevOps tools and automated scripts to facilitate the maintenance of the project.
- ◆ **General Automatic Application Updater (GAAU) (B.Sc. Project)**: a programmable tool for the automation of the installation and update processes of distributed software systems. I designed and implemented this tool. It was used in the customized Project.net project, which *decreased the maintenance costs down to 10%*.
- ◆ **Sharif Java Profiler (part of M.Sc. Project)**: a tool for extracting runtime information about Java programs including the accessed classes and method calls along with their frequencies. I *designed and implemented* this tool that was used in the customized Project.net project to assist the extraction of its software architecture.

2008-2009 **System Group Company**, Tehran, Iran

Worked as a **JavaEE developer** in the Java Enterprise Software Development team. I developed several main components of a CRM application in this team.

2007-2012 Worked on several side projects in **Sharif Processors of Yazd Company**, Tehran, Iran:

- ✦ **Moragheb**: an e-Health national project for automating the processes related to controlling the health issues in Iran. This was my *first commercial project* that I developed by myself from scratch using JBoss Seam framework.
- ✦ **Atash Firewall**: a personal firewall for MS Windows. Special features in this firewall are application window control, low-level network access, Network-enabled application launch, and Detecting a change in an executable. I was a *key developer and designer* in this project.
- ✦ **SIAMRA**: a web-based Information System for Iran Computer Museum. It automated the internal processes of the museum as well as serving the clients. I was the *main developer* in this project.

2012-2018 Was a teacher assistant in **Big Data, Software Engineering, Functional Programming** and **IT Security** courses with more than 120 students in each course.

## Speaking Languages

English: Fluent, C2 equivalent / Persian: Mother Tongue / French: Basic proficiency, A2 equivalent