

# Arash POURHABIBI-ZARANDI

Senior Member of Technical Staff, Oracle

## CONTACT INFO

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## INTERESTS

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I am broadly interested in the field of computer systems and interdisciplinary systems-level problems found in modern, large-scale datacenters, from cloud services to data stores and all the way down to server systems. During my PhD, I looked for maximizing the compute density of server systems and minimizing their energy footprint through specialization of various system components and better system integration by characterizing modern datacenter applications. The focus of my PhD thesis was on the evasion of the RPC tax in datacenters through hardware-software co-design.

## WORK EXPERIENCE

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| CURRENT<br>DEC. 2021 | <b>Senior Member of Technical Staff   Oracle, Zurich, Switzerland</b><br>Part of the R&D team working on <a href="#">MySQL Heatwave</a> , Oracle's MySQL cloud database service for transactions, real-time analytics across data warehouses and data lakes (i.e., Lakehouse), and machine learning. My focus has been on the Lakehouse and Autopilot capabilities.                                                                                                               |
| 2015-2021            | <b>Doctoral Research Assistant   PARSA, EPFL, Lausanne, Switzerland</b><br>Contributed to several research projects focused on hardware and software co-design for future generations of datacenter servers. Supervised junior students and summer interns. Member of the CloudSuite team, and part of the core team responsible for its 3rd release. Member of the Flexus simulator maintenance team, and part of the core team working on its new incarnation branded as QFlex. |
| 2010-2013            | <b>Member of the IT Task Force   CS Department, Shiraz University, Iran</b><br>In charge of the maintenance of department's network infrastructure and IT services. Proposed and implemented new services for the department such as a CMS.                                                                                                                                                                                                                                       |
| 2011-2013            | <b>Freelance Java and iOS Developer</b><br>Involved in development of a payment switch system (in Java). Co-founded the Mobile Programming group at Shiraz University and developed a bill payment app for iPhone.                                                                                                                                                                                                                                                                |

## EDUCATION

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| 2015-2021 | <b>Ph.D. in COMPUTER &amp; COMMUNICATION SCIENCES</b><br><b>Swiss Federal Institute of Technology in Lausanne (EPFL), Lausanne, Switzerland</b><br>Doctoral Research Assistant at <a href="#">PARSA</a> under supervision of <a href="#">Prof. Babak FALSAFI</a><br>Thesis: Hardware-Software Co-Design of an RPC Processor<br>Related Courses: Advanced Multiprocessor Architecture, Topics on Datacenter Design, Understanding Datacenter Software Dynamics              |
| 2013-2015 | <b>M.Sc. in COMPUTER ENGINEERING (SOFTWARE ENGINEERING)</b><br><b>Shiraz University, Shiraz, Iran</b><br>Thesis: Design & Implementation of a Scheme for Big Data Processing on GPU<br>Advisor: Dr. Farshad KHUNJUSH<br>Ranked First: Achieving the highest course GPA (19.84/20) among all M.Sc. students<br>Related Courses: Advanced OS, Advanced Computer Architecture, Multicore Programming, Parallel Algorithms, Grid Computing, Software Architecture, Text Mining |
| 2009-2013 | <b>B.Sc. in COMPUTER ENGINEERING (SOFTWARE ENGINEERING)</b><br><b>Shiraz University, Shiraz, Iran</b><br>Ranked First: Achieved the highest GPA in CS courses (18.88/20) among all B.Sc. students                                                                                                                                                                                                                                                                          |

## TECHNICAL SKILLS

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Programming: Python, C/C++, Java, SQL, PThreads, OpenMP, CUDA, MPI  
Operating Systems: macOS, Linux, Windows  
Miscellaneous: Git, Docker,  $\LaTeX$ , Shell Scripting, Agile Development  
Basic Familiarity: Objective-C, Ruby, PHP, HTML, JavaScript

## PUBLICATIONS & PATENTS

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1. **Cerebros: Evading the RPC Tax in Datacenters.** A. Pourhabibi, M. Sutherland, A. Daglis, B. Falsafi. *In Proceedings of the 54th IEEE/ACM International Symposium on Microarchitecture, MICRO'21*, Athens, Greece, October 2021.
2. **Equinox: Training (for Free) on a Custom Inference Accelerator.** M. Drumond, L. Coulon, A. Pourhabibi, A. Yüzügüler, B. Falsafi, M. Jaggi. *In Proceedings of the 54th IEEE/ACM International Symposium on Microarchitecture, MICRO'21*, Athens, Greece, October 2021.
3. **Data Transformer Apparatus.** A. Pourhabibi, S. Gupta, H. Kassir, M. Sutherland, Z. Tian, M. Drumond, B. Falsafi, C. Koch. *Patent (Pending)*, March 2021.
4. **Optimus Prime: Accelerating Data Transformation in Servers.** A. Pourhabibi, S. Gupta, H. Kassir, M. Sutherland, Z. Tian, M. Drumond, B. Falsafi, C. Koch. *In Proceedings of the 25th ACM International Conference on Architectural Support for Programming Languages and Operating Systems, ASPLOS'20*, Lausanne, Switzerland, March 2020.
5. **Towards near-threshold server processors.** A. Pahlevan, J. Picorel, A. P. Zarandi, D. Rossi, M. Zapater, A. Bartolini, P. G. Del Valle, D. Atienza, L. Benini, and B. Falsafi. *In Proceedings of the 2016 Conference on Design, Automation & Test in Europe (DATE)*, Dresden, Germany, March 2016.
6. The official Persian translation of “Engineering SaaS: An Agile Approach Using Cloud Computing” written by Armando FOX and David PATTERSON. *Currently under preparation.*

## AWARDS & HONORS

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DEC. 2018	Awarded the <b>Teaching Assistant Award</b> for teaching excellence School of Computer & Communication Sciences (IC), EPFL, Lausanne, Switzerland
SUMMER 2014	Ranked 2 <sup>nd</sup> at the first Iran Programming Skill Challenge (Java section) Held by Sharif University of Technology and Tehran University's Faculty of Entrepreneurship, Iran
SEP. 2013	Honorary admission to the M.Sc. program without university entrance exam Shiraz University, Shiraz, Iran
JUNE 2013	Awarded as the <b>Best Undergraduate Student</b> in Computer Engineering Shiraz University, Shiraz, Iran
FEB. 2012	Nominated for the <b>Best Mobile Application</b> for SAHA (payment app for iPhone) The First Iran Mobile Innovation Awards, held by Sharif University of Technology, Tehran, Iran

## PROFESSIONAL & EXTRACURRICULAR SERVICES

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ASPLOS 2020	Artifact Evaluation Committee Member
DEC. 2014	Co-organizer of an Hour of Code Event Organized a one-day workshop, participating in the <a href="#">Hour of Code</a> program, for tens of high-school and middle-school students and taught them the basics of computer programming and algorithmic thinking.
2010-2014	BreakTime In University (BTiU) BTiU is a three-day annual conference consists of tens of parallel workshops held by a group of university students during the summer at Shiraz University. Hundreds of talented high-schoolers attend this event to learn more about various study majors, practice teamwork, life and social skills, and learn how to be creative and innovative. I had the chance to be a part of the organizing team for five years.
MAY 2012	Member of Conference Organizing Committee Internet and technical services assistant at the 16 <sup>th</sup> CSI International Symposiums on Computer Architecture & Digital Systems ( <a href="#">CADS 2012</a> ) and Artificial Intelligence & Signal Processing ( <a href="#">AISP 2012</a> ) held at Shiraz University, Shiraz, Iran.

## LANGUAGES

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PERSIAN:	Native Proficiency
ENGLISH:	Full Professional Proficiency
FRENCH:	Elementary Proficiency

## OPEN SOURCE CONTRIBUTIONS

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2015-2021	<b>CloudSuite</b> CloudSuite is a benchmark suite of cloud services. The benchmarks are based on real-world software stacks and represent real-world setups. It is one of the early benchmark suites that is representative of modern datacenter services and is included in Google's PerfKit Benchmarker. It has become an industry standard and been used to drive the design of modern datacenter-oriented CPUs, such as Cavium ThunderX. I was a core member of the team responsible for the maintenance and the third release of CloudSuite, which is a major enhancement over prior releases both in benchmarks and infrastructure.
2016-2021	<b>QFlex</b> The QFlex project targets quick, accurate, and flexible simulation of multi-node computer systems proceeding along four fronts: QEMU, a popular open-source full-system machine emulator, Flexus, a powerful and flexible simulation framework that enables detailed cycle-accurate simulation, SMARTS, which applies rigorous statistical sampling theory to reduce the simulation time while achieving high accuracy, and NS-3, a popular and flexible network simulation stack. I was a member of the Flexus maintenance team and the team responsible for its new incarnation branded as QFlex.

## TEACHING EXPERIENCE

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FALL 2019	<b>Introduction to Multiprocessor Architecture</b>
FALL 2018	Assisted in redesigning the course: constructed a new syllabus and prepared course material including lecture slides, exercises, programming assignments, and exams. Graded assignments and exams. Led weekly lab sessions and guided students.   EPFL
FALL 2017	
FALL 2016	
SPRING 2020	<b>System Oriented Programming</b>
SPRING 2019	Assisted in redesigning the course: constructed a new course project and weekly tasks for students. Created a grading and feedback infrastructure for the weekly tasks, graded the final project and led weekly lab sessions.   EPFL
SPRING 2018	<b>Systems for Data Science</b> Graded students' assignments, projects and exams, held lab sessions and gave guidance to students for their projects.   EPFL
SPRING 2017	<b>Programming II (Using C++)</b> Graded students' programming assignments, projects and exams. Led weekly lab sessions and gave guidance to students.   EPFL
SPRING 2014	<b>Grid Computing</b> Graded students' programming assignments and projects.   Shiraz University
SPRING 2014	<b>Software Architecture</b> Graded students' programming assignments and projects.   Shiraz University
SPRING 2014	<b>Database Laboratory</b>
SPRING 2013	Completely redesigned the course from scratch. Constructed the syllabus and prepared the course material. Led weekly lab sessions, gave guidance to students and graded their assignments and projects.   Shiraz University
FALL 2013	<b>GPU Programming</b> Prepared and graded students' programming assignments and projects, led weekly lab sessions and gave guidance to students.   Shiraz University
SPRING 2013	<b>Design &amp; Implementation of Programming Languages</b> Prepared students' programming assignments and projects.   Shiraz University
FALL 2012	<b>Fundamentals of Computer and Programming Using Python</b>
FALL 2010	Constructed the syllabus and prepared the course material (programming assignments, labs, and projects). Led weekly lab sessions, gave guidance to students and graded their assignments and projects.   Shiraz University
SPRING 2012	<b>Principles of Programming Using C</b>
SPRING 2011	Prepared and graded students' programming assignments and projects, led weekly lab sessions and gave guidance to students.   Shiraz University
FALL 2011	<b>Advanced Programming Using Java</b> Prepared and graded students' programming assignments and projects, led weekly lab sessions and gave guidance to students.   Shiraz University

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