Mario **Preishuber** Dipl.-Ing.

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Interests

Research Concurrent data structures, distributed systems, in-memory databases, memory analysis, performance analysis

Personal Beach volley ball, traveling, motor sports

Specials

Dec 2017 **Google Inc.** Munich, Germany
Participant
I was invited to Google's 5th Compiler and Programming Language Summit 2017. I presented my work on the statistical metrics of memory accesses and there impact on a programs performance.

Jan 2016 – Aug 2015 **Visiting student** *Ecole Polytechnique Federale de Lausanne (EPFL)*, Switzerland
School of Computer and Communication Sciences
Major: Computer Science

Education

Apr 2018 – Oct 2014 **Dipl.-Ing.** *University of Salzburg*, Austria
Department of Computer Science

Sep 2014 – Oct 2011 **B.Eng.** *University of Salzburg*, Austria
Department of Computer Science

Jun 2009 – Sep 2004 *HTL (technical high school)*, Braunau am Inn, Austria
Major: Design and communication technologies

Self-Employment

2017 **Dental Manufacturing Unit GmbH** Austria
Software Developer
I developed and implemented new firmware features for the manufactured machines. I extended software layers above to adopt firmware changes. I created a testing environment to verify software correctness in combination with the actual hardware. Used programming languages C, C#, and Python.

Oct 2017 – Nov 2017 **Wirtschaftsförderungsinstitut der Wirtschaftskammer (WIFI) Österreich** Austria
Trainer
I prepared and taught the class *HTML5, CSS3 & Responsive WebDesign* for a business clients of WIFI Salzburg.

Employment

Since Apr 2018 **Dental Manufacturing Unit GmbH** Austria
Software Developer
I'm working on all software layers of the developed machines and coordinate external projects. Used programming languages are C, C# and Python.

Sep 2012 – Aug 2012 **SIGMATEK GmbH & Co KG** Austria
Summer Intern
I developed a Wireshark plugin for the Nested Varan Frames protocol. I extended an existing NSIS installer. Used programming languages were C and C++.

Sep 2011 – May 2010 **DVT-Daten-Verarbeitung-Tirol GmbH** Austria
Software Engineer
I designed and implemented web applications based on a J2EE architecture and the Apache Struts 2.0 framework.

Aug 2008 – Jul 2008 **ppedv AG** Germany
Summer Intern
I implemented new features and a new design for the homepage, blog-engine and forum of the company using .Net technologies.

Theses

Mar 2014 – Jun 2014 **Bachelor thesis, JavaScript Heap Analysis Using Real-World Web Applications** *University of Salzburg*, Austria
Advisor: Prof. Christoph Kirsch My bachelor thesis was done in course of ACDC4JS. The aim of my thesis to aid the development of more realistic workloads for benchmarking the memory management of JavaScirpt virtual machines. I have analyzed the heap models of real-world web application for this purpose.

Jun 2009 – Sep 2004 **Diploma thesis, SEER** *HTL (technical high school)*, Austria
My diploma thesis was done in cooperation with Sony (DADC) Austria. The topic of my thesis is developing software for analyzing and filtering large volume of email traffic sent to customer support. I have developed the so-called SEER (Sophisticated Embedded Email Responder) for this purpose with another student.

Projects

Jan 2015 – Oct 2014 **pseudOS, Advanced Operating Systems Class** *University of Salzburg*, Austria
Student
The aim is to develop the major components of an operating system based on PintOS. I have developed a more efficient scheduling algorithm, user-programs, virtual memory, and a UNIX like filesytem. My operating system is called pseudOS.

Aug 2014 – Aug 2013 **ACDC4JS[1], Computational Systems Group** *University of Salzburg*, Austria
Project Staff
The project was done in cooperation with Google Munich. The purpose of ACDC4JS is to analyze the efficiency of the garbage collector in JavaScript virtual machines, especially Google's V8. I have worked on research and development of measurement tools. The analyses of heap models, using automated user interactions was also part of my work.

Jun 2013 **PCCC, Compiler Construction Class** *University of Salzburg*, Austria
Mar 2013 *Student*
The goal is to develop a self-compiling compiler. I have developed a full functionally compiler in a non-trivial subset of C together with another student. Target is a DLX-based emulator. My self-compiling compiler is called PCCC and was the best project of the class.

Awards

Jun 2009 **Innovation & Wirtschaft in OÖ** OÖ. Technologie- und Marketinggesellschaft m.b.H
With the SEER project I won the first price in the category IT with my college. A competition for innovative high school students, supported by the government of Upper Austria.

Others

Mar 2010 **Mandatory military service** Austria
Oct 2009

Publications

[1] M. Aigner, T. Hütter, C.M. Kirsch, A. Miller, H. Payer, and **M. Preishuber**. "ACDC-JS: Explorative Benchmarking of JavaScript Memory Management". In: *Proc. Dynamic Languages Symposium (DLS)*. ACM, 2014. DOI: 10.1145/2661088.2661089. Click here for PDF file.

[2] A. Haas, T. Hütter, C.M. Kirsch, M. Lippautz, **M. Preishuber**, and A. Sokolova. "Scal: A Benchmarking Suite for Concurrent Data Structures". In: *Proc. International Conference on Networked Systems (NETYS)*. LNCS. Springer, 2015. DOI: 10.1007/978-3-319-26850-7_1. Click here for PDF file.

[3] T. Hütter, **M. Preishuber**, J. Hämmerle-Uhl, and A. Uhl. "Weaknesses in Security Considerations Related to Chaos-Based Image Encryption". In: *Information and Communications Security*. Springer International Publishing, 2016, pp. 278–291. DOI: 10.1007/978-3-319-50011-9_22.

[4] **M. Preishuber**, T. Hütter, S. Katzenbeisser, and A. Uhl. "Depreciating Motivation and Empirical Security Analysis of Chaos-Based Image and Video Encryption". In: *IEEE Transactions on Information Forensics and Security* 13.9 (2018), pp. 2137–2150. DOI: 10.1109/TIFS.2018.2812080. Click here for PDF file.