

Fabio Niephaus

Developer Tools, Virtual Machines, Programming Languages.

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Work Experience

- Sep 2021 – present **Principal Researcher**, *Oracle Labs*, Potsdam, Germany.
GraalVM developer tools and programming languages.
- Apr 2007 – present **Freelance Software Engineer and Consultant**, Potsdam, Germany.
Notable clients: Maton Guitars, Modeagentur Bucksch GmbH & Co. KG.
- Jan 2019 – Jul 2021 **Research Assistant**, *Software Architecture Group, HPI*, Potsdam, Germany.
- Jun 2017 – Sep 2017 **Software Engineering Intern**, *Google*, Mountain View, CA, USA.
Designed and implemented a live feedback mechanism for the IPython-based Colaboratory data analysis tool and improved its interactive debugger, both to increase the productivity of hundreds of search engineers and thousands of other users. Facilitated Design Thinking training sessions.
- Apr 2014 – Jun 2017 **Teaching Assistant**, *Software Architecture Group, HPI*, Potsdam, Germany.
- Aug 2015 – Mar 2016 **Site Reliability Engineering Intern**, *Google*, Dublin, Ireland.
Designed and built an internal customer dashboard for Google's offline storage system and worked on its monitoring and backend components. Facilitated Design Thinking training sessions.
- Nov 2010 – Jul 2011 **Full-time Intern**, *Maton Guitars*, Melbourne, Australia.

Education

- Oct 2017 – Jul 2022 **Ph.D. in Computer Science**, *Hasso Plattner Institute*, Potsdam, Germany.
Advisor: Prof. Dr. Robert Hirschfeld. Funding: HPI Research School ('17/'18), Oracle Labs ('19-'21).
Doctoral thesis: *Exploratory Tool-Building Platforms for Polyglot Virtual Machines*.
- Oct 2014 – Aug 2017 **M.Sc. (Dist) in IT-Systems Engineering**, *Hasso Plattner Institute*, Potsdam, Germany.
Master's thesis: *Squimera: A Live, Smalltalk-Based IDE for Dynamic Programming Languages*.
- Oct 2011 – Jul 2014 **B.Sc. (Dist) in IT-Systems Engineering**, *Hasso Plattner Institute*, Potsdam, Germany.
Bachelor's thesis: *Optimization Algorithms for Energy Systems in Multi-Family Residential Buildings*.
- Aug 2001 – Aug 2010 **German Abitur**, *Grafschafter Gymnasium*, Moers, Germany.

Selected Teaching Activities

- Graduate Program **Virtual Execution Environments '18/'19 (lect.)**, **Polyglot Programming '19/'20 (sem.)**, **Programming Experience '19/'20 (sem.)**, **Programming Languages '20/'21 (sem.)**, **Reverse Engineering '18/'19/'22 (sem.)**.
- Undergraduate Prog. **Software Engineering '20 (lect.)**, **Software Architecture '17/'18 (lect.)**, **Programming Languages '17/'18 (sem.)**.

Selected Publications

- Nov 2020 **Example-Based Live Programming for Everyone**.
F. Niephaus, P. Rein, J. Edding, J. Hering, B. König, K. Opahle, N. Scordialo, R. Hirschfeld. Onward'20.
- Oct 2019 **GraalSqueak: Toward a Smalltalk-Based Tooling Platform for Polyglot Programming**.
F. Niephaus, T. Felgentreff, R. Hirschfeld. MPLR'19.
- Oct 2019 **Language-Independent Development Environment Support for Dynamic Runtimes**.
D. Stolpe, T. Felgentreff, C. Humer, F. Niephaus, R. Hirschfeld. DLS'19.

- Apr 2019 **PolyJuS: A Squeak/Smalltalk-Based Polyglot Notebook System for the GraalVM.**
F. Niephaus, E. Krebs, C. Flach, J. Lincke, R. Hirschfeld. PX/19.
- Apr 2019 **Towards Polyglot Adapters for the GraalVM.**
F. Niephaus, T. Felgentreff, R. Hirschfeld. ICW'19.
- Jul 2018 **GraalSqueak: A Fast Bytecode Interpreter Written in an AST Interpreter Framework.**
F. Niephaus, T. Felgentreff, R. Hirschfeld. IC00OLPS'18.
- Mar 2018 **Live Multi-Language Development and Runtime Environments.**
F. Niephaus, T. Felgentreff, T. Pape, R. Hirschfeld, M. Taeumel. Programming Journal 2018.
- Mar 2016 **Matriona: Class Nesting with Parameterization in Squeak/Smalltalk.**
M. Springer, F. Niephaus, H. Masuhara, R. Hirschfeld. Modularity'16.

Selected Projects

- Dec 2017 – present **TruffleSqueak: A Polyglot Programming Environment for the GraalVM.**
Implemented a fast bytecode interpreter for Squeak/Smalltalk in the Truffle language implementation framework which enables novel research on tool support for polyglot programming.
- Jan 2017 – Jun 2017 **Squimera: A Live, Smalltalk-Based IDE for Dynamic Programming Languages.**
Built a polyglot VM with support for Python, Ruby, and Squeak/Smalltalk as well as a programming system that provides a consistent programming experience across these languages.
- Oct 2014 – Jul 2015 **ME310 Global Team-Based Product Innovation & Engineering.**
Worked on a design challenge in collaboration with Stanford University and University of St. Gallen. Developed a prototype to improve the collaboration between engineers at ThyssenKrupp, using Design Thinking methodologies.

Scholarships and Awards

- Oct 2011 – Jul 2022 **e-fellows.net Scholar.**
- Aug 2019 **Innovation Technology Award for GraalSqueak**, ESUG'19, Cologne, Germany.
- Oct 2017 – Dec 2018 **Scholar of the HPI Research School.**
- Dec 2011 – Jun 2017 **Scholar of the German National Academic Foundation.**
- Apr 2017 **ACM Student Research Competition Winner**, *«Programming» 2017*, Brussels, Belgium.
- Sep 2016 **Innovation Technology Award for smalltalkCI**, ESUG'16, Prag, Czech Republic.

Extracurricular Activities

- Organizing Committee **ECOOP'20, IC00OLPS'20, MoreVMs'20/21, «Programming»'18/19/20/21, SPLASH'18.**
- Program Committee **IC00OLPS'19, MoreVMs'19, SLE'20 (AE).**
- Student Volunteer **ECOOP'15/16/18, ESUG'16, «Programming»'17, SPLASH'17.**
- Jan 2020 – Sep 2021 **GraalVM Project Advisory Board Member.**
- Apr 2014 – Apr 2019 **Assistant Basketball Coach**, *College Sports*, University of Potsdam.
- Jun 2012 – Jun 2013 **Scholarship Student Representative**, German National Academic Foundation.
- Mar 2009 – Aug 2010 **School Council President**, Graftschafter Gymnasium Moers.
- Aug 2008 **Deutsche SchülerAkademie**, Bildung & Begabung gGmbH.

Other

- Languages German (native), English (fluent), French (basic).
- Hobbies and Interests Music, electric and acoustic guitars, basketball, sports, foosball, movies, traveling.
- Memberships ACM, Squeak e.V., CdE e.V., RedHawks Potsdam e.V.