

Tomer Libal

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Summary

- I am a researcher and a software engineer with extensive experience (~ 8 years) both in the industry and the academy. My academic specialization is in higher-order unification and theorem proving with research done also in proof certification and formal verification. I have experience in teaching of university level courses and have held a management position as a lead developer in a successful technology company.
- **Programming languages:** C, C++, Ocaml, Java, Scala, ML, Scheme, Ruby, Prolog and λ Prolog
- **Proof Assistants:** TLA and Coq
- **Research Topics:** Automated Deduction, Proof Transformation and Formal Verification
- **Teaching:** Programming Languages and Computational Logic

Experience

- **The American University of Paris** Paris, France
Lecturer Sep. 2016 – Dec. 2016
 - Software Engineering (CS3053) Undergraduate course, Fall 2016
 - Database Applications (CS3068) Undergraduate course, Fall 2016
 - Intro to Web Authoring (CS1005) Undergraduate course, Fall 2016
- **Parsifal Team - École Polytechnique/Inria** Palaiseau, France
Researcher Jan. 2015 – Dec. 2016
 - Research on proof certification and unification on ERC advanced grant ProofCert
 - λ Prolog, Prolog, Ocaml and Scala developer in the Checkers and Leo-III teams
- **École Polytechnique** Palaiseau, France
Teaching Assistant Mar. 2015 – Aug. 2016
 - Principles of Programming Languages (INF321) Undergraduate course, Spring 2015, 2016
 - Computational Logic (INF551) Master course, Fall 2015
 - Supervision of student projects and interns
- **Microsoft Research - Inria Joint Center** Palaiseau, France
Researcher Oct. 2012 – Dec. 2014
 - Research on theorem provers and proof assistants for the TLA+ proof language
 - Modeling and verifying real time systems using the TLA Proof Assistant and Model Checker
 - Ocaml and Java developer in the TLA+ Proof System project
- **Theory and Logic Group - Vienna University of Technology** Vienna, Austria
Project Assistant Nov. 2008 – Sep. 2012
 - Researching algorithms for higher-order unification and resolution
 - C, C++ and Scala developer in the Generic Architecture for Proofs project
- **Quigo Technologies** Tel Aviv, Israel and New York, USA
Programming Team Lead Sep 2001 – Jan 2006
 - In charge of the Java development team of a search marketing product which integrates AI methods such as Bayesian Networks
 - In charge of all the company database integration development, HTTP server side development, software deployment and continuous integration
 - The company was merged¹ into AOL
- **Various Companies** Jerusalem, Israel
Java Programmer 1998 - 2001
 - Surfnotes and VerticalNet Solutions
 - Was employed as an OOP consultant to a formal text book used by computer students in Israel
- Among technologies used are: Java Hibernate, the Spring Framework, JSF, JSP, Java Struts, Java Servlets, Hudson, Maven, Ant, Jenkins and various Ruby, Ocaml and Scala libraries and tools

¹<http://techcrunch.com/2007/11/07/aol-buys-quigo-confirmed/>

Education

- **Vienna University of Technology** Vienna, Austria
Ph.D. in Computer Sciences 2008 – 2012
– Ph.D. Thesis - Unification in Higher-order Resolution
- **Vienna University of Technology** Vienna, Austria
M.Sc in Computer Sciences 2006 – 2008
– Master Thesis: Cut Elimination in Inductive Proofs of Weakly Quantified Theorems
- **The Hebrew University** Jerusalem, Israel
B.Sc in Computer Sciences 1998 – 2001

Academic Activities and Awards

- Was awarded the Erasmus Mundus scholarship for the European MSc programme Computational Logic for the academic years 2006-2007 and 2007-2008
- Invited lecture in the EMCL student workshop in Vienna, 2016
- A member of the POPL 2017 Artifact Evaluation Committee
- Reviewer for the Journal of Automated Reasoning, the FSCD and CADE conferences and the PxTP workshop
- Collaboration with and visits to Christoph Benzmüller’s research group, FU Berlin

Publications

- [1] T. Libal and M. Volpe, “Certification of prefixed tableau proofs for modal logic,” 2016. Accepted to GandALF.
- [2] T. Libal and A. Steen, “Towards a substitution tree based index for higher-order resolution theorem provers,” 2016. PAAR.
- [3] T. Libal and D. Miller, “Functions-as-constructors higher-order unification,” 2016. FSCD.
- [4] S. Azaiez, D. Doligez, M. Lemerre, T. Libal, and S. Merz, “Proving determinacy of the pharos real-time operating system,” 2016. ABZ.
- [5] R. Blanco, T. Libal, and D. Miller, “Defining the meaning of TPTP formatted proofs,” 2015. IWIL.
- [6] T. Libal, “Regular patterns in second-order unification,” 2015. CADE.
- [7] Z. Chihani, T. Libal, and G. Reis, “The proof certifier checkers,” 2015. TABLEAUX.
- [8] D. Doligez, J. Kriener, L. Lamport, T. Libal, and S. Merz, “Coalescing: Syntactic abstraction for reasoning in first-order modal logics,” 2015. ARQNL.
- [9] T. Libal, M. Riemer, and M. Rukhaia, “Advanced proof viewing in prooftool,” 2014. UITP.
- [10] T. Libal, “Bounded higher-order unification using regular terms,” 2014. EPiC Series in Computing.
- [11] T. Libal, “Utilizing higher-order unifiability algorithms in the resolution calculus,” 2013. ADDCT.
- [12] S. Hetzl, T. Libal, M. Riemer, and M. Rukhaia, “Understanding resolution proofs through herbrand’s theorem,” 2013. TABLEAUX.
- [13] C. Dunchev, A. Leitsch, T. Libal, M. Riemer, M. Rukhaia, D. Weller, and B. W. Paleo, “PROOFTOOL: a GUI for the GAPt framework,” 2013. UITP.
- [14] A. Leitsch and T. Libal, “A resolution calculus for second-order logic with eager unification,” 2012. PAAR.
- [15] C. Dunchev, A. Leitsch, T. Libal, M. Riemer, M. Rukhaia, D. Weller, and B. W. Paleo, “System feature description: Importing refutations into the gapt framework,” 2012. PxTP.
- [16] T. Dunchev, A. Leitsch, T. Libal, D. Weller, and B. W. Paleo, “System description: The proof transformation system CERES,” 2010. IJCAR.
- [17] A. L. Stefan Hetzl, T. Libal, D. Weller, and B. W. Paleo, “Resolution refinements for cut-elimination based on reductive methods,” 2009. ESSLi.