Tomer Libal

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Summary

- I am a researcher, instructor and software engineer with extensive experience 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 λProlog
- **Proof Assistants:** TLA and Coq
- **Research Topics:** Automated Deduction, Proof Transformation and Formal Verification
- **Teaching:** Programming Languages and Computational Logic

Experience

- **Prosecco Team - Microsoft Research - Inria Joint Center** — Paris, France
  Research Engineer — *Jan. 2017 – ?*
  - Research on type checkers
  - Ocaml and F* developer in the F* project
- **The American University of Paris** — Paris, France
  Lecturer — *Sep. 2016 – ?*
  - Intro to Computer Programming II (CS1050) Undergraduate course, Spring 2017
  - 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
  - λProlog, Prolog, Ocaml and Scala developer in the Checkers and Leo-III teams
  - Reference: Dale Miller, head of the group
- **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
  - Reference: Leslie Lamport, head of the group
- **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
  - Reference: Alexander Leitsch, head of the group
- **Quigo Technologies** — Tel Aviv, Israel and New York, USA
  Programming Team Lead — *Sep 2001 – Jan 2006*
  - In charge of a Big Data team developing search marketing solutions
  - In charge of all the company database integration development, HTTP server side development, software deployment and continuous integration
  - The company was merged[1] into AOL

[1] http://techcrunch.com/2007/11/07/aol-buys-quigo-confirmed/

- **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

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. 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. Riener, 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. Riener, and M. Rukhaia, "Understanding resolution proofs through herbrand's theorem," 2013. TABLEAUX.
[13] C. Dunchev, A. Leitsch, T. Libal, M. Riener, 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. Riener, 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.