

Burak Ekici, Ph.D.

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Languages: Turkish(native), English (operational), French(intermediate), Italian(intermediate)

Education & Employment

- 2018-now Post-Doctoral Research Fellow @ *Department of Computer Science, University of Innsbruck*, Innsbruck, Austria.
Project: **CoqHammer**
Advisor: Cezary Kaliszyk.
With: Łukasz Czajka.
- 2016-2017 Post-Doctoral Research Fellow @ *Department of Computer Science, The University of Iowa*, Iowa City-IA, USA.
Project: **Integrating CVC4 into SMTCoq.**
Advisor: Cesare Tinelli.
With: Chantal Keller and Alain Mebsout.
- 2013-2015 PhD Student @ *Department of Informatics, University Joseph Fourier*, Grenoble-France.
Thesis: **Certification of programs with computational effects.** [[manuscript](#)] [[slides](#)]
Advisors: Jean-Guillaume Dumas, Dominique Duval, Damien Pous.
- 2009-2012 MSc Student @ *Department of Computer Engineering, Yaşar University*, Izmir-Turkey.
Thesis: **A parallelization approach to Haskell language through category theoretic implementations.**
Advisor: Ahmet H. Koltuksuz.
- 2010-2011 Trainee Researcher @ *European Commission Joint Research Centre*, Ispra(VA)-Italy.
Project: **Linearity detection of the growth effect on children fingertips.**
Advisor: Günter-Egon Schumacher.
- 2004-2009 BSc Student @ *Department of Computer Engineering, Izmir Institute of Technology*, Izmir-Turkey.
Thesis: **Parallelization of mathematical functions of a cryptographic and multi-precision library, Crympix.**
Advisor: Ahmet H. Koltuksuz.
With: Görkem Kılınç and Çağatay Yücel.

Research Interests

Computational effects, categorical logic, type theory, Coq, SMT, hammer systems.

Publications & Abstracts

JOURNALS

- 2017 Burak Ekici. “[IMP with exceptions over decorated logic](#).” (Pending with “Minor revision request” at *Discrete Mathematics and Theoretical Computer Science*.)

CONFERENCES/WORKSHOPS

- 2018 Burak Ekici, Cezary Kaliszyk. “[Mac Lane’s Comparison Theorem for the Kleisli Construction Formalized in Coq](#).” (submitted.)
- 2018 Łukasz Czajka, Burak Ekici, Cezary Kaliszyk. “[Concrete Semantics with Coq and CoqHammer](#).” Proc. 11th Int. Conf. on Intelligent Computer Mathematics (CICM). Hagenberg, Austria, August 2018.
- 2018 Burak Ekici. “[Towards Mac Lane’s Comparison Theorem for the \(co\)Kleisli Construction in Coq](#).” Proc. of the 3rd Formal Mathematics for Mathematicians (FMM), co-located with the 11th CICM. Hagenberg, Austria, August 2018.
- 2017 Burak Ekici, Alain Mebsout, Cesare Tinelli, Chantal Keller, Guy Katz, Andrew Reynolds and Clark Barrett. “[SMTCoq: A plug-in for integrating SMT solvers into Coq](#).” Proc. 29th Int. Conf. on Computer Aided Verification (CAV). Heidelberg, Germany, July 2017.
- 2016 Burak Ekici, Guy Katz, Chantal Keller, Alain Mebsout, Andrew Reynolds and Cesare Tinelli. “[Extending SMTCoq, a Certified Checker for SMT \(Extended Abstract\)](#).” *HaTT 2016: 1st International Workshop on Hammers for Type Theories, Coimbra, Portugal, July 2016*.
- 2015 Jean-Guillaume Dumas, Dominique Duval, Burak Ekici, Damien Pous and Jean-Claude Reynaud. “[Hilbert-Post completeness for the state and the exception effects](#).” *MACIS 2015: Sixth International Conference on Mathematical Aspects of Computer and Information Sciences, Berlin, Germany, 11–13 November 2015*.
- 2014 Jean-Guillaume Dumas, Dominique Duval, Burak Ekici and Jean-Claude Reynaud. “[Certified proofs in programs involving exceptions](#).” *CICM 2014 : Eighth Conference on Intelligent Computer Mathematics, Coimbra, Portugal, 7–11 July 2014, CEUR Workshop Proceedings, no 1186, paper 20*.
- 2014 Jean-Guillaume Dumas, Dominique Duval, Burak Ekici and Damien Pous. “[Formal verification in Coq of program properties involving the global state effect](#)” *JFLA 2014 : Journées Francophones des Langages Applicatifs, Fréjus, France, 8–11 January 2014*.
- 2010 Burak Ekici, Çağatay Yücel, Gökem Kılınc, Ahmet H. Koltuksuz, “[Implementations of Category Theory in Computer Science](#).”, *9th National Mathematics Symposium, Karadeniz Technical University, October 2010*.
- 2010 K. Kratchanov, E. Golemanova, T. Golemanov, T. Ercan, B. Ekici. “[Implementation of Search Strategies in Control Network Programming](#).”, *Procedural and Non-Procedural In: Proc. Intl. Symposium in Innovations in Intelligent Systems and Applications (INISTA 2010), June 2010, Kayseri, Turkey, 386-390*.

ABSTRACTS

- 2014 Jean-Guillaume Dumas, Dominique Duval, *Burak Ekici* and Damien Pous. “[Program certification with computational effects.](#)” *Journées Nationales de Calcul Formel (JNCF) 2014, Marseille, France November 2014.*
- 2014 *Burak Ekici.* “[Certification of programs with computational effects.](#)” *Doctoral session. CICM 2014 : Eighth Conference on Intelligent Computer Mathematics, Coimbra, Portugal, 7–11 July 2014.*

Recent Talks

INVITED

- 10.11.2015 [Relative Hilbert-Post completeness for exceptions.](#) Foundations Seminar, Ljubljana-Slovenia.

OTHERS

- 15.08.2018 [Concrete Semantics with Coq and CoqHammer.](#) CICM’18 Hagenberg-Austria.
- 13.08.2018 [Towards Mac Lane’s Comparison Theorem for the \(co\)Kleisli construction in Coq.](#) FMM’18 Hagenberg-Austria.
- 31.05.2018 [SMTCoq, a plug-in for the trustworthy integration of SAT/SMT solvers into Coq.](#) Master Seminar, University of Innsbruck-Austria.
- 03.06.2015 [IMP with exceptions over decorated logic.](#) TFP’15, Sophia-Antipolis-France.
- 05.11.2014 [Program certification with computational effects.](#) JNCF’14, Marseille-France.
- 11.07.2014 [Certification of programs with computational effects.](#) CICM’14, Coimbra-Portugal.
- 18.02.2014 [{IMP + Exc} over Decorated Logic.](#) LJK, Grenoble-France.
- 09.01.2014 [Formal verification in Coq of program properties involving the global state effect.](#) JFLA’2014, Fréjus - France.
- 05.12.2013 [Formal verification in Coq of program properties involving the global state effect.](#) Séminaires LJK-Modèles et Algorithmes Déterministes: BIPOP-CASYS, Grenoble-France.
- 11.10.2013 [Proofs About Programs Involving Computational Effects.](#) Exposé au LJK, Grenoble-France.
- 23.05.2013 [Certification of Programs with Computational Effects.](#) EJCP 2013, Dinard-France.

Events Attended

INVITED

- 09-13.11.15 University of Ljubljana (invited by Dr. Andrej Bauer), Ljubljana, Slovenia.

OTHERS

- 13-17.08.18 Conferences on Intelligent Computer Mathematics (CICM’18), Hagenberg-Austria.

- 25-30.03.18 3rd Conference on Artificial Intelligence and Theorem Proving (AITP'18), Aussois-France.
- 03-05.06.15 The Sixteenth Symposium on Trends in Functional Programming (TIFP'15), INRIA, Sophia-Antipolis-France.
- 26-29.05.15 Colloque Inter'Actions en Mathématiques 2015 (member of the organization committee), Institut Fourier, Grenoble-France.
- 03-07.11.14 Journées Nationales de Calcul Formel (JNCF'14), CIRM, Marseille-France.
- 07-11.07.14 Conferences on Intelligent Computer Mathematics (CICM'14), Coimbra-Portugal.
- 07-18.04.14 PhD school on semantics of proofs and certified mathematics by Institut Henri Poincaré, CIRM, Marseille-France.
- 07-11.01.14 JFLA: Journées Francophones des Langages Applicatifs, La-villa-clythia, Fréjus-France.
- 23-31.05.13 École Jeunes Chercheurs en Programmation, Inria, Rennes-France.
- 17-29.04.12 IWOSI: The Information Warfare, Cyber Warfare and Open Sources Intelligence (member of the organization committee), Izmir-Turkey.
- 01-02.09.09 Workshop on The Security of Information and Communication Technologies: A Turkey & EC-JRC Joint Effort, Izmir-Turkey.
- 25-26.09.09 Workshop on Multi-Core Architectures & Parallel Programming with Intel Software Tools (member of the organization committee), Izmir-Turkey.

Code

Please see my [github repository](#).

Miscellaneous

Programming: C/C++, Haskell, OCaml, Coq.

Libraries: CRYMPIX, OpenMP, WHY3, SMTCoq, CoqHammer.

Referees

[Jean-Guillaume Dumas](#)

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[Dominique Duval](#)

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[Cesare Tinelli](#)

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