

Burak Ekici, Ph.D.

University of Innsbruck

Department of CS, ICT building, Technikerstrasse 21a/2 6020 Innsbruck, Austria

Bureau: 2W03,

email: burak.ekici@uibk.ac.at

URL: <http://ekiciburak.github.io/>

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 multiprecision 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

- 2018 Burak Ekici. “[IMP with exceptions over decorated logic](#).” *Discrete Mathematics and Theoretical Computer Science* 20(2), 2018.
- 2018 Burak Ekici, Cezary Kaliszyk. “[Mac Lane’s Comparison Theorem for the Kleisli Construction Formalized in Coq](#).” (submitted to *Mathematics in Computer Science*)

CONFERENCES/WORKSHOPS

- 2019 *Burak Ekici*, Arjun Viswanathan, Yoni Zohar, Clark Barrett, and Cesare Tinelli. “[Verifying Bit-vector Invertibility Conditions in Coq \(Extended Abstract\)](#).” Sixth Workshop on Proof eXchange for Theorem Proving (PxTP). Natal, Brazil, August 2019.
- 2018 Łukasz Czapka, *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 Ham-mers 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 Kılınç, 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

- 07.06.2019 [Univalent Typoids in Coq](#). Ludwig-Maximilians-Universität, Munich-Germany.
- 27.12.2018 Decorated semantics for an imperative language with exceptions. Özyeğin University, İstanbul-Turkey.
- 10.11.2015 [Relative Hilbert-Post completeness for exceptions](#). Foundations Seminar, Ljubljana-Slovenia.

OTHERS

- 27.03.2019 Univalent Type Theory. Master Seminar, University of Innsbruck-Austria.
- 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.
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.

Events Attended

INVITED

07.06.2019	Types in Munich (invited by Dr. Iosif Petrakis), Ludwig-Maximilians-Universität, Munich-Germany.
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.

Code

Please see my [github repository](#).

Miscellaneous

Programming: C/C++, Haskell, OCaml, Coq, Lean.
Libraries: CRYMPIX, OpenMP, WHY3, SMTCoq, CoqHammer.

Referees

Jean-Guillaume Dumas

LJK, University Grenoble Alpes

email: Jean-Guillaume.Dumas@imag.fr

Cesare Tinelli

Department of Computer Science,

The University of Iowa

email: cesare-tinelli@uiowa.edu

Dominique Duval

LJK, University Grenoble Alpes

email: Dominique.Duval@imag.fr

Cezary Kaliszyk

Computational Logic Group,

University of Innsbruck

email: cezary.kaliszyk@uibk.ac.at

Last updated: August 26, 2019 • Typeset in \LaTeX