

Burak Ekici, Ph.D.

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

Education & Employment

- 2019-now Assistant Professor @ *Department of Computer Engineering, İstanbul Kültür University, İstanbul, Turkey.*
- 2018-2019 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

- 2020 Burak Ekici. “Eilenberg-Moore Constructions in Coq.” (Submitted to Journal of Formalized Reasoning)
- 2020 Burak Ekici, Cezary Kaliszyk. “Mac Lane’s Comparison Theorem for the Kleisli Construction Formalized in Coq.” *Mathematics in Computer Science*, 2020.

2018 Burak Ekici. “IMP with exceptions over decorated logic.” Discrete Mathematics and Theoretical Computer Science 20(2), 2018.

CONFERENCES

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 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, Görkem 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.

Teaching

2019-2020 Main Course: Digital Design @ İstanbul Kültür University.

2019-2020 Main Course: Microprocessors @ İstanbul Kültür University.

2019-2020 Main Course: Programming Languages @ İstanbul Kültür University.

2018-2019 Proseminar: Discrete Mathematics @ University of Innsbruck.

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](#). CISM'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](#). CISM'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.

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- 13-17.08.18 Conferences on Intelligent Computer Mathematics (CISM'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 (CISM'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@univ-grenoble-alpes.fr

[Dominique Duval](#)

LJK, University Grenoble Alpes

email: dominique.duval@univ-grenoble-alpes.fr

[Cesare Tinelli](#)

Department of Computer Science,

The University of Iowa

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[Cezary Kaliszyk](#)

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