Burak Ekici, Ph.D.

TED University, Department of Computer Engineering
mail: Ziya Gökalp Caddesi No:48 06420, Kolej Çankaya, Ankara
e-mail: burak.ekici@tedu.edu.tr
URL: http://ekiciburak.github.io/

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

Education & Employment

2021-now	Assistant Professor @ *Department of Computer Engineering, TED University*, Ankara, Turkey.
2019-2020	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.
01.2013-12.2015	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

2022	*Burak Ekici.* "Formal categorical reasoning." Turkish Journal of Mathematics, 2022.

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-Cluaude Reynaud. "Certified proofs in programs involving exceptions." *CICM 2014 : Eigth 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

2022	*Burak Ekici*. "Formal Categorical Reasoning." *Studies on Scientific Developments in Geometry, Algebra, and Applied Mathematics (Online Event), 1-3 February 2022.*
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 Novermber 2014.*
2014	*Burak Ekici*. "Certification of programs with computational effects." *Doctoral session. CICM 2014 : Eigth Conference on Intelligent Computer Mathematics, Coimbra, Portugal, 7–11 July 2014.*

Teaching

2021-2022	Main Course: Theory of Computation @ TED University.
2020-2021	

2021-2022	Main Course: Category Theory in Computer Science @ TED University.
2021-2022	Main Course: Fundamentals of Programming I @ TED University.
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

01.02.2022	Formal Categorical Reasoning. Studies on Scientific Developments in Geometry, Algebra, and Applied Mathematics. (online event)
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++, Java, 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
email: cesare-tinelli@uiowa.edu

Cezary Kaliszyk
Computational Logic Group,
University of Innsbruck
email: cezary.kaliszyk@uibk.ac.at