

Burak Ekici, Ph.D.

Senior Research Associate at Department of Computer Science
University of Oxford

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URL: <http://ekiciburak.github.io/>
LANGUAGES: Turkish (native), English (operational), French (intermediate),
Italian (intermediate), German (notions)

WORK EXPERIENCE

2023-NOW	Senior Research Associate – Department of Computer Science University of Oxford – Oxford, UK Topic: Multiparty Session Types Advisor: Nobuko Yoshida
2022-NOW	Assistant Professor – Department of Computer Engineering Mugla Sıtkı Koçman University – Mugla, Turkey
2021-2022	Assistant Professor – Department of Computer Engineering TED University – Ankara, Turkey
2019-2020	Assistant Professor – Department of Computer Engineering Istanbul Kültür University – Istanbul, Turkey
2018-2019	Postdoctoral Researcher – Department of Computer Science University of Innsbruck, Innsbruck, Austria Topic: CoqHammer Advisor: Cezary Kaliszyk
2016-2017	Postdoctoral Researcher – Department of Computer Science University of Iowa, Iowa, USA Topic: CVC4, SMTCoq Advisor: Cesare Tinelli
2010-2011	Trainee Researcher – European Commission Joint Research Centre Ispra(VA), Italy Topic: Biometric Security Systems Advisor: Günter Schumacher

EDUCATION

2013-2015	PhD Degree in COMPUTER SCIENCE AND MATHEMATICS <i>Programming Language Semantics</i> , Université Grenoble Alpes – Grenoble, France Advisors: Jean-Guillaume Dumas , Dominique Duval , Damien Pous
2009-2012	MSc Degree in COMPUTER ENGINEERING <i>Parallelization in Functional Programming</i> , Yasar University – Izmir, Turkey Advisor: Ahmet Hasan Koltuksuz
2004-2009	BSc Degree in COMPUTER ENGINEERING Izmir Institute of Technology – Izmir, Turkey Advisor: Ahmet Hasan Koltuksuz

RESEARCH INTERESTS

Computational effects, categorical logic, type theory, Coq, functional programming, Haskell, OCaml, SMT, hammer systems, Multiparty session types.

PUBLICATIONS AND ABSTRACTS

Journals

- 2023 [A Sound Definitional Interpreter for a Simply Typed Functional Language](#)
Axioms
Burak Ekici.
- 2022 [Formal categorical reasoning](#)
Turkish Journal of Mathematics
Burak Ekici.
- 2020 [Mac Lane's Comparison Theorem for the Kleisli Construction Formalized in Coq](#)
Mathematics in Computer Science
Burak Ekici and Cezary Kaliszyk.
- 2018 [IMP with exceptions over decorated logic](#)
Discrete Mathematics and Theoretical Computer Science
Burak Ekici.

Conferences

- 2023 [Formal Verification of Bit-vector Invertibility Conditions in Coq](#)
The 14th International Symposium on Frontiers of Combining System (FroCoS)
Burak Ekici, Arjun Viswanathan, Yoni Zohar, Cesare Tinelli, and Clark Barrett.
- 2019 [Verifying Bit-vector Invertibility Conditions in Coq \(Extended Abstract\)](#)
Sixth Workshop on Proof eXchange for Theorem Proving (PxTP)
Natal, Brazil, August 2019
Burak Ekici, Arjun Viswanathan, Yoni Zohar, Clark Barrett, and Cesare Tinelli.
- 2018 [Concrete Semantics with Coq and CoqHammer](#)
Proc. 11th Int. Conf. on Intelligent Computer Mathematics (CICM)
Hagenberg, Austria, August 2018
Lukasz Czajka, Burak Ekici, Cezary Kaliszyk.
- 2018 [Towards Mac Lane's Comparison Theorem for the \(co\)Kleisli Construction in Coq](#)
Proc. of the 3rd Formal Mathematics for Mathematicians (FMM)
Hagenberg, Austria, August 2018
Burak Ekici.
- 2017 [SMTCoq: A plug-in for integrating SMT solvers into Coq](#)
Proc. 29th Int. Conf. on Computer Aided Verification (CAV)
Heidelberg, Germany, July 2017
Burak Ekici, Alain Mebsout, Cesare Tinelli, Chantal Keller, Guy Katz, Andrew Reynolds and Clark Barrett.
- 2016 [Extending SMTCoq, a Certified Checker for SMT \(Extended Abstract\)](#)
HaTT 2016: 1st International Workshop on Hammers for Type Theories
Coimbra, Portugal, July 2016.
Burak Ekici, Guy Katz, Chantal Keller, Alain Mebsout, Andrew Reynolds and Cesare Tinelli.
- 2015 [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.
Jean-Guillaume Dumas, Dominique Duval, *Burak Ekici*,
Damien Pous and Jean-Claude Reynaud.
- 2014 [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.
Jean-Guillaume Dumas, Dominique Duval, *Burak Ekici* and Jean-Claude Reynaud.
- 2014 [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
Jean-Guillaume Dumas, Dominique Duval, *Burak Ekici* and Damien Pous
- 2010 [Implementations of Category Theory in Computer Science](#)
9th National Mathematics Symposium, Karadeniz Technical University, October 2010.
Burak Ekici, Cagatay Yücel, Gökem Kılıç, Ahmet H. Koltuksuz.
- 2010 [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.
K. Kratchanov, E. Golemanova, T. Golemanov, T. Ercan, *B. Ekici*.

Abstracts

- 2022 [Formal Categorical Reasoning](#),
Studies on Scientific Developments in Geometry, Algebra, and Applied Mathematics,
(Online Event) 1-3 February 2022.
Burak Ekici.
- 2014 [Program certification with computational effects](#),
Journées Nationales de Calcul Formel (JNCF) 2014, Marseille, France November 2014.
Jean-Guillaume Dumas, Dominique Duval, *Burak Ekici* and Damien Pous.
- 2014 [Certification of programs with computational effects](#),
Doctoral session. CICM 2014 : Eighth Conference on Intelligent Computer Mathematics,
Coimbra, Portugal, 7–11 July 2014.
Burak Ekici.

TEACHING

2022-2023	Main Course	Operating Systems (System programming in C)
2019-2020		
2022-2023	Main Course	Programming Language Concepts (OCaml, Coq)
2020-2023	Main Course	Formal Languages and Abstract Machines
2022-2023	Main Course	Functional Programming (Haskell, Coq)
2021-2022	Main Course	Category Theory in Computer Science (Coq)
2021-2022	Main Course	Fundamentals of Programming I (Java)
2019-2020	Main Course	Digital Design
2019-2020	Main Course	Microprocessors (x86)
2018-2019	Proseminar	Discrete Mathematics

RECENT TALKS

Invited

- 08.03.2024 Decorated semantics for an imperative language with exceptions.
Quantum Research Group, University of Oxford.
- 10.11.2023 SMTCoq – A Certified Checker for SMT.
Mobility Reading Group, University of Oxford.
- 07.06.2019 [Univalent Typoids in Coq](#).
Ludwig-Maximilians-Universität, Munich-Germany.
- 27.12.2018 Decorated semantics for an imperative language with exceptions.
Özyegin University, Istanbul-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](#).
- 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 (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
Institut Henri Poincaré, CIRM, Marseille-France.
- 07-11.01.14 JFLA: Journées Francophones des Langues 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
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[Dominique Duval](#)
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Department of Computer Science,
The University of Iowa
cesare-tinelli@uiowa.edu

[Cezary Kaliszyk](#)
Computational Logic Group,
University of Innsbruck
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Department of Computer Engineering,
Istanbul Kültür University
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