Georgiana Caltais

Personal Information

Born April 20, 1984, Suceava, Romania. Romanian citizenship. Languages: Romanian (native), English (fluent), French (basic).

Contact Information

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Academic Research Area

Concurrency, formal languages, automata, program analysis, process algebra, coalgebra, structural operational semantics, equational logic, rewriting logic.

Education

Reykjavík University, Reykjavík, Iceland
Radboud University, Nijmegen, the Netherlands

Ph.D., Computer Science — August 2010 to August 2013

- Thesis Topic: *Coalgebraic Tools for Bisimilarity and Decorated Trace Semantics*
- Promotors: Prof. Dr. Jan Rutten, Prof. Dr. Anna Ingólfsdóttir
- Co-promotors: Dr. Marcello Bonsangue, Dr. Alexandra Silva

Alexandru Ioan Cuza University, Iaşi, Romania

M.Sc., Faculty of Computer Science — October 2007 to July 2009

- Thesis Topic: *CIRC: A Behavioural Verification Tool Based on Circular Coinduction – extensions –*
- Supervisor: Prof. Dr. Dorel Lucanu
- Score 10.0 (out of 10.0)

B.Sc., Faculty of Computer Science — October 2003 to July 2007

- Thesis Topic: *The implementation of a Programming Language in Maude, using Denotational Semantics*
- Supervisor: Prof. Dr. Dorel Lucanu
- Score 9.62 (out of 10.0)

Professional Experience

ETH Zürich – Chair of Software Engineering, Switzerland

Postdoctoral Researcher — November 2013 to present
Concurrency Made Easy (CME) project

- Focused on the formalization and implementation of a toolbox for the analysis of concurrent programs, in the context of the SCOOP concurrency model.

Teaching Assistant — November 2013 to present
Einführung in die Programmierung (Introduction to Programming)

- Head assistant: coordinated the course, interviewed potential teaching assistants, prepared and moderated weekly assistant meetings, set up the exercise groups (for a total of 360 students)
- Conducted exercise classes (group of 20 students)

Concepts of Concurrent Computation

- Conducted the exercise classes

Alexandru Ioan Cuza University, Iaşi, Romania

Research Assistant October 2007 to July 2010
research project CNCSIS ID-393 – "Automated Verification using Circularities"

- Provided behavioral specifications for several case studies.
- Provided formal proofs for theoretical aspects behind the implementations.
- Implemented some of the capabilities of the prover.
- Participated in writing research papers and the project proposal DAK–"An Executable Semantic Framework for Rigorous Design, Analysis and Testing of Systems" (accepted by ANCS).

Teaching Assistant October 2007 to July 2010

- Functional Programming – Haskell
- Algorithms and Programming – C/C++

S.C. Venus Technologies Provider S.R.L., Iaşi, Romania

Software Developer June 2006 to July 2007

- Participated in the development of a 3D simulator of cloth behaviour.
- Built the mathematical model of the physical behaviour of clothes.
- Modeled the collisions between cloth and rigid objects.
- Studied algorithms for optimizing the collision detection.

PUBLICATIONS

G. Caltais.
Expression-based aliasing for OO-languages.
FTSCS 2014, to appear. CoRR abs/1409.7509 (2014).

G. Caltais, B. Meyer.
Coffman deadlocks in SCOOP.
NWPT 2014, CoRR abs/1409.7514 (2014).

F. Bonchi, M. Bonsangue, G. Caltais, J. Rutten, A. Silva.
A coalgebraic view on decorated traces.
To appear in MSCS.

F. Bonchi, G. Caltais, D.Pous, A. Silva.
Brzozowski's and Up-To Algorithms for Must Testing.
APLAS 2013, LNCS, 8301, 1-16.

F. Bonchi, M. Bonsangue, G. Caltais, J. Rutten, A. Silva.
Final semantics for decorated traces.
MFPS 2012, Elsevier, 286, 73-86.

M. Bonsangue, G. Caltais, E. I. Goriac, D. Lucanu, J. Rutten, A. Silva.
Automatic equivalence proofs for non-deterministic coalgebras.
Science of Computer Programming, 78(9): 1324-1345.

L. Aceto, G. Caltais, E. I. Goriac, A. Ingolfsdottir.
PREG Axiomatizer - A Ground Bisimilarity Checker for GSOS with Predicates.
CALCO Tools 2011, Springer-Verlag, 6859, 378-385.

L. Aceto, G. Caltais, E. I. Goriac, A. Ingólfsdóttir.
Axiomatizing GSOS with Predicates.
SOS 2011, EPTCS, 62, 1-15.

M. Bonsangue, G. Caltais, E. I. Goriac, D. Lucanu, J. Rutten, A. Silva.
A Decision Procedure for Bisimilarity of Generalized Regular Expressions.
SBMF 2010, Springer-Verlag, 6527, 226-241.

E. I. Goriac, G. Caltais and D. Lucanu.
Simplification and Generalization in CIRC.
SYNASC 2009, IEEE Computer Society, 85-92.

D. Lucanu, E. I. Goriac, G. Caltais and G. Roşu.
CIRC: A Behavioral Verification Tool based on Circular Coinduction.
CALCO Tools 2009, Springer-Verlag, 5728, 433-442.

G. Grigoraş, D. Lucanu, G. Caltais and E. I. Goriac.
Automated Proving of the Behavioral Attributes.
BCI 2009, IEEE Computer Society, 33-38.

E. I. Goriac, G. Caltais, D. Lucanu, O. Andrei and G. Grigoraş.
Patterns for Maude Metalanguage Applications.
WRLA 2008, Elsevier Science Publishers B. V., 238, 121-138, 2009.

G. Caltais, E. I. Goriac, D. Lucanu and G. Grigoraş.
A Rewrite Stack Machine for ROC!.
SYNASC 2008, IEEE Computer Society, 85-91.

Presentations

Exploiting alias information. CME internal workshop, Chair of Software Engineering, ETH Zürich (November 2014).

On the design and analysis of a concurrency model. ICE-TCS seminars, Reykjavík University (November 2014).

Expression-based aliasing for OO-languages. FTSCS 2014.

Coffman deadlocks in SCOOP. NWPT 2014.

An Executable Semantic Framework for the Design and Analysis of SCOOP. Chair of Software Engineering, ETH Zürich (May 2014).

Coalgebraic Tools for Bisimilarity and Decorated Trace Semantics. Ph.D. defense, Radboud University, Nijmegen, the Netherlands (December 2013).

Alais analysis – a possible approach? –. CME internal workshop, Chair of Software Engineering, ETH Zürich (November 2013).

(Co)algebra & SOS for Concurrency – from theory to practice. Chair of Software Engineering, ETH Zürich (May 2013).

Checking the must-testing preorder with bisimulations up-to. ICE-TCS seminars, Reykjavík University (February 2013).

Final Semantics for Decorated Traces. COIN: Coalgebra in the Netherlands, CWI Amsterdam (March 2012) and MFPS 2012.

Formal methods for concurrency: (Co)algebra and SOS. ICE-TCS seminars, Reykjavík University (January 2012).

Axiomatizing GSOS with Predicates. ICE-TCS Workshop on Structural Operational Semantics and the Equational Logic of Processes, Reykjavík University (April 2011).

Algebra meets Coalgebra – A Decision Procedure for Bisimilarity of Generalized Regular Expressions. ICE-TCS seminars, Reykjavík University (August 2010).

Behavioural Specification of Polynomial Functors.
- Scientific Day of the University, Iaşi (October 2009).
- ARCO meeting, Eindhoven (November 2009).

Simplification and Generalization in CIRC. SYNASC 2009.

Automata-based Behavioural Specification of Regular Expressions. ARCO meeting, Iaşi (May 2009).

A Rewrite Stack Machine for ROC!. SYNASC 2008.

Patterns for Maude Metalanguage Applications. WRLA 2008.

K: a Rewrite-based Framework for Modular Language Design, Semantics, Analysis and Implementation. Formal Methods group sessions at Al. I. Cuza University, Iaşi.

Grants and Awards

Research internship at Centrum Wiskunde & Informatica, September – December 2011.

Merit-Based Scholarship in the form of Tuition Waiver for the academic years 2010 – 2012 from the Graduate Studies Council, School of Computer Science, Reykjavík University.

ETAPS 2008 – Participation Grant.

Professional Training

LASER Summer School 2013, 2014. Leading-Edge Software Engineering.

Research stage at Radboud University, Nijmegen, October – December 2012. Study on decorated trace semantics for NFA's and generative probabilistic systems: coalgebraic modelling, equivalence-checking algorithms and case studies.

Research stage at CWI, Amsterdam, March 2012. Study on the coalgebraic modelling of Basic Parallel Processes (BPP).

Research stage at CWI, Amsterdam, October – December 2011. Study on the coalgebraic modelling of decorated trace semantics. The outcome of this joint work consists in a paper accepted in MFPS 2012.

Marktoberdorf Summer School 2008. Engineering Methods and Tools for Software Safety and Security.

Research stage at CWI, Amsterdam, July 19 – August 2, 2009. Study on coalgebra and implementation of a Maude meta-application for automated reasoning on the equality of regular expressions for polynomial functors.

Sinaia School on Formal Verification of Software Systems 3–10 March 2008.

Agile IT Project Management Training 13–14 November 2008, Al. I. Cuza University.

Other activities

I contributed in training and coordinating the ETH Zürich team participating in the contest Prix du Jeune Entrepreneur 2014.

I organized an apéro for students interested in doing Master or Bachelor theses within the research topics of the Chair of Software Engineering at ETH Zürich.

I co-chaired Niklaus Wirth Birthday Symposium (ETH Zürich).

I participated in organizing LASER summer school in 2013, 2014.

I participated in organizing the workshops: ARCO 2008, ARCO 2009, ICE-TCS Workshop on Structural Operational Semantics and the Equational Logic of Processes 2011.

References

Available on request.