

FLORIAN BRANDNER

PERSONAL DATA

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WORK EXPERIENCE

Télécom ParisTech **Current** Associate Professor, Paris, FR
Associate Professor (maître de conférences) in the ACES team (formally S3) of the LTCI laboratory at Télécom ParisTech (Université Paris-Saclay).

ENSTA ParisTech 09/2013
08/2015 Assistant Professor, Palaiseau, FR
Assistant Professor (enseignant-chercheur) at the Computer Science and Systems Engineering Department of ENSTA ParisTech (École Nationale Supérieure de Techniques Avancées).

DTU Compute 11/2011
09/2013 Post-doctoral Researcher, Copenhagen, DK
Post-doctoral researcher at the Embedded Systems Engineering Section of DTU Compute (Danmarks Tekniske Universitet). Funded by the European project T-CREST.

INRIA Grenoble 10/2009
10/2011 Post-doctoral Researcher, Lyon, France
Post-doctoral researcher at the Laboratoire de l'Informatique du Parallélisme (LIP) at the École Normale Supérieure de Lyon (ENS de Lyon) Funded by INRIA and the Mediacom project as part of Nano2012.

MSR Redmond 04/2009
07/2009 Microsoft Research, Redmond, WA, USA
Research Internship at Microsoft Research on just-in-time code generation for the fast JavaScript engine *SPUR*.

*CD-Laboratory
Phd* 10/2005
02/2009 Research Assistant, Vienna, Austria
Research on retargetable compiler components, compiler optimizations and processor description languages in the Christian Doppler Laboratory – Compilation Techniques for Embedded Processors. In part funded by ONDEMAND Microelectronics and the Christian Doppler Forschungsgesellschaft.

- 03/2004
10/2004
StarCore LLC. Compiler-Developer, Vienna, Austria
In 2004 *StarCore* (now *LSI LOGIC*) established a branch in Vienna. I joined *StarCore* to develop high-level and low-level optimizations for a new compiler targeting the *StarCore SC1x00* family DSPs.
- 01/2004
02/2004
Atair GmbH. Software-Developer, Vienna, Austria
Development of a processor description language for the Open Compiler Environment (OCE) by *Atair*.
- 2002
2005
Vienna University of Technology Teaching Assistant, Vienna, Austria
Teaching Assistant at the Languages Group of the Institute of Computer Languages, the Distributed Systems Laboratory of the Institute of Information Systems, and the Database and Artificial Intelligence Group of the Institute of Information Systems.

EDUCATION

- 10/2005
12/2009
PhD Vienna University of Technology, Austria
PhD PhD student of Computer Science at the Vienna University of Technology. The final Rigorosum (defense) was held in Vienna on December 18th, 2009.
Thesis: Compiler Backend Generation from Structural Processor Models
Jury members: Jens Knoop, Andreas Krall, Tomáš Hruška
Adviser: Andreas Krall
- 09/1999
10/2004
Dipl. Ing. Master Vienna University of Technology, Austria
Dipl. Ing. Master Student of Computer Science at the Vienna University of Technology. Graduated with honors in 2004.
Thesis: Instruction set simulation
Adviser: Andreas Krall
- 06/2003
01/2004
Exchange Technical University of Denmark, Lyngby
Exchange Exchange student at the DTU in Lyngby close to Copenhagen, Denmark.
- 09/1991
06/1999
School BG/BRG Bruck an der Mur, Austria
School Secondary School.

ADDITIONAL INFORMATION

- Languages* ENGLISH · Fluent
FRENCH · Conversation
GERMAN · Mother Tongue
DANISH · Reading

BOOK CHAPTERS

DSP Instruction Set Simulation

Florian Brandner, Nigel Horspool, and Andreas Krall
 Handbook of Signal Processing Systems (2nd Edition)
 S.S. Bhattacharyya, E.F. Deprettere, R. Leupers, and J. Takala (Editors)
 2013, Springer

DSP Instruction Set Simulation

Florian Brandner, Nigel Horspool, and Andreas Krall
 Handbook of Signal Processing Systems
 S.S. Bhattacharyya, E.F. Deprettere, R. Leupers, and J. Takala (Editors)
 2010, Springer

PROCEEDINGS

 Proceedings of the 18th International Workshop on Worst-Case
 Execution Time Analysis

Florian Brandner
 Barcelona, Spain, 2018
 OASiCs

 Proceedings of the 11th Workshop on Optimizations for DSP and
 Embedded Systems

Florian Brandner and Tom Vander Aa (Editors)
 Orlando, FL, USA, 2014
 ACM ICPS

 Proceedings of the 10th Workshop on Optimizations for DSP and
 Embedded Systems

Florian Brandner and Tom Vander Aa (Editors)
 Shenzhen, China, 2013
 ACM ICPS

JOURNAL PUBLICATIONS

Analysis of Preemption Costs for the Stack Cache

Amine Naji, Sahar Abbaspour, **Florian Brandner**, and Mathieu Jan
 Real-Time Systems (RTS)
 online: Feb. 2018, Springer

Studying Optimal Spilling in the Light of SSA

Florian Brandner, **Florian Brandner**, and Alain Darte
 ACM Transactions on Architecture and Code Optimization (TACO)
 Volume 11(4): (2015), ACM

Refinement of Worst-Case Execution Time Bounds by Graph Pruning

Florian Brandner and Alexander Jordan
 Computer Languages, Systems & Structures (COMLAN)
 Volume 40(3-4): 155-170 (2014), Elsevier

Criticality: Static Profiling for Real-Time Programs

Florian Brandner, Stefan Hepp, and Alexander Jordan
 Real-Time Systems (RTS)
 2014, Volume 50(3): 377-410, Springer

 Elimination of Parallel Copies using Code Motion on Data
 Dependence Graphs

Florian Brandner and Quentin Colombet
 Computer Languages, Systems & Structures (COMLAN)
 2013, Volume 39(1): 25-47, Elsevier

Automatic Generation of Compiler Backends

Florian Brandner, Viktor Pavlu, and Andreas Krall

Software: Practice and Experience (SPE)

2013, Volume 43(2):207-240, Wiley

CONFERENCE PUBLICATIONS

Shedding the Shackles of Time-Division Multiplexing

*Outstanding
Paper Award*

Farouk Hebbache, Mathieu Jan, **Florian Brandner**, and Laurent Pautet

Real-Time Systems Symposium (RTSS)

Nashville, USA, 2018, IEEE

Experimental Energy Profiling of Energy-Critical Embedded Applications

Best Paper Award

Kameswar Rao Vaddina, **Florian Brandner**, Gerard Memmi, and Pierre Jouvelot

Symposium on Green Networking and Computing (SGNC) part of SoftCOM 2017

Split, Croatia, 2017, IEEE

Efficient Context Switching for the Stack Cache: Implementation and Analysis

*Outstanding
Paper Award*

Sahar Abbaspour, **Florian Brandner**, Amine Naji, and Mathieu Jan

23th International Conference on Real-Time and Network Systems (RTNS)

Lille, France, 2015, ACM ICPS

Splitting Functions into Single-Entry Regions

Stefan Hepp and **Florian Brandner**

International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES)

New Delhi, India, 2014, ACM

A Loosely Synchronizing Asynchronous Router for TDM-Scheduled NOCs

Ioannis Kotleas, Dean Humphreys, Rasmus Bo Sørensen, Evangelia Kasapaki,

Florian Brandner, and Jens Sparsø

International Symposium on Networks-on-Chip (NOCS)

Ferrara, Italy, 2014, IEEE

Static Analysis of Worst-Case Stack Cache Behavior

Alexander Jordan, **Florian Brandner**, and Martin Schoeberl

International Conference on Real-Time and Network Systems (RTNS)

2013, Sophia-Antipolis, France, ACM ICPS

Static Profiling of the Worst-Case in Real-Time Programs

Best Paper Award

Florian Brandner, Stefan Hepp, and Alexander Jordan

International Conference on Real-Time and Network Systems (RTNS)

2012, Pont à Mousson, France, ACM ICPS

Static Routing in Symmetric Real-Time Network-on-Chips

Florian Brandner and Martin Schoeberl

International Conference on Real-Time and Network Systems (RTNS)

2012, Pont à Mousson, France, ACM ICPS

A Statically-Scheduled Time-Division-Multiplexed Network-on-Chip for Real-Time Systems

Martin Schoeberl, **Florian Brandner**, Evangelia Kasapaki, and Jens Sparsø

Symposium on Networks-on-Chip (NOCS)

2012, Kongens Lyngby, Denmark, ACM/IEEE

Copy Elimination on Data Dependence Graphs

Florian Brandner and Quentin Colombet

Symposium On Applied Computing (SAC-PL)

2012, Riva del Garda, Italy, ACM

A Non-Iterative Data-Flow Algorithm for Computing Liveness Sets in Strict SSA Programs

Benoit Boissinot, **Florian Brandner**, Alain Darte, Benoît Dupont de Dinechin, and Fabrice Rastello

Symposium on Programming Languages and Systems (APLAS)
2011, Kenting, Taiwan, Springer

Studying Optimal Spilling in the Light of SSA

Quentin Colombet, **Florian Brandner**, and Alain Darte

Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES)
2011, Taipei, Taiwan, ACM

Execution Models for Processors and Instructions

Florian Brandner, Viktor Pavlu, and Andreas Krall

28th Norchip Conference
2010, Tampere, Finland, IEEE

SPUR: A Trace-Based JIT Compiler for CIL

Michael Bebenita, **Florian Brandner**, Manuel Fahndrich, Francesco Logozzo, Wolfram Schulte, Nikolai Tillmann, and Herman Venter

International Conference on Object Oriented Programming Systems Languages and Applications (OOPSLA)
2010, Reno, USA, ACM

Completeness of Automatically Generated Instruction Selectors

Florian Brandner

21st International Conference on Application-specific Systems, Architectures and Processors (ASAP)
2010, Rennes, France, IEEE

RTTM: Real-Time Transactional Memory

Martin Schoeberl, **Florian Brandner**, and Jan Vitek

25th Symposium On Applied Computing, Real Time Systems Track, (SAC)
2010, Sierre, Switzerland, ACM

Stack Allocation of Objects in the Cacao Virtual Machine

Peter Molnar, Andreas Krall, and **Florian Brandner**

7th International Conference on the Principles and Practice of Programming in Java (PPPJ)
2009, Calgary, Canada, ACM

Embedded JIT Compilation with CACAO on YARI

Florian Brandner, Martin Schoeberl, and Tommy Thorn

12th IEEE International Symposium on Object/component/service-oriented Real-time distributed Computing (ISORC)
2009, Tokyo, Japan, IEEE

Generalized Instruction Selection using SSA-Graphs

Dietmar Ebner, **Florian Brandner**, Bernhard Scholz, Andreas Krall, Peter Wiedermann, and Albrecht Kadlec

ACM Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES)
2008, Tucson, USA, ACM

Compiler Generation from Structural Architecture Descriptions

Florian Brandner, Dietmar Ebner, and Andreas Krall

International Conference on Compilers, Architecture, and Synthesis for Embedded Systems (CASES)
2007, Salzburg, Austria, ACM

Effective Compiler Generation by Architecture Description

Stefan Farfeleder, Andreas Krall, Edwin Steiner, and **Florian Brandner**

ACM Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES)
2006, Ottawa, Canada, ACM

WORKSHOP PUBLICATIONS

Dynamic Arbitration of Memory Requests with TDM-like Guarantees

Farouk Hebbache, Mathieu Jan, **Florian Brandner**, and Laurent Pautet
 Workshop on Compositional Theory and Technology for Real-Time Embedded
 Systems (CRTS)
 Paris, France, 2017

Worst-Case Execution Time Analysis of Predicated Architectures

Florian Brandner and Amine Naji
 Workshop on Worst-Case Execution Time Analysis (WCET)
 Dubrovnik, Croatia, 2017, OASICS Dagstuhl

Eager Stack Cache Memory Transfers

Amine Naji and **Florian Brandner**
 Workshop on Worst-Case Execution Time Analysis (WCET)
 Toulouse, France, 2016, OASICS Dagstuhl

A Comparative Study of the Precision of Stack Cache Occupancy
Analyses

Amine Naji and **Florian Brandner**
 Junior Researcher Workshop on Real-Time Computing (JRWRTC)
 Lille, France, 2015

Alignment of Memory Transfers of a Time-Predictable Stack Cache

Sahar Abbaspour and **Florian Brandner**
 Junior Researcher Workshop on Real-Time Computing (JRWRTC)
 Versailles, France, 2014

Lazy Spilling for a Time-Predictable Stack Cache: Implementation
and Analysis

Sahar Abbaspour, Alexander Jordan, and **Florian Brandner**
 Workshop on Worst-Case Execution Time Analysis (WCET)
 Madrid, Spain, 2014, OASICS Dagstuhl

A Time-predictable Stack Cache

Sahar Abbaspour, **Florian Brandner**, and Martin Schoeberl
 Workshop on Software Technologies for Embedded and Ubiquitous Systems (SEUS)
 2013, Paderborn, Germany

Studying Spilling in the Light of SSA

Quentin Colombet, **Florian Brandner**, and Alain Darté
 Workshop on Compilers for Parallel Computing (CPC)
 2012, Padua, Italy

Modeling Application-Specific Processors for Cyber-Physical Systems

Florian Brandner, Viktor Pavlu, and Andreas Krall
 Workshop on Software Language Engineering for Cyber-physical Systems (WS4C)
 2011, Berlin, Germany (LNI)

Compiler-driven Optimization of the Worst-Case Execution Time

Florian Brandner and Alain Darté
 Workshop Analyse to Compile, Compile to Analyse (ACCA)
 2011, Chamonix, France

Towards a Time-predictable Dual-Issue Microprocessor: The Patmos
Approach

Martin Schoeberl, Pascal Schleuniger, Wolfgang Puffitsch, **Florian Brandner**,
 Christian W. Probst, Sven Karlsson, and Tommy Thorn
 Workshop on Practice, Predictability and Performance in Embedded Systems (PPES)
 2011, Grenoble, France

Automatic Tool Generation from Structural Processor Descriptions

Florian Brandner
 15th Biennial Workshop on Programmiersprachen und Grundlagen der
 Programmierung (KPS)
 2009, Maria Taferl, Austria

Precise Simulation of Interrupts using a Rollback Mechanism

Florian Brandner

12th International Workshop on Software and Compilers for Embedded Systems (SCOPES)
2009, Nice, France

Completeness of Instruction Selector Specifications with Dynamic Checks

Florian Brandner

8th International Workshop on Compiler Optimization Meets Compiler Verification (COCV)
2009, York, England

Fast and Accurate Simulation using the LLVM Compiler Framework

Florian Brandner, Andreas Fellnhof, Andreas Krall, and David Riegler

1st Workshop on Rapid Simulation and Performance Evaluation: Methods and Tools (RAPIDO)
2009, Paphos, Cyprus

Leveraging Predicated Execution for Multimedia Processing

Dietmar Ebner, **Florian Brandner**, and Andreas Krall

Workshop on Embedded Systems for Real-Time Multimedia (ESTIMedia)
2007, Salzburg, Austria

Static Verification of Global Heap References in Java Native Libraries

Andreas Krall, Christian Thalinger, Dietmar Ebner, and **Florian Brandner**

Workshop on Semantics, Program Analysis, and Computing Environments for Memory Management (SPACE)
2006, Charleston, USA

TECHNICAL REPORTS

Subgraph-Based Refinement of Worst-Case Execution Time Bounds

Florian Brandner and Alexander Jordan

ENSTA Technical Report, hal-00978015
Palaiseau, France, April 2014

Parallel Copy Elimination on Data Dependence Graphs

Florian Brandner, Quentin Colombet

INRIA Technical Report RR-7535
Lyon, France, September 2011

Computing Liveness Sets for SSA-Form Programs

Florian Brandner, Benoit Boissinot, Alain Darté, Benoît Dupont de Dinechin, Fabrice Rastello

INRIA Technical Report RR-7503
Lyon, France, January 2011

SPUR: A Trace-Based JIT Compiler for CIL

Michael Bebenita, **Florian Brandner**, Manuel Fahndrich, Francesco Logozzo, Wolfram Schulte, Nikolai Tillmann, and Herman Venter

Technical Report MSR-TR-2010-27
Microsoft Research
Redmond, USA, March 2010

Embedded JIT Compilation with CACAO on YARI

Florian Brandner, Tommy Thorn, and Martin Schoeberl

Technical Report RR 35/2008
Institute of Computer Engineering
Vienna University of Technology
Vienna, Austria, June 2008

PROJECT REPORTS

D2.1 Software Simulator of Patmos

Florian Brandner

T-CREST project report

Kongens Lyngby, Denmark, March, 2012

D5.2 Initial Compiler Version

Florian Brandner, Stefan Hepp, and Daniel Prokesch

T-CREST project report

Vienna, Austria, September, 2012

THESES

Compiler Backend Generation from Structural Processor Models

Florian Brandner

PhD Thesis

2009, Vienna University of Technology, Vienna, Austria

Instruction Set Simulation

Florian Brandner

Diploma/Masters Thesis

2004, Vienna University of Technology, Vienna, Austria

January 17, 2019