

Jordy Ruiz, Ph.D

Research Engineer

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Profile

French research engineer based in London since 2019, with experience in low-level program analysis of embedded systems. Enjoys mathematics, well-structured programming and clever use of abstractions. Highly enthusiastic towards mentoring and cross-disciplinary learning.

Work

Research Engineer at StatInf (4 mo.)

then Software Team Lead at StatInf (2 y.)

2022/10 – 2025/02

- R&D for a hybrid static/statistical analysis of binary embedded systems programs
- Led a small software team (4–7 engineers), built from the ground up, mentoring collaborative development
- Management using Agile methods, interfacing with R&D, Product and Corporate teams
- In-house disassembly and program analysis plugins for our clients' architecture needs (TMS320C28, MPC5554 PPC, ARMv7+Thumb-2, ARMv9...)
- Led the development and go-to-market of StatInf's key product **RocqStat**, including:
 - GUI design and implementation;
 - Backend development for binary code and software trace analysis
 - Securing our patented EVT algorithms;
 - Docker containerization;
 - CI/CD pipeline setup with integration testing;
 - Go-to-production processes and product demonstrations;
 - Iterative collaboration on product specifications.

#C++ #ARM-assembly #TI-assembly #PPC-assembly #embedded-systems #statistical-analysis
#static-analysis #software-traces #team-management #Agile-methods
#collaborative-development #CI-CD #Docker #Deployment

Research Associate at Imperial College London

2019/10 – 2022/09

Automating test generation using “chopped” symbolic execution in KLEE, through program analysis of LLVM IR code.

with Pr. Cristian Cadar

#C++ #LLVM #KLEE #patch-testing #static-analysis #dynamic-analysis #concolic-execution

Postdoctoral fellowship at Université de Lille

2018/06 – 2019/06

Detection of arrays in assembly code for static timing analysis

with Pr. Giuseppe Lipari

#C++ #ARM-assembly #OTAWA #PPL #static-analysis #abstract-interpretation #WCET

Ph.D. at Université Toulouse III

2014/10 – 2017/12

Thesis: Identifying data flow properties to improve worst-case execution time estimations

Analysed actual critical embedded applications (Continental, DEBIE-1, PapaBench...)

with Pr. Christine Rochange

#C++ #ARM-assembly #OTAWA #static-analysis #embedded-systems #infeasible-paths
#abstract-interpretation

Masters at Université Toulouse III

2014/08

Thesis: Detecting infeasible paths on machine code

with Dr. Hugues Cassé

#C++ ARM-assembly #OTAWA #static-analysis #abstract-interpretation

Internship at Université Toulouse III

2013/07

Co-inductive reasoning for the transformation of deterministic automata.

Complete formal proof of Brozowski's algorithm¹ in Coq.

with Dr. Ralph Matthes

#Coq #Haskell #formal-proofs #category-theory

¹Based on the categorical proof by Bonchi et al., *Brzozowski's Algorithm (Co)Algebraically* (2012)

Education

Université Toulouse III

Masters in Computer Science

Second year: Critical Software & Distributed systems (ranked 2/8)

First year: Artificial Intelligence & Pattern Recognition (ranked 1/15)

2012 – 2014

Bachelor in Fundamental Mathematics

Bachelor in Computer Science

2009 – 2012

2009 – 2012

Parallel studies and simultaneous graduation from two bachelors.

Publications in journals, international conferences, and workshops

Relational Abstract Interpretation of Arrays in Assembly Code.

2021/12

C. Ballabriga, J. Forget, **J. Ruiz**

In: *Formal Methods in System Design*, Volume 59. (regular paper)

Static Analysis Of Binary Code With Memory Indirections Using Polyhedra. \star

2019/01

C. Ballabriga, J. Forget, L. Gonnord, G. Lipari, **J. Ruiz**

In: *VMCAI – International Conference on Verification, Model Checking, and Abstract Interpretation*, 2019. (regular paper)

\star best paper award

Working around loops for infeasible path detection in binary programs.

2017/09

J. Ruiz, H. Cassé, M. De Michiel

In: *SCAM – IEEE International Working Conference on Source Code Analysis and Manipulation*, 2017. (regular paper)

The W-SEPT project: Towards Semantic-aware WCET Estimation.

2017/06

C. Maïza, P. Raymond, C. Parent-Vigouroux, A. Bonenfant, F. Carrier, H. Cassé,
P. Cuenot, D. Claraz, N. Halbwachs, F. Carrier, H. Cassé, E. Jahier, H. Li, M. De Michiel,
V. Mussot, I. Puaut, C. Rochange, E. Rohou, **J. Ruiz**, P. Sotin, W.-T. Sun.

In: *WCET – Workshop on Worst-Case Execution Time Analysis*, 2017. (regular paper)

Expressing and Exploiting Path Conflicts in WCET Analysis.

2016/07

V. Mussot, **J. Ruiz**, P. Sotin, M. De Michiel, H. Cassé

In: *WCET – Workshop on Worst-Case Execution Time Analysis*, 2016. (regular paper)

Using SMT Solving for the Lookup of Infeasible Paths in Binary Programs.

2015/07

J. Ruiz, H. Cassé

In : *WCET – Workshop on Worst-Case Execution Time Analysis*, 2015. (regular paper)

Languages

English: fluent.

French: native.

Sinographs (Chinese characters): intermediate.