Gustavo Federico PETRI

Personal Information

Affiliation: Amazon, S3 Automated Reasoning Group
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Interests

I work on *formal verification*, *automated reasoning*, *programming languages*, and the design and verification of *concurrent* and *distributed* systems — including *relaxed memory models* and *confidential computing*. I particularly enjoy applying theory to real systems and hardware.

Employment

2022–pres. Principal Applied Scientist. **Amazon**, S3 Automated Reasoning Group, Cambridge, UK. Lead in a team of five Applied Scientists embedded in engineering teams, bringing formal methods and automated reasoning to production at scale (Amazon S3).

2018–2022 Principal Research Engineer. **Arm**, Cambridge, UK. Team lead on formal methods for emerging products; verification of the Arm Confidential Computing Architecture and Trusted Execution Environments.

2015–2018 Associate Professor. *Maître de Conférences* (tenured position) at the Computer Science Department of the **Université Paris Diderot–Paris 7**. Member of the **Modeling and Verification** team, Institut de Recherche en Informatique Fondamentale (IRIF).

2013–2015 Visiting Assistant Professor. Non-tenure track faculty position at the Computer Science Department at **Purdue University**. Working in collaboration with *Prof. Suresh Jagannathan* and *Prof. Jan Vitek* on the verified compilation of concurrent managed languages.

2012–2013 Postdoctoral Researcher. Computer Science Department at **Purdue University**. Collaborated with *Prof. Suresh Jagannathan* and *Prof. Jan Vitek*.

2011–2012 Postdoctoral Researcher. Foundations of Programming Languages Team, School of Computing, **DePaul University**. Collaborated with *Prof. Radha Jagadeesan* and *Prof. James Riely* on the semantics and verification of programs in relaxed memory models.

2006 Intern. Everest Team, INRIA – Sophia Antipolis. Collaborated with *Prof. Marieke Huisman* on formalizing the Java Memory Model in the Coq proof assistant.

2005–2006 Java Developer. Instituto Tecnológico Córdoba. Worked on a clean room development of the `java.rmi` library funded by the Intel Corporation.

Education

2010 Ph.D. in Computer Science. INRIA – Sophia Antipolis, France (degree granted by the Université de Nice – Sophia Antipolis). Directed by *Gérard Boudol*. Thesis: "Operational Semantics of Relaxed Memory Models". **Reviewers**: Andrew Appel and Jean-Jacques Lévy. **Committee**: Martín Abadi, *Gilles Barthe* (president), Gérard Boudol, Marieke Huisman and Xavier Leroy.

2005 M.S. in Computer Science (equivalent). "Licenciado en Ciencias de la Computación", (five years C.S. degree) at Fa.M.A.F., Universidad Nacional de Córdoba (U.N.C.), Argentina. GPA: 9.1/10.

2003 B.S. in Computer Science (equivalent). "Analista en Computación" (three years C.S. degree) at Fa.M.A.F., U.N.C., Córdoba, Argentina.

Selected Publications

N. Jaber, D. Jin, B. Kragl, E. Magnago, G. Petri, T. Tarrach, and S. Tasiran
High Fidelity Models for Large Scale Stateful Services. To appear at OSDI (2026).

A. Fox, G. Stockwell, S. Xiong, H. Becker, D. Mulligan, G. Petri, and N. Chong
A Verification Methodology for the Arm Confidential Computing Architecture. OOPSLA (2023).

C. Wang, C. Enea, S. Orhun Mutluergil, and G. Petri
Replication-Aware Linearizability. PLDI (2019).

Y. Zakowski, D. Cachera, D. Demange, G. Petri, D. Pichardie, S. Jagannathan, and J. Vitek
Verifying a Concurrent Garbage Collector with a Rely-Guarantee Methodology.
Journal of Automated Reasoning (2019).

H. Zhu, G. Petri, and S. Jagannathan
Automatically learning shape specifications. PLDI (2016).

H. Zhu, G. Petri, and S. Jagannathan
Poling: SMT Aided Linearizability Proofs. CAV (2015).

S. Jagannathan, V. Laporte, G. Petri, D. Pichardie, and J. Vitek
Atomicity Refinement for Verified Compilation. ACM TOPLAS (2014).

G. Boudol and G. Petri
Relaxed Memory Models: an Operational approach. POPL (2009).

Teaching Experience

Université Paris Diderot - Paris 7: **2015–2018**
Multiple classes ranging from freshman level to second years M.S.: *Introduction to programming* in Python & Java (1st year B.S.), *Formal Methods and Verification* (2nd year M.S.), *Algorithms 3* (3rd year B.S.), *Advanced Object Oriented Programming* [Scala] (2nd year M.S.), *Algorithmic Verification* (2nd year Parisian Research M.S.), *Semantics of Programming Languages* (1st year M.S.), *Advanced Software Engineering* (1st year M.S.).

Purdue University: **2013–2014**
Senior year undergraduate level *Programming Languages* (CS 456).
Graduate level *Programming Languages* (CS 565).

Fa.M.A.F., U.N.C., Argentina: **2003–2005**
Undergraduate Teaching Assistant (T.A.) for six semesters on different courses including: *Programming Languages and Compilers*, *Data Bases*, *Discrete Mathematics II*, *Introduction to Logics and Programming*, and *Algorithms and Data Structures II*.

Academic Community Service

Program committees: OOPSLA (2026), PLDI (2024, 2021), ASPLOS (2024, 2023), PaPoC (2021), FM (2021) and FORTE (2019), among others. Regular reviewer for TOPLAS, JAR, LMCS, JOT, ASE, POPL, PLDI, ESOP, TACAS, CAV, SAS, CONCUR, ICALP and FSTTCS, among others.

Languages

- English: Fluent.
- Spanish: Native speaker.
- French: Fluent.