Marco Patrignani, Ph.D.

Homepage :	`https://squera.github.io`
Email:	`marco.patrignani@unitn.it` Phone: +39 0461 285250
Address:	Room 124, Disi, Polo 2. Via sommarive 9 I-38123 Povo (TN) Italy
Date of Birth:	December 2nd, 1986.

Working Experience

2025/3/1 to ...	Associate Professor at University of Trento (IT)
2022/3/1 to 2025/2/28	Assistant Professor (RTD-B) at University of Trento (IT)
2018/9/1 to 2022/2/28	Research group leader at CISPA Helmholz Center for Information Security (DE)
2021/2/1 to 2021/06/30	Visiting lecturer at Stanford University (USA)
2018/9/1 to 2021/01/31	Visiting assistant professor at Stanford University (USA)
2017/9/1 to 2018/8/31	PostDoc researcher at CISPA (DE) (with Michael Backes)
2015/10/1 to 2017/8/31	PostDoc researcher at MPI SWS Saarbrücken (DE) (with Deepak Garg).
2010/11/1 to 2015/09/30	Ph.D. student at KU Leuven (BE) (with Dave Clarke and Frank Piessens).

Education

2010/11 to 2015/09	***Ph.D.* in Computer Science** (2015/05/27) at *KU Leuven* (BE).
2008/9 to 2010/7	***Master degree (Laurea specialistica)* in Computer Science** at the *University of Bologna* (IT), (110/110 cum laude). (First graduate from the class).
2005/9 to 2008/10	***Bachelor degree (Laurea)* in Computer Science**. *University of Bologna* (IT), (107/110).

Achievements & Awards

2022 Distinguished Paper Award at CCS	For: *Automatic Detection of Speculative Execution Combinations*. (link)
2019 Distinguished Paper Award at CSF	For: *Journey beyond full abstraction*. (link)
2023 PRIN PNRR (224K€)	AM∀DEUS Project (PI)
2023 Mysten Labs (20K€)	Funding for assistants to work on the Move language (PI).
2021 Rita Levi Montalcini (IT) (220K€)	Tenure-track funding at the University of Trento (PI).
2021 Novi/Facebook Grant (50K$)	To work on robust safety for the Move language (PI).
2017 Cispa-Stanford (DE)	Funding for PostDoc, Assistant professor and Research group leader (6 years total) between CISPA and Stanford.
2011 FWO grant (BE)	Scholarship for a Ph.D. at KU Leuven
2010 LLP Erasmus placement (IT)	EU commission fundings for an internship at KU Leuven.

Publications

Journal papers

1. **Marco Patrignani**, Robert Künnemann, Riad S. Wahby, and Ethan Cecchetti. Universal composability is robust compilation. *ACM Trans. Program. Lang. Syst.*, 46(4), December 2025
2. Dominique Devriese, Eric Mark Martin, and **Marco Patrignani**. On the Semantic Expressiveness of Iso- and Equi-Recursive Types. *Logical Methods in Computer Science*, Volume 20, Issue 4, November 2024
3. Dominique Devriese, **Marco Patrignani**, and Frank Piessens. Two parametricities versus three universal types. *ACM Trans. Program. Lang. Syst.*, 44(4), sep 2022

4. Carmine Abate, Roberto Blanco, Adrien Durier, Deepak Garg, Catalin Hritcu, **Marco Patrignani**, Eric Tanter, and Jeremy Thibault. An Extended Account of Trace-Relating Compiler Correctness and Secure Compilation. *ACM Trans. Program. Lang. Syst.*, 43(4), nov 2021
5. **Marco Patrignani** and Deepak Garg. Robustly safe compilation, an efficient form of secure compilation. *ACM Trans. Program. Lang. Syst.*, 43(1), February 2021
6. **Marco Patrignani**, Amal Ahmed, and Dave Clarke. Formal approaches to secure compilation a survey of fully abstract compilation and related work. *ACM Comput. Surv.*, 51(6):125:1–125:36, January 2019
7. Dominique Devriese, **Marco Patrignani**, Frank Piessens, and Steven Keuchel. Modular, Fully-abstract Compilation by Approximate Back-translation. *Logical Methods in Computer Science*, Volume 13, Issue 4, October 2017
8. **Marco Patrignani**, Pieter Agten, Raoul Strackx, Bart Jacobs, Dave Clarke, and Frank Piessens. Secure Compilation to Protected Module Architectures. *ACM Trans. Program. Lang. Syst.*, 37(2):6:1–6:50, April 2015
9. **Marco Patrignani** and Dave Clarke. Fully abstract trace semantics for protected module architectures. *Computer Languages, Systems & Structures*, 42(0):22 – 45, 2015. Special issue on the Programming Languages track at the 29th ACM Symposium on Applied Computing

Conference Papers

1. Matthew Kolosick, Basavesh Ammanaghatta Shivakumar, Sunjay Cauligi, **Marco Patrignani**, Marco Vassena, Ranjit Jhala, and Deian Stefan. Robust constant-time cryptography. In *Proceedings of the 46th ACM SIGPLAN International Conference on Programming Language Design and Implementation*, PLDI 2025, New York, NY, USA, 2025. ACM
2. Xaver Fabian, **Marco Patrignani**, Marco Guarnieri, and Michael Backes. Do you even lift? strengthening compiler security guarantees against spectre attacks. *Proc. ACM Program. Lang.*, (POPL), January 2025
3. Robert Künnemann, **Marco Patrignani**, and Ethan Cecchetti. Computational-Bounded Robust Compilation and Universally Composable Security. In *Proceedings of the 37th IEEE Computer Security Foundations Symposium CSF 2024, Enschede, The Netherlands*, CSF 2024, 2024
4. **Marco Patrignani** and Sam Blackshear. Robust Safety for Move. In *Proceedings of the 36th IEEE Computer Security Foundations Symposium CSF 2023, Dubrovnik, Croatia*, CSF 2023, 2023
5. Alexandra E. Michael, Anitha Gollamudi, Jay Bosamiya, Evan Johnson, Aidan Denlinger, Craig Disselkoen, Conrad Watt, Bryan Parno, **Marco Patrignani**, Marco Vassena, and Deian Stefan. Mswasm: Soundly enforcing memory-safe execution of unsafe code. *Proc. ACM Program. Lang.*, 7(POPL), January 2023
6. Xaver Fabian, Marco Guarnieri, and **Marco Patrignani**. Automatic detection of speculative execution combinations. In *Proceedings of the 2022 ACM SIGSAC Conference on Computer and Communications Security*, CCS '22, New York, NY, USA, 2022. ACM. **Distinguished Paper Award**
7. Will Chricton, **Marco Patrignani**, Maneesh Agrawala, and Pat Hanrahan. Modular information flow through ownership. In *Proceedings of the 43rd ACM SIGPLAN International Conference on Programming Language Design and Implementation*, PLDI 2022, page 1–14, New York, NY, USA, 2022. ACM
8. **Marco Patrignani** and Marco Guarnieri. Exorcising spectres with secure compilers. In *Proceedings of the 2021 ACM SIGSAC Conference on Computer and Communications Security*, CCS '21, page 445–461, New York, NY, USA, 2021. ACM
9. Akram El-Korashy, Stelios Tsampas, **Marco Patrignani**, Dominique Devriese, Deepak Garg, and Frank Piessens. Capableptrs: Securely compiling partial programs using the pointers-as-capabilities principle. In *34th IEEE Computer Security Foundations Symposium, CSF 2021, Dubrovnik, Croatia, June 21-25, 2021*, pages 1–16. IEEE, 2021

10. **Marco Patrignani**, Eric Martin, and Dominique Devriese. On the semantic expressiveness of recursive types. *Proc. ACM Program. Lang.*, 5(POPL), jan 2021

11. David Durst, Matthew Feldman, Dillon Huff, David Akeley, Ross G. Daly, Gilbert Louis Bernstein, **Marco Patrignani**, Kayvon Fatahalian, and Pat Hanrahan. Type-directed scheduling of streaming accelerators. In *Proceedings of the 41st ACM SIGPLAN International Conference on Programming Language Design and Implementation, PLDI 2020, London, UK, June 15-20, 2020*, pages 408–422, 2020

12. Carmine Abate, Roberto Blanco, Adrien Durier, Deepak Garg, Catalin Hritcu, **Marco Patrignani**, Eric Tanter, and Jeremy Thibault. Trace-relating compiler correctness and secure compilation. In Peter Müller, editor, *Programming Languages and Systems*, pages 1–28, Cham, 2020. Springer

13. Carmine Abate, Roberto Blanco, Deepak Garg, Catalin Hritcu, **Marco Patrignani**, and Jeremy Thibault. Journey Beyond Full Abstraction: Exploring Robust Property Preservation for Secure Compilation. In *Proceedings of the 32th IEEE Computer Security Foundations Symposium CSF 2019, Hoboken, USA*, CSF, 2019. **Distinguished Paper Award**

14. **Marco Patrignani** and Deepak Garg. Robustly safe compilation. In *Programming Languages and Systems - 28th European Symposium on Programming, ESOP 2019*, ESOP'19, 2019

15. Dominique Devriese, **Marco Patrignani**, and Frank Piessens. Parametricity versus the universal type. In *Proceedings of the 45th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL 2018, Los Angeles, CA, USA*, 2018

16. **Marco Patrignani** and Deepak Garg. Secure Compilation and Hyperproperties Preservation. In *Proceedings of the 30th IEEE Computer Security Foundations Symposium CSF 2017, Santa Barbara, USA*, CSF 2017, 2017

17. **Marco Patrignani**, Dominique Devriese, and Frank Piessens. On Modular and Fully-Abstract Compilation. In *Proceedings of the 29th IEEE Computer Security Foundations Symposium CSF 2016, Lisbon, Portugal*, CSF 2016, 2016

18. Dominique Devriese, **Marco Patrignani**, and Frank Piessens. Fully-abstract compilation by approximate back-translation. In *Proceedings of the 43rd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, POPL 2016, St. Petersburg, FL, USA, January 20 - 22, 2016*, pages 164–177, 2016

19. Adriaan Larmuseau, **Marco Patrignani**, and Dave Clarke. Implementing a Secure Abstract Machine. In *Proceedings of the 31th Annual ACM Symposium on Applied Computing*, SAC '16. ACM, 2016

20. Adriaan Larmuseau, **Marco Patrignani**, and Dave Clarke. A secure compiler for ML modules. In *Programming Languages and Systems - 13th Asian Symposium, APLAS 2015, Pohang, South Korea, November 30 - December 2, 2015, Proceedings*, pages 29–48, 2015

21. Adriaan Larmuseau, **Marco Patrignani**, and Dave Clarke. A high-level model for an assembly language attacker by means of reflection. In *Dependable Software Engineering: Theories, Tools, and Applications - First International Symposium, SETTA 2015, Nanjing, China, November 4-6, 2015, Proceedings*, pages 168–182, 2015

22. **Marco Patrignani** and Dave Clarke. Fully Abstract Trace Semantics of Low-level Isolation Mechanisms. In *Proceedings of the 29th Annual ACM Symposium on Applied Computing*, SAC '14, pages 1562–1569. ACM, 2014

23. **Marco Patrignani**, Dave Clarke, and Frank Piessens. Secure Compilation of Object-Oriented Components to Protected Module Architectures. In *Proceedings of the 11th Asian Symposium on Programming Languages and Systems (APLAS'13)*, volume 8301 of *LNCS*, pages 176–191, 2013

24. **Marco Patrignani**, Dave Clarke, and Davide Sangiorgi. Ownership Types for the Join Calculus. In *FMOODS/FORTE 2011*, volume 6722 of *LNCS*, pages 289–303, 2011

Theses

1. **Marco Patrignani**. *The Tome of Secure Compilation: Fully Abstract Compilation to Protected Modules Architectures*. PhD thesis, KU Leuven, Leuven, Belgium, May 2015

Professional Activities

Teaching (. . . are ongoing courses)

2022-23 → . . .	Advanced Programming [bsc, 6cfu] (@UniTn)
2022-23 → . . .	Programming Language Semantics [msc, 6cfu] (@UniTn)
2021-22 → . . .	Programmazione 2 [bsc, 6cfu](@UniTn)
2021-22 → 22-23	Doctoral course on secure compilation (@UniTn) (+@UniPi 21-22)
2021-22	Formal Methods in Security (IFC part) (@CISPA & UdS)
2018-19 → 20-21	cs358: Programming Language Foundations [winter] (@Stanford)
2018-19 → 20-21	cs350: Secure Compilation [spring] (@Stanford)
2017-18 → 18-19	Instructor for the seminar on secure compilation (@CISPA & UdS)
2017-18	Topic supervisor on the CISPA joint conference seminar. (@CISPA & UdS)
2011-12 → 14-15	Comparative Programming Languages: TA *[plus lectures]*; (@ KUL)
2013-14 → 14-15	Problem & solving: TA and organisation. (@ KUL)
2010-11 → 12-13	Fundamentals of Computer Science: TA *[plus lectures]*. (@ KUL)

Note: P&O is a software development course project equivalent to a Bachelor thesis.

Students ([P]hD and [R]esearch assistants first, then [M]aster, [B]achelor, and [I]nterns)

@CISPA	Xaver Fabian [P] (since 2021/09), Matthis Kruse [P] (from 2021/10, dropped in 2025/03)
@UniTN	Andrea Stedile [R] (2024/02→2025/11), Luca Giacometti [R] (2024/02→09)
@UniTN	Federico Frigerio [B], Filippo Lollato [B], Enrico Dalla Croce [B], Matteo Possamai [B], Stefano Girardi [B], Filippo Marcon [B], Jarkko Suominen [M], Stefano Dal Mas [M], Michele Mattioli [B], Giovanni Maria Zanchetta [B], Andrea Carzeri [B], Ilya Emelyanov [B], Daniele Di Cesare [B], Giovanni Feltrin [B], Lorenzo Bodini [B], Alessio Amiri [B], Giulio Bazzoli [B], Alfredo Bombace [B], Luca Dematte [B], Lorenzo Midiri [B], Davide Minatel [B], Matteo Parma [B], Francesco Piazzi [B], Giovanni Zanibellato [B], Federico Pezzato [M], Matteo Possamai [B], Patrick Cerka [B], Sebastiano Tocci [B], Luca Podavini [B], Fabio Giovanazzi [B], Alessio Zeni [B], Luca Sartore [B], Andrea Ballarini [B], Roberto Cornacchiari [B], Luca Giacometti [B], Sabin Andone [M], Andrea Stedile [M], Sacha Bordais-Poulard [M], Guillaume Massal [M]
@Stanford	Koby Chan [M], Eric Martin [M], Wilson Nguyen [I], Nicholas Barbier [I], Max DiGiacomo [I]
@CISPA	Xaver Fabian [M], Julian Maurer [B]
@MPI-SWS	Maximilian Schwenger [B] (with Deepak Garg), Akram El-Korashy [M] (with Deepak Garg)
@KU Leuven	Matthias van der Hallen [B], Pieter van Geel [B]

Community Duties

Keynote GTMFS '24

Chair PRISC '25, PRISC '24, FCS '23, FCS '22

PC PLDI '26, CSF '26, POPL '26, SecDev '25, SeRIM '25, ItaSec '25, PRISC '24, CSF '24, SecDev '23, PRISC '23, POPL '23; Aplas '22; SecDev '22; SecDev '21; CCS '21; CSF '20; PRISC '19; SAC '19; PRISC '18; SAC '18; SCM '17; SAC '17; FCS '16; SAC '16; SAC '15; ICCSW '14.

External Reviewer Elsevier JISAS; JFP; CSF '21; POPL '16; CSF '15; Elsevier COMLAN; FOCLASA '14; GPCE '14; SWJ; IFM '13; FSEN '13; ESOP '12; IWACO '11.

Languages

Italian	Mothertongue.
English	Spoken every day and used to write international articles since 2010.
Dutch & German	Elementary proficiency.

Contacts

Prof. Frank Piessens

`frank.piessens@cs.kuleuven.be`

Phone: +32 16 3 27603

Address: Celestijnenlaan 200A, B-3001 Heverlee, Belgium

Prof. Deepak Garg

`dg@mpi-sws.org`

Phone: +49 681 9303 9201

Address: MPI-SWS Campus E1 5 Saarbruecken, 66123 Germany

Prof. Dominique Devriese

`dominique.devriese@kuleuven.be`

Phone: +32 2 629 3752

Address: Celestijnenlaan 200A, B-3001 Heverlee, Belgium

Prof. Marco Guarnieri

`marco.guarnieri@imdea.org`

Phone: (+34) 91-101-2202 ext 4320

Address: IMDEA Software Institute, Campus Montegancedo 28223 Pozuelo de Alarcón (Madrid) Spain

Prof. John Mitchell

`jcm@stanford.edu`

Phone: +1 650 723 8634

Address: Department of Computer Science, Gates 476, Stanford University, USA

Prof. Amal Ahmed

`amal@ccs.neu.edu`

Phone: +1 617 373 2076

Address: College of Computer and Information Science 328 West Village H 360 Huntington Avenue Boston, MA 02115