Fausto Spoto

Associate Professor, Department of Computer Science, University of Verona, Italy
+39-3204352527, fausto.spoto@univr.it

Education

University of Pisa, Italy
Ph.D. in Computer Science, 1995–1999.

- **Thesis:** Analysis of Logic Programs through Linear Refinement.
- **Advisor:** Prof. Giorgio Levi (Department of Computer Science, Pisa, Italy).
- **Reviewers:** Prof. Michael Codish (Department of Computer Science, Ben-Gurion University of the Negev, Israel) and Prof. Maurice Bruynooghe (Faculty of Engineering Science, Leuven, The Netherlands).

University of Pisa, Italy
Master in Computer Science (cum laude), 1991–1995.

- **Thesis:** Concrete and Abstract Semantics of Prolog with Cut.
- **Advisors:** Prof. Giorgio Levi (Department of Computer Science, Pisa, Italy) and Prof. Egon Börger (Department of Computer Science, Pisa, Italy).

Academic Evaluation to Full Professor (*Abilitazione*)

Ministry of University and Research, Rome, Italy
Habilitation to the role of full professor in Computer Science, January 2022–January 2033

- Successfully evaluated to the role of full professor in Computer science.
- In Italy, associate professors can apply for a national selection in order to get an official *abilitazione* to a position of full professor. This national selection verifies that the candidate reaches the scientific and teaching criteria for the award of a position as full professor. During the period of validity of this title, the associate professor might be offered an actual post as full professor in any Italian university. This second step, largely dependent on the budget of the university and on internal policies, might require some years.

Academic Experience

University of Verona, Department of Computer Science, Italy
Associate Professor in Computer Science, 2005–today.
Assistant Professor in Computer Science, 2002–2005.
Postdoctoral Researcher in Computer Science, 2001–2002.

- research in the area of programming languages, semantics, verification, blockchain, smart contracts.
- teaching programming languages, smart contracts, abstract interpretation, software verification (bachelor, master, Ph.D.).
- mentoring graduate and postgraduate students.

Université de la Réunion, Saint-Denis, France
Visiting Professor, February 2023 – April 2023.

- collaboration with Prof. Frédéric Mesnard and Etienne Payet.

- teaching an introduction to blockchain (master).
- research on verification of smart contracts.

Universidad Complutense, Madrid, Spain
Visiting Professor, July 2018 – September 2018.

- collaboration with Prof. Elvira Albert and Samir Genaim.
- research on abstract interpretation of Java.

RWTH, Aachen, Germany
Visiting Professor, February 2011 – September 2011.

- sabbatical leave.
- collaboration with Prof. Jürgen Giesl.
- research on termination analysis of Java programs.

Université de la Réunion, Saint-Denis, France
Visiting Professor, August 2010 – January 2011.

- sabbatical leave.
- collaboration with Prof. Frédéric Mesnard and Etienne Payet.
- research on termination analysis of Java programs.

University of Washington, Seattle, USA
Visiting Professor, July 2009 – September 2009.

- collaboration with Prof. Thomas Jensen.
- research on abstract interpretation of Java.

University of Chiang Mai, Thailand
Visiting Professor, December 2007 – January 2008.

- supported by an ASEM-DUO fellowship
- teaching an introduction to abstract intepretation of Java (master).

Universidad Politécnica, Madrid, Spain
Visiting Researcher, June 2006.

- collaboration with Prof. Elvira Albert.
- research on abstract interpretation.

Université de Rennes I, France
Postdoctoral Researcher in Computer Science, July 2003 – September 2003.

- collaboration with Prof. Thomas Jensen.
- research on abstract interpretation of object-oriented programs and Java bytecode.

IT University and DIKU, Copenhagen, Denmark
Visiting Researcher, July 2002 – August 2002.

- collaboration with Prof. Fritz Henglein.
- research on the relationship between abstract interpretation and type systems.

Katholieke Universiteit, Nijmegen, The Netherlands
Visiting Researcher, June 2002.

- collaboration with Prof. Erik Poll.

- research on the Java Modeling Language.

School of Computer Studies, Leeds, UK
Visiting Researcher, September 2001 – December 2001, October 2002 – November 2002.

- collaboration with Dr. Patricia Hill.
- research on abstract interpretation of Java bytecode.

INRIA/CNRS research centre IRISA, Rennes, France
Postdoctoral Researcher in Computer Science, January 2000 – December 2000.

- collaboration with Prof. Thomas Jensen.
- research on abstract interpretation of object-oriented programs and Java bytecode.

School of Computer Studies, Leeds, UK
Visiting Researcher, October 1998 – March 1999.

- collaboration with Dr. Patricia Hill.
- research on abstract interpretation of logic programs.

Fellowships, Research Projects, Invitations

1999 European fellowship for Training and Mobility of Researchers (TMR) for taking part in the *Practice and Principles of Declarative Programming '99* conference in Paris, France.

1999 Contribution to the EPSRC gr/m05645 UK research project *Software Support for Constraint Logic Programming* (in Leeds, UK).

2000 Contribution to the European research project *SECSAFE* on the security of information systems based on static analysis (in Rennes, France).

2001-2002 Contribution to the Italian MURST *Abstract Interpretation, Type-Systems and Control-Flow Analysis* project (in Verona).

2001 Co-author, with Patricia M. Hill, of the UK research project EPSRC gr53401 *Escape Analysis for Object-Oriented Languages* (in Leeds, UK).

2002 Contribution to the *VERIFICARD* European research project on the automatic verification of JavaCard microchips (in Nijmegen, The Netherlands).

2002-2004 Contribution to the Italian MURST project *CoVer: Constraint-Based Verification of Reactive Systems* (in Verona).

2004 Co-author, with Patricia M. Hill, of the UK research project *Static Analysis for Numerical Stability* funded by the Royal Society of Sciences (in Leeds, UK).

2002-2005 Contribution to the Italian FIRB project *SPY-Mod: Interpretazione Astratta e Model Checking per la Verifica di Sistemi Embedded* (Verona).

2005-2007 Contribution to the Italian MURST project *AIDA* (Verona).

2008 ASEM-DUO fellowship to visit the Chiang Mai University (Thailand).

2008 Contribution to the second edition of the Italian PRIN project AIDA (Verona).

2009 CooperInt Italian fellowship of the University of Verona to visit the University of Washington (Seattle, USA).

2011 Von Humboldt Stiftung German fellowship (probably the most prestigious German academic fellowship) to visit the RWTH university in Aachen, Germany.

2012 Invitation to the Dagstuhl Seminar (Germany) on *Analysis of Executables: Benefits and Challenges*.

2018 CooperInt Italian fellowship to visit the Universidad Complutense, Madrid, Spain.

Creation of New Companies

Vero4Chain Srl, Verona, Italy
Cofounder and CEO, October 2021 – today.

- a company providing software solutions and consultancy about blockchain technology and its applications.
- currently working with wine and water distribution companies in Italy and Switzerland.

JuliaSoft Srl, Verona, Italy
Cofounder and main shareholder, October 2010 – July 2018.

- a company specialized in the production of software tools for the automatic verification of Java bytecode.
- application of theoretical results derived from his scientific research.
- company sold to GrammaTech (`https://www.grammatech.com/`), that integrated the technology into its commercial products.

Industrial Projects

Noleggiare Srl, Verona, Italy, `https://www.noleggiare.it/`
Research and Development project, January – December 2023.

- the project develops a new innovative algorithm for the estimation of the cost of rent for vehicles, able to learn the best price from the previous years' sales.

CJDNS SASU, Poissy, France, `https://github.com/cjdelisle/CJDNS-contact`
Research and Development project, July – December 2021.

- the project studied the type system of the Rust programming language, with the goal of proving its termination. Rust is the language increasingly used in the code of CJDNS SASU, for the PKT blockchain and coin (`https://pkt.cash/`).

Ailia SA, Lugano, Switzerland, `https://takamaka.io/`
Research and Development project, January – December 2019, June – December 2020.

- the project developed the theory and the code for the run-time support of a new programming language for smart contracts in a subset of Java, called Takamaka, able to simplify the creation of new smart contracts; the Takamaka language can be described as Solidity in Java. It is the language of choice of Ailia's Takamaka blockchain and of the Hotmoka blockchain (see below, in the Software Products section).

Commerc.io Srl, Schio, Italy, `https://commercio.network/`
Research and Development project, October – December 2020.

- the project studied the Cosmos SDK for the Cosmos blockchain based on Tendermint, with the goal of producing a tutorial and user documentation for prospective programmers of new blockchain applications.

Corvallis SpA, Padova, Italy, `https://corvallis.it/`
Research and Development project, July 2015 – May 2017.

- the project studied new semantical technology for the extraction of information from databases, and their representation on desktop and mobile applications.

AddValue Spa, Verona, Italy, `https://www.addvalue.it/`
Research and Development project, January – December 2015.

- the project studied and compared the existing and emerging technologies for the development of rich internet applications (RIAs), comparing their cloud support and their applicability to the different mobile architectures.

Teaching Experience

C Programming, Verona, Italy
Teaching module at the level of bachelor in Computer Science, 2012 – today.

- an introduction to programming by using the C language as the reference language of choice. It covers the full language features, including arrays, functions, recursion, pointers, structures and dynamic memory management.

Java Programming and Software Engineering, Verona, Italy
Teaching module at the level of bachelor in Computer Science, 2009 – today.

- an introduction to Java and to object-oriented programming, with hints to some design patterns that pave the way to software engineering. It covers standard material such as objects, classes, methods, interfaces, abstract methods and classes, overriding, constructor chaining, anonymous classes and lambda expressions, but also more advanced topics such as concurrecy, lazy and parallel streams and functional programming in Java.

Introduction to Information Technology, Verona, Italy
Teaching module at the level of the bachelors in Literature and Languages, 2003 – 2010.

- a basic introduction to information technology for students from the humanities: digitalization and information representation, hardware, memory, CPU, input/output, devices, software, flow diagrams, algorithms.

Compiler Construction, Verona, Italy
Teaching module at the level of bachelor in Computer Science, 2003 – 2013.

- lexical analysis, grammar hierarchy, syntactical analysis, type-checking, semantical analysis, code generation; the theoretical presentation is coupled with examples and experiments with an actual compiler for a simple object-oriented language (Kitten, see the Software Products section below), that generates executable Java bytecode.

Functional Programming, Verona, Italy
Teaching module at the level of master in Computer Science, 2005 – 2007.

- functional programming and an introduction to the Caml language, with examples of implementation of complex data structures in Caml, including considerations about their worst-case and amortized complexity.

Miscellaneous
Teaching modules at the level of bachelor, master and Ph.D. in Computer Science, 1998 – today.

- These were contributions to other, short-lived teaching experiments. They were included in other teaching modules in Verona, such as some classes on blockchain theory, Solidity, mobile programming, concurrent programming, SystemC, abstract interpretation and software verification. Contribution to teaching C programming in Leeds

(UK), during the Ph.D., abstract interpretation in Chiang Mai (Thailand), as part of an ASEM-DUO fellowship, and blockchain and Solidity in Réunion (France), inside the framework of the Erasmus EU programme for staff mobility.

Software Products

Mokamint

A generic proof-of-space engine, March 2023 – February 2024 (expected).

- Java, open source, Apache 2.0.
- `https://github.com/Mokamint-chain/mokamint`.
- Mokamint consists of the networking and consensus layers for building new blockchains based on the proof-of-space distributed consensus: who reserves more disk space for mining has more chance of winning the right to mine the next block of the blockchain. The idea comes from the Signum blockchain (`https://signum.network/`). While Signum is monolithic code targeted at a vertical blockchain application, Mokamint is a generic engine, which means that new applications can be built over Mokamint, as new Mokamint applications, in the same way as Tendermint applications are built over the Tendermint byzantine fault tolerant generic engine (`https://tendermint.com/`), later rebranded into Ignite (`https://ignite.com/`). Mokamint is built as a collection of software components communicating through web sockets and Json messages, which makes it language agnostic and will allow the creation of future Mokamint application in any programming language.
- under development.

Hotmoka

An application layer with smart contracts in Takamaka, June 2019 – September 2021.

- Java, open source, Apache 2.0.
- `https://github.com/Hotmoka/hotmoka`.
- Hotmoka is a framework for programming a network of communicating nodes, in a subset of Java called Takamaka. Nodes can belong to a blockchain or can be Internet of Things (IoT) devices. Nodes allow one to score new code, instantiate new objects and call their entry points (Java methods). Consequently, Takamaka looks like a Java counterpart of Solidity. Currently, there are Hotmoka nodes with local, non-distributed storage, ideal for IoT devices, and a node built over Tendermint, which leads to a blockchain of byzantine fault tolerant nodes programmed with smart contracts in Takamaka. A test network is live at `panarea.hotmoka.io`. A main network has been deployed by the Vero4Chain Srl company at `blueknot.vero4chain.it`. They can be contacted by command-line or through the Mokito Android app (see below).
- completed; undergoing refactoring and bug fixing; integration over Mokamint foreseen in 2024.

Mokito

A wallet for Hotmoka nodes, June 2020 – September 2021.

- Kotlin, open source, Apache 2.0.
- `https://github.com/Hotmoka/HotmokaAndroid`.
- `https://play.google.com/store/apps/details?id=io.hotmoka.android.mokito`
- Mokito allows Android users to connect to a Hotmoka node (blockchain or IoT), navigate its manifest and the objects in its memory, create and store accounts, transfer crypto tokens between accounts and visualize ERC20-like contracts for fungible tokens.
- completed; undergoing refactoring and bug fixing.

Julia

A generic static analyzer for Java bytecode, June 2003 – July 2018.

- Java, property of GrammaTech.
- `https://www.grammatech.com/`.
- A static analyzer for verifying security and correctness of applications compiled in Java bytecode. It applies the scientific results of Fausto Spoto's research to a concrete case of analysis, with the ability of scaling to software of significant size. This tool was at the heart of the JuliaSoft Srl company (see above, Creation of New Companies) and has been subsequently acquired by GrammaTech, together with the company itself. It is now integrated into the analysis tools sold by GrammaTech.

Kitten

A didactic compiler for a simple object-oriented language, September 2005 – March 2015.

- Java, open source, GPL 2.0.
- `https://github.com/spoto/Kitten`.
- A minimal compiler for a simple object-oriented language, generating executable code in Java bytecode. It's meant to be a didactical tool to learn the inner working of a compiler over an actual implementation, open to extensions and modifications. Kitten was used for the course on compiler construction in Verona (see the section on Teaching Experience).

Peer-reviewed Publications

International Journals

1. Fausto Spoto. *Operational and Goal-Independent Denotational Semantics for Prolog with Cut*. In **Journal of Logic Programming**, 42(1):1-46, January 2000.
2. Patricia M. Hill and Fausto Spoto. *Generalising Def and Pos to Type Analysis*. In **Journal of Logic and Computation**, 12(3), June 2002, pages 497-542.
3. Giorgio Levi and Fausto Spoto. *Pair-Independence and Freeness Analysis through Linear Refinement*. In **Information and Computation**, 182(1), pages 14-52, 2003.
4. Fausto Spoto and Thomas Jensen. *Class Analyses as Abstract Interpretations of Trace Semantics*. In **ACM TOPLAS**, volume 25, September 2003, pages 578-630.
5. Patricia M. Hill and Fausto Spoto. *Logic Programs as Compact Denotations*. In **Elsevier Computer Languages, Systems and Structures**, volume 29, issue 3, pages 45-73, October 2003.
6. Patricia M. Hill and Fausto Spoto. *Deriving Escape Analysis by Abstract Interpretation*. In **Higher Order and Symbolic Computation**, volume 19, pages 415-463, 2006.
7. Fausto Spoto. *Optimality and Condensing of Information Flow through Linear Refinement*. In **Theoretical Computer Science**, 2007, volume 388, pages 53-82. Elsevier.
8. Fausto Spoto, Fred Mesnard and Etienne Payet. *A Termination Analyser for Java Bytecode Based on Path-Length*. In **ACM TOPLAS**, volume 32, number 3, 2010.
9. Fausto Spoto and Etienne Payet. *Magic-sets for Localised Analysis of Java Bytecode*. In **Higher-Order and Symbolic Computation**, volume 23, number 1, pages 29–86, 2010.
10. Fausto Spoto. *Precise null-Pointer Analysis*. In **Software and Systems Modeling**, volume 10, number 2, pages 219–252, 2011.

11. Étienne Payet and Fausto Spoto. *Static Analysis of Android Programs.* In **Information & Software Techonology**, volume 54, number 11, pages 1192–1201, 2012.

12. Đurica Nikolić and Fausto Spoto. *Inferring Complete Initialization of Arrays.* In **Theoretical Computer Science**, volume 484, pages 16–40, 2013.

13. Đurica Nikolić and Fausto Spoto. *Reachability Analysis of Program Variables.* In **ACM Transactions on Programming Languages and Systems**, volume 35, number 4, 2013.

14. Giovanni Scardoni, Gabriele Tosadori, Mohammed Faizan, Fausto Spoto, Franco Fabbri and Carlo Laudanna. *Biological Network Analysis with CentiScaPe: Centralities and Experimental Dataset Integration.* In **F1000Research**, volume 3, 2014.

15. Enrico Scapin and Fausto Spoto. *Field-sensitive Unreachability and non-Cyclicity Analysis.* In **Science of Computer Programming**, volume 95, pages 359–375, 2014.

16. Giovanni Scardoni, Gabriele Tosadori, Sakshi Pratap, Fausto Spoto and Carlo Laudanna. *Finding the Shortest Path with PesCa: A Tool for Network Reconstruction.* In **F1000Research**, volume 4, 2015.

17. Gabriele Tosadori, Ivan Bestvina, Fausto Spoto, Carlo Laudanna and Giovanni Scardoni: *Creating, Generating and Comparing Random Network Models with Network Randomizer.* In **F1000Research**, volume 5, 2016.

18. Fausto Spoto, Elisa Burato, Michael D. Ernst, Pietro Ferrara, Alberto Lovato, Damiano Macedonio and Ciprian Spiridon. *Static Identification of Injection Attacks in Java.* In **ACM TOPLAS**, volume 41, number 3, 2019.

19. Amit Kr. Mandal, Federica Panarotto, Agostino Cortesi, Pietro Ferrara and Fausto Spoto. *Static analysis of Android Auto infotainment and on-board diagnostics II apps.* In **Software, Practice and Experience**, volume 49, number 7, 2019.

20. Pietro Ferrara, Amit Kr. Mandal, Agostino Cortesi and Fausto Spoto. *Cross-Programming Language Taint Analysis for the IoT Ecosystem.* In **Electronic Communication of the European Association of Software Science and Technology**, volume 77, 2019.

21. Pietro Ferrara, Agostino Cortesi and Fausto Spoto. *From CIL to Java bytecode: Semantics-based Translation for Static Analysis Leveraging.* **Science of Computer Programming**, volume 191, 2020.

22. Pietro Ferrara, Luca Olivieri and Fausto Spoto. *Static Privacy Analysis by Flow Reconstruction of Tainted Data.* **International Journal of Software Engineering and Knowledge Engineering**, volume 31, number 7, 2021.

23. Pietro Ferrara, Amir Kr. Mandal, Agostino Cortesi and Fausto Spoto. *Static Analysis for Discovering IoT Vulnerabilities.* **International Journal on Software Tools for Technology Transfer**, volume 23, number 1, 2021.

24. Marco Crosara, Luca Olivieri, Fausto Spoto and Fabio Tagliaferro. *Fungible and non-Fungible Tokens with Snapshots in Java.* **Cluster Computing**, volume 26, number 5, pages 2701–2718, 2023.

25. Fausto Spoto, Sara Migliorini, Mauro Gambini and Andrea Benini. *On the Use of Generic Types for Smart Contracts.* **Cluster Computing**, volume 26, number 4, pages 2099–2113, 2023.

26. Luca Olivieri, Vincenzo Arceri, Badaruddin Chachar, Luca Negrini, Fabio Tagliaferro, Fausto Spoto, Pietro Ferrara, Agostino Cortesi. *General-Purpose Languages for Blockchain Smart Contracts Development: A Comprehensive Study.* **IEEE Access**, volume 12, pages 166855–166869, 2024.

27. Muhammad Bin Saif, Sara Migliorini, Fausto Spoto. *Efficient and Secure Distributed Data Storage and Retrieval Using Interplanetary File System and Blockchain.* **Future Internet**, volume 16, number 3, article 98, 2024.

28. Muhammad Bin Saif, Sara Migliorini, Fausto Spoto. *A Survey on Data Availability in Layer 2 Blockchain Rollups: Open Challenges and Future Improvements.* **Future Internet**, volue 16, number 9, article 315, 2024.

29. Luca Olivieri, Fausto Spoto. *Software verification challenges in the blockchain ecosystem.* **International Journal on Software Tools for Technology Transfer**, volume 16 number 4, pages 431–444, 2024.

30. Luca Olivieri, Luca Negrini, Vincenzo Arceri, Thomas P. Jensen, Fausto Spoto: *Design and Implementation of Static Analyses for Tezos Smart Contracts.* **Distributed Ledger Technology: Research and Practice**, volume 4, number 2, article 13, 2025

International Conferences

31. Giorgio Levi and Fausto Spoto. *An Experiment in Domain Refinement: Type Domains and Type Representations for Logic Programs.* In Catuscia Palamidessi, Hugh Glaser, and Karl Meinke, editors, proc. of *PLILP/ALP'98*, Principles of Declarative Programming, volume 1490 of Lecture Notes in Computer Science, pages 152-169, Pisa, Italy, September 1998.

32. Fausto Spoto and Giorgio Levi. *Abstract Interpretation of Prolog Programs.* In A. M. Haeberer, editor, proc. of *AMAST'98*, the 7th International Conference on Algebraic Methodology and Software Technology, volume 1548 of Lecture Notes in Computer Science, pages 455-470, Amazonia, Manaus, Brazil, January 1999.

33. Patricia M. Hill and Fausto Spoto. *Freeness Analysis through Linear Refinement.* In Static Analysis Symposium, *SAS'99*, volume 1694 of Lecture Notes in Computer Science, pages 85-100, Venice, Italy, September 1999.

34. Giorgio Levi and Fausto Spoto. *Non Pair-Sharing and Freeness Analysis through Linear Refinement.* In proc. of *PEPM'00*, the ACM SIGPLAN Workshop on Partial Evaluation and Semantics-Based Program Manipulation, pages 52-61, Boston, USA, January 2000.

35. Patricia M. Hill and Fausto Spoto. *Analysis of Downward Closed Properties of Logic Programs.* In *AMAST'00*, Algebraic Methodology and Software Technology, volume 1816 of Lecture Notes in Computer Science, pages 181-196, Iowa City, USA, May 2000.

36. Fausto Spoto. *Watchpoint Semantics: A Tool for Compositional and Focussed Static Analyses.* In P. Cousot, editor, *SAS'01*, the Static Analysis Symposium, volume 2126 of Lecture Notes in Computer Science, pages 127-145. Paris, France, July 2001.

37. Thomas Jensen and Fausto Spoto. *Class Analysis of Object-Oriented Programs through Abstract Interpretation.* In F. Honsell and M. Miculan, editors, *FOSSACS'01*, Foundations of Software Science and Computation Structure, volume 2030 of Lecture Notes in Computer Science, pages 261-275. Genova, Italy, April 2001.

38. Gianluca Amato and Fausto Spoto. *Abstract Compilation for Sharing Analysis.* In H. Kuchen and K. Ueda, editors, proc. of *FLOPS'01*, the Fuji International Symposium on Functional and Logic Programming, volume 2024 of Lecture Notes in Computer Science, pages 311-325, Tokyo, Japan, March 2001.

39. Patricia M. Hill and Fausto Spoto. *A Foundation of Escape Analysis.* In H. Kirchner and C. Ringeissen editors, proc. of *AMAST'02*, Algebraic Methodology and Software Technology, volume 2422 of Lecture Notes in Computer Science, pages 380-395, St. Gilles les Bains, La Réunion island, France, September 2002.

40. Patricia M. Hill and Fausto Spoto. *A Refinement of the Escape Property.* In A. Cortesi, editor, proc. of *VMCAI'02* workshop on Verification, Model Checking and Abstract Interpretation, volume 2294 of Lecture Notes in Computer Science, pages 154-166, Venice, Italy, January 2002.

41. Patricia M. Hill and Fausto Spoto. *Logic Programs as Compact Denotations.* In G. Gupta editor, proc. of *PADL'03*, Practical Aspects of Declarative Languages, volume 2562 of Lecture Notes in Computer Science, pages 339-356, New Orleans, Louisiana, USA.

42. Fausto Spoto and Erik Poll. *Static Analysis for JML's assignable Clauses.* In G. Ghelli editor, proc. of *FOOL-10*, the 10th International Workshop on Foundations of Object-Oriented Languages, New Orleans, Louisiana, USA, January 2003.

43. Samir Genaim and Fausto Spoto, *Information Flow Analysis for Java Bytecode.* In R. Cousot editor, proc. of *VMCAI'05*, the Sixth International Conference on Verification, Model Checking and Abstract Interpretation, volume 3385 of Lecture Notes in Computer Science, pages 346-362. Paris, France, January 2005.

44. Fausto Spoto. *Julia: A Generic Static Analyser for the Java Bytecode.* In proc. of *FTfJP'05*, the 7th Workshop on Formal Techniques for Java-like Programs, Glasgow, Scotland, July 2005.

45. Stefano Secci and Fausto Spoto, *Pair-Sharing Analysis of Object-Oriented Programs.* In proc. of *SAS'05*, the 12th International Static Analysis Symposium, volume 3672 of Lecture Notes in Computer Science, pages 320-335. London, United Kingdom, September 2005.

46. Fausto Spoto, *Information Flow is Linear Refinement of Constancy.* In proc. of *ICTAC'05*, the International Colloquium on Theoretical Aspects of Computing, volume 3722 of Lecture Notes in Computer Science, pages 351–365. Hanoi, Vietnam, October 2005.

47. Fausto Spoto, Patricia M. Hill and Étienne Payet. *Path-Length Analysis for Object-Oriented Programs.* Presented at *EAAI'06*, the 1st International Workshop on Emerging Applications of Abstract Interpretation, March 2006. Vienna, Austria

48. Stefano Rossignoli and Fausto Spoto, *Detecting Non-Cyclicity by Abstract Compilation into Boolean Functions.* In proc. of *VMCAI'05*, the 7th International Conference on Verification, Model Checking and Abstract Interpretation, volume 3855 of Lecture Notes in Computer Science, pages 95-110. Charleston, South Carolina, USA, January 2006.

49. Étienne Payet and Fausto Spoto. *Magic-Sets Tranformation for the Analysis of Java Bytecode.* In proc. of *SAS'07*, Static Analysis Symposium, August 2007, Kogens Lyngby, Denmark, volume 4634 of Lecture Notes in Computer Science, pages 452-467

50. Samir Genaim and Fausto Spoto. *Constancy Analysis.* In Marieke Huisman, editor, *FTfJP'08*, 10th Workshop on Formal Techniques for Java-like Programs, Paphos, Cyprus, July 2008.

51. Fausto Spoto. *Nullness Analysis in Boolean Form.* In proc. of *SEFM'08*, the 6th IEEE International Conference on Software Engineering and Formal Methods, Cape Town, South Africa, November 2008, pages 21-30, IEEE Computer Society Press.

52. Étienne Payet and Fausto Spoto. *Experiments with Non-Termination Analysis for Java Bytecode.* In Samir Genaim and Elvira Albert editors, *Bytecode'09*, the 4th International Workshop on Bytecode Semantics, Verification, Analysis and Transformation, York, UK, March 2009. In Electronic Notes in Theoretical Computer Science, 253(5), 83-96.

53. Fausto Spoto, Lunjin Lu and Fred Mesnard. *Using CLP Simplifications to Improve Java Bytecode Termination Analysis.* In Samir Genaim and Elvira Albert editors, *Bytecode'09*, the 4th International Workshop on Bytecode Semantics, Verification, Analysis and Transformation, York, UK, March 2009. In Electronic Notes in Theoretical Computer Science, 253(5), 129–144.

54. Fausto Spoto. *The Nullness Analyser of Julia.* In Edmund M. Clarke and Andrei Voronkov editors, *LPAR'10*, the 16th International Conference on Logic for Programming, Artificial Intelligence, and Reasoning, Dakar, Senegal, April 2010. Volume 6355 of Lecture Notes in Computer Science, pages 405-424.

55. Fausto Spoto and Michael D. Ernst. *Inference of Field Initialization.* In *ICSE'11*, the 33rd ACM International Conference on Software Engineering, pages 231–240. Honolulu, Hawaii, 2011.

56. Etienne Payet and Fausto Spoto. *Static Analysis of Android Programs.* In *CADE'11*, the 23rd International Conference on Automated Deduction. Volume 6803 of Lecture Notes in Computer Science, pages 439–445. Wroclaw, Poland, 2011.

57. Đurica Nikolić and Fausto Spoto. *Automaton-based Array Initialization Analysis.* In *LATA'12*, the 6th International Conference on Language and Automata Theory and Applications. Volume 7183 of Lecture Notes in Computer Science, pages 420–432. A Coruña, Spain. 2012.

58. Đurica Nikolić and Fausto Spoto. *Definite Expression Aliasing Analysis of Program Variables.* In *ICTAC'12*, the 9th International Colloquium on Theoretical Aspects of Computing, volume 7521 of Lecture Notes in Computer Science, pages 74–89. Bangalore, India. 2012.

59. Đurica Nikolić and Fausto Spoto. *Reachability Analysis of Program Variables.* In *IJCAR'12*, the 6th International Joint Conference on Automated Reasoning. Volume 7364 of Lecture Notes in Computer Science, pages 423–438. Manchester, UK. 2012.

60. Alberto Lovato, Damiano Macedonio and Fausto Spoto. *A Thread-Safe Library for Binary Decision Diagrams.* In *SEFM'14*, the 12th International Conference on Software Engineering and Formal Methods. Volume 8702 of Lecture Notes in Computer Science, pages 35–49. Grenoble, France, 2014.

61. Etienne Payet and Fausto Spoto. *An Operational Semantics for Android Activities.* In *PEPM'14*, the ACM SIGPLAN 2014 workshop on Partial Evaluation and Program Manipulation, pages 121–132. San Diego, CA, 2014.

62. Michael D. Ernst, Alberto Lovato, Damiano Macedonio, Ciprian Spiridon and Fausto Spoto. *Boolean Formulas for the Static Identification of Injection Attacks in Java.* In *LPAR'15*, the 20th International Conference on Logic for Programming, Artificial Intelligence, and Reasoning. Suva, Fiji, November 2015. Volume 9450 of Lecture Notes in Computer Science, pages 130-145.

63. Michael D. Ernst, Alberto Lovato, Damiano Macedonio, Fausto Spoto, Javier Thaine. *Locking Discipline Inference and Checking.* In *ICSE'16*, the 38th International Conference on Software Engineering. Austin, TX, USA, May 2016, pages 1133-1144. ACM.

64. Michael D. Ernst, Damiano Macedonio, Massimo Merro, Fausto Spoto. *Semantics for Locking Specifications.* In *NFM'16*, the 8th International NASA Symposium on Formal Methods. Minneapolis, MN, USA, June 2016. Volume 9690 of Lecture Notes in Computer Science, pages 355-372.

65. Fausto Spoto. *The Julia Static Analyzer for Java.* Invited talk at *SAS'16*, the 23rd International Symposium on Static Analysis. Edinburgh, UK, September 2016. Volume 9837 of Lecture Notes in Computer Science, pages 39-57.

66. Pietro Ferrara, Elisa Burato, Fausto Spoto. *Security Analysis pf the OWASP Benchmark with Julia*. In 1st Italian Conference on Cybersecurity (ITASEC'17), Venice, Italy, January 17-20, 2017. Volume 1816 of CEUR Workshop Proceedings, pages 242–247.

67. Pietro Ferrara, Fausto Spoto. *Static Analysis for GDPR Compliance*. In 2nd Italian Conference on Cybersecurity (ITASEC'18), Milan, Italy, February 6-9, 2018. Volume 2058 of CEUR Workshop Proceedings.

68. Rocco Salvia, Pietro Ferrara, Fausto Spoto and Agostino Cortesi. *SDLI: Static Detection of Leaks Across Intents*. In TrustCom/BigDataSE, pages 1002–1007, 2018. IEEE.

69. Federica Panarotto, Agostino Cortesi, Pietro Ferrara, Amit Kr. Mandal and Fausto Spoto. *Static Analysis of Android Apps Interaction with Automotive CAN*. In SmartCom. Volume 11344 of Lecture Notes in Computer Science, pages 114–123, 2018.

70. Pietro Ferrara, Agostino Cortesi and Fausto Spoto. *CIL to Java-bytecode Translation for Static Analysis Leveraging*. In FormaliSE@ICSE, ACM Press, pages 40–49, 2018.

71. Amit Kr. Mandal, Agostino Cortesi, Pietro Ferrara, Federica Panarotto and Fausto Spoto. *Vulnerability Analysis of Android Auto Infotainment Apps*. In 15th ACM International Conference on Computing Frontiers (CF'18), pages 183–190, 2018.

72. Étienne Payet and Fausto Spoto. *Checking Array Bounds by Abstract Interpretation and Symbolic Expressions*. In IJCAR. Volume 10900 of Lecture Notes in Computer Science, pages 706–722, 2018.

73. Pietro Ferrara, Luca Olivieri and Fausto Spoto. *Tailoring Taint Analysis to GDPR*. In 6th annual privacy forum on Privacy Technologies and Policy (APF'18). Volume 11079 of Lecture Notes in Computer Science, pages 63–76, 2018.

74. Fausto Spoto. *A Java Framework for Smart Contracts*. In Financial Cryptography WTSC Workshop. Volume 11599 of Lecture Notes in Computer Science, pages 122–137, 2019.

75. Pietro Ferrara, Luca Olivieri and Fausto Spoto. *BackFlow: Backward Context-Sensitive Flow Reconstruction of Taint Analysis Results*. In 21st international conference on Verification, Model Checking, and Abstract Interpretation (VMCAI'20). Volume 11990 of Lecture Notes in Computer Science, pages 23–43, 2020.

76. Amit Kr. Mandal, Pietro Ferrara, Yuliy Khlyebnikov, Agostino Cortesi and Fausto Spoto. *Cross-program Taint Analysis for IoT Systems*. In 35th ACM/SIGAPP Symposium on Applied Computing (SAC'20), pages 1944–1952, ACM, 2020.

77. Fausto Spoto. *Enforcing Determinism of Java Smart Contracts*. In Financial Cryptography WTSC Workshop. Volume 12063 of Lecture Notes in Computer Science, pages 568–583, 2020.

78. Rocco Salvia, Agostino Cortesi, Pietro Ferrara and Fausto Spoto. *Intents Analysis of Android Apps for Confidentiality Leakage Detection*. In 7th International Doctoral Symposium on Applied Computation and Security Systems. Volume 1178 of Advances in Intelligent Systems and Computing, pages 43–65, 2020.

79. Luca Olivieri, Fausto Spoto and Fabio Tagliaferro. *On-Chain Smart Contract Verification over Tendermint*. In Financial Cryptography WTSC Workshop. Volume 12676 of Lecture Notes in Computer Science, pages 333–347, 2021.

80. Marco Bozzetti, Luca Olivieri and Fausto Spoto. *Cybersecurity Impacts of the Covid-19 Pandemic in Italy*. In 4th Italian Conference on Cybersecurity (ITASEC'21), virtual event, April 2021. Volume 2940 of CEUR Workshop Proceedings.

81. Marco Crosara, Luca Olivieri, Fausto Spoto and Fabio Tagliaferro. *Re-engineering ERC-20 Smart Contracts with Efficient Snapshots for the Java Virtual Machine*. In 3rd International Conference on Blockchain Computing and Applications (BCCA'21), November, 2021. Tartu, Estonia, pages 187–194, 2021, IEEE.

82. Andrea Benini, Mauro Gambini, Sara Migliorini and Fausto Spoto. *Power and Pitfalls of Generic Smart Contracts*. In 3rd International Conference on Blockchain Computing and Applications (BCCA'21), November, 2021. Tartu, Estonia, pages 179–186, 2021, IEEE.

83. Luca Olivieri, Fabio Tagliaferro, Vincenzo Arceri, Marco Ruaro, Luca Negrini, Agostino Cortesi, Pietro Ferrara, Fausto Spoto and Enrico Talin. *Ensuring Determinism in Blockchain Software with GoLiSA: An Industrial Experience Report*. In 11th ACM SIGPLAN International Workshop on the State Of the Art in Program Analysis (SOAP'22), San Diego, CA, USA, June 2022, pages 23–29. ACM.

84. Étienne Payet, David J. Pearce and Fausto Spoto. *On the Termination of Borrow Checking in Featherweight Rust*. In 14th International NASA Symposium on Formal Methods (NFM'22). Volume 13260 of Lecture Notes in Computer Science, pages 411–430. Pasadena, CA, USA, 2022.

85. Luca Olivieri, Thomas P. Jensen, Luca Negrini and Fausto Spoto: *MichelsonLiSA: A Static Analyzer for Tezos*. In IEEE International Conference on Pervasive Computing and Communications Workshops and other Affiliated Events (PerCom). Atlanta, GA, USA, pages 80–85, 2023, IEEE.

86. Luca Olivieri, Luca Negrini, Vincenzo Arceri, Fabio Tagliaferro, Pietro Ferrara, Agostino Cortesi and Fausto Spoto: *Information Flow Analysis for Detecting Non-Determinism in Blockchain*. In 37th European Conference on Object-Oriented Programming (ECOOP'23), Seattle, Washington, United States, pages 23:1-23:25, 2023.

87. Muhammad Bin Saif, Sara Migliorini, Fausto Spoto. *Blockchain-Based Multirole Authentication and Authorization in Smart Contracts with a Hierarchical Factory Pattern*. In 6th International Conference on Blockchain Computing and Applications (BCCA 2024), Dubai, UAE, November, 2024, pages 22–29, **IEEE**.

88. Luca Olivieri, Luca Negrini, Vincenzo Arceri, Pietro Ferrara, Agostino Cortesi, Fausto Spoto. *Static Detection of Untrusted Cross-Contract Invocations in Go Smart Contracts*. In 40th ACM/SIGAPP Symposium on Applied Computing (SAC 2025), March/April 2025, Catania, Italy, pages 338–347. **ACM**.

Editing

89. Fausto Spoto (ed.). *Proceedings of the First Workshop on Bytecode Semantics, Verification, Analysis and Transformation* (Bytecode'05). Volume 141, Issue 1 of Electronic Notes in Theoretical Computer Science, pages 1-274 (5 December 2005). Edinburgh, UK, April 2005.

90. Marieke Huisman and Fausto Spoto (eds). *Proceedings of the Second Workshop on Bytecode Semantics, Verification, Analysis and Transformation* (Bytecode'07). Volume 190, Issue 1 of Electronic Notes in Theoretical Computer Science, pages 1-160 (31 July 2007). Braga, Portugal, March 2007.

91. Fausto Spoto (ed). *Proceedings of the Software Verification track* of the 23rd Annual ACM Symposium on Applied Computing (SV'08). Pages 326-394. ACM Press. Fortaleza, Brazil, March 2008.

Organization of Scientific Events

- Organizing committee member of *SAS'98* (Static Analysis Sysposium) and *PLILP/ALP'98* (Programming Languages, Implementations, Logics and Programs/Algebraic and Logic Programming), Pisa, Italy, 1998
- Organizing committee chair of *AMiLP'03* (Algebraic Methods in Language Processing), Verona, Italy, 2003
- Program committee member of *WLPE'03* (Workshop on Logic Programming Environments), Mumbai, India, 2003
- Workshops coordinator of *ICLP'04* (International Conference on Logic Programming), Saint-Malo, France, 2004
- Workshops coordinator and local organisation chair of *LOPSTR'04+PEPM'04+PPDP'04+SAS'04* (International Symposium on Logic-based Program Synthesis and Transformation, ACM SIGPLAN 2004 Symposium on Partial Evaluation and Semantics Based Program Manipulation, ACM-SIGPLAN International Conference on Principles and Practice of Declarative Programming and Static Analysis Symposium), Verona, 2004
- Programme committee member of *CILC'04* (Convegno Italiano di Logica Computazionale), Parma, 2004
- Workshop chair of *Bytecode'05*, First Workshop on Bytecode Semantics, Verification, Analysis and Transformation, Edinburgh, Scotland, UK, 2005.
- Programme committee member of *CILC'05* (Convegno Italiano di Logica Computazionale), Rome, 2005
- Program committee member of the software verification track of SAC'06 (ACM Symposium on Applied Computing), Dijon, Francia, 2006
- Workshop co-chair of *Bytecode'07*, Second Workshop on Bytecode Semantics, Verification, Analysis and Transformation, Braga, Portogallo, 2007
- Program co-chair of the software verification track of SAC'07 (ACM Symposium on Applied Computing), Seoul, Corea del Sud, 2007
- Program chair of the software verification track of SAC'08 (ACM Symposium on Applied Computing), Fortaleza, Brazil, 2008.
- Program Committee member of *Bytecode'08*, *Third Workshop on Bytecode Semantics, Verification, Analysis and Transformation*, Budapest, Hungary, 2008.
- Program committee member of *Bytecode'09*, *Fourth Workshop on Bytecode Semantics, Verification, Analysis and Transformation*, York, UK, 2009.
- Program committee member of *Bytecode'10*, *Fifth Workshop on Bytecode Semantics, Verification, Analysis and Transformation*, Cyprus, 2010.
- Program committee member of *Bytecode'12*, *Seventh Workshop on Bytecode Semantics, Verification, Analysis and Transformation*, Tallinn, Estonia, 2012.
- Program committee member of *TAPAS'12*, *Tools for Automatic Program Analysis*, Deauville, France, 2012.
- Program committee member of *Bytecode'13*, *Eighth Workshop on Bytecode Semantics, Verification, Analysis and Transformation*, Rome, Italy, 2013.

- Program committee member of *LOPSTR'14*, *24th International Symposium on Logic-Based Program Synthesis and Transformation*, Canterbury, UK, 2014.
- Program committee member of *SAS'17*, *24th International Symposium on Static Analysis*, New York City, NY, USA, 2017.
- Program committee member of *LOPSTR'18*, *25th International Symposium on Logic-Based Program Synthesis and Transformation*, Frankfurt am Main, Germany, 2018.
- Artifact evaluation committee member of *SAS'18*, *25th Static Analysis Symposium*, Freiburg im Breisgau, Germany, 2018.
- Program chair of *TAPAS'18*, *9th Workshop on Tools for Automatic Program Analysis*, Freiburg im Breisgau, Germany, 2018.
- Program committee member of *TAPAS'19*, *10th Workshop on Tools for Automatic Program Analysis*, Porto, Portugal, 2019.
- Program committee member of *TAPAS'20*, *11th Workshop on Tools for Automatic Program Analysis*, Chicago, USA, 2020.

Reviewing

Reviewing activity for the following international journals and conferences: *Information and Computation*, *Journal of Systems and Software*, *Theoretical Computer Science*, *ACM Transactions on Computational Logic*, *ACM Transactions on Programming Languages and Systems*, *Theory and Practice of Logic Programming*, *Journal of Computer Science and Technology*, *Software Practice and Experience*, *Empirical Software Engineering*, *Algebraic Methodology And Software Technology*, *European Symposium on Programming*, *International Colloquium on Automata, Languages and Programming*, *International Conference on Logic Programming*, *International Symposium on Logic-based Program Synthesis and Transformation*, *International Conference on Embedded Software*, *Mathematical Foundations of Programming Semantics*, *Principles and Practice of Declarative Programming*, *Workshop on Quantitative Aspects of Programming Languages*, *Static Analysis Symposium*, *Logic-Based Program Synthesis and Transformation*, *Journal of Logical and Algebraic Methods in Programming* and *Verification, Model Checking and Abstract Interpretation*. All reviews have always been completed on the requested time.

Student Supervision

Ph.D.:

- Đurica Nikolić, computer science, April 2013.
- Alberto Lovato, computer science, June 2017.
- Gabriele Tosadori, computer science, June 2017.
- Luca Olivieri, computer science, April 2023.

master: around 15 students.

bachelor: around 50 students.

University Committees

Member of the emergency team and fire protection team of the Department of Computer Science of Verona. Head of the spin-off companies evaluation committee of the same department. Member of the quality assurance committee for the computer science of the same department.

Verona, Italy

August 29, 2025