



Vincenzo Arceri

ASSISTANT PROFESSOR (NO-TENURE TRACK)

University of Parma, Parco Area delle Scienze, 53/A, 43124 - Parma (PR), Italy

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Career

Assistant Professor (no-tenure track)

Parma, Italy

UNIVERSITY OF PARMA

From Sep. 2021

- Research: abstract interpretation, static analysis of blockchain smart contract written in Go, relational string analysis, static analysis of unsafe Rust, design and implementation of LiSA, a Library for Static Analysis
- Teaching: Fundamentals of Programming within the Computer Science B.Sc. in University of Parma (15 CFU, 120 hours of lectures, 1st year)

Postdoctoral Researcher

Venice, Italy

CA' FOSCARI UNIVERSITY OF VENICE

Sep. 2020 - Sep. 2021

- Research project: Development of a generic static analyzer for Go
- Project coordinator: Prof. Agostino Cortesi
- The goal of this research project is the study and the development of a parametric static analyzer based on abstract interpretation for Golang, within the context of smart contracts and Cosmos SDK decentralized applications. Within the FSE research project "Progetto, sviluppo e validazione di sistemi blockchain per l'e-commerce" 2120-0002-1463-2019 in collaboration with Corvallis S.p.a., Commerc.io S.r.l. and Alpenite S.r.l..
- Teaching: Introduction to coding and data management - Practice (module 2) within the Digital Management B.Sc. in University Ca' Foscari of Venice (10 hours of lectures, 1st year, academic year 2021-2022)

Postdoctoral Researcher

Venice, Italy

CA' FOSCARI UNIVERSITY OF VENICE

Sep. 2019 - Sep. 2020

- Research project: Software integrated framework for IoT applications in Smart Cities scenarios
- Project coordinator: Prof. Agostino Cortesi
- The objective of this research project was to study new formal techniques for static analysis of strings. In particular, the research work done during this period can be split in three main topics: measure the precision increment of existing non-relational string analysis for dynamic languages, study of the precision/efficiency trade-off new string analyses and the development of a generic framework for the generation of relational string analyses.

Education

University of Verona

Verona, Italy

PHD IN COMPUTER SCIENCE

Oct. 2016 - May 2020

Thesis: "Taming Strings in Dynamic Languages - An Abstract Interpretation-based Static Analysis Approach".
Advisor: Prof. Isabella Mastroeni
External Reviewers: Prof. Sergio Maffei and Prof. Xavier Rival
Defence committee members: Prof. Roberto Bruni, Prof. Sergio Maffei, Prof. Isabella Mastroeni
Defended: 18 May 2020

University of Verona

Verona, Italy

MASTER DEGREE IN COMPUTER SCIENCE

Oct. 2014 - Jul. 2016

Grade: 110/110 cum laude
Subject: "PHP Type Static Analysis by Abstract Interpretation".
Advisor: Prof. Isabella Mastroeni

University of Verona

Verona, Italy

BACHELOR DEGREE IN COMPUTER SCIENCE

Oct. 2011 - Jul. 2014

Grade: 105/110
Thesis: Una tecnica di analisi semantica per JavaScript: la separation logic
Advisor: Prof. Isabella Mastroeni

Research Interests

My research interests are focused on the application of the abstract interpretation framework for improving the security, reliability and correctness of software by means of sound static program analysis.

Currently, my main research activities include the design and development of new static analyses for general-purpose

language blockchain applications, the formalization and development of new relational string analyses, with a focus on dynamic languages such as JavaScript, and the development of static analyzers of modern programming languages such as Go and Rust. Moreover, I am particularly interested in improving the classical approach adopted in static analysis via abstract interpretation, both from the precision and performance point of view.

Keywords: abstract interpretation, static analysis, dynamic languages, software engineering, program verification

Awards, Honors and Fellowships

Jul. 2023	Invited to Dagstuhl Seminar 23281 , "Theoretical Advances and Emerging Applications in Abstract Interpretation"	Wadern, Germany
Jul. 2023	INDAM GNCS Funding , for participation in schools, workshops, seminars and conferences (600€)	Parma, Italy
Oct. 2019	Best Paper Award , VALID 2019, "Towards an Operational Semantics for Solidity" M. Crosara, G. Centurino, V. Arceri	Valencia, Spain
Aug. 2018	Scholarship , Marktoberdorf Summer School (Engineering Secure and Dependable Software Systems)	Marktoberdorf, Germany

Publications

EDITORSHIPS

- [e1] [V. Arceri](#), A. Cortesi, P. Ferrara, M. Olliaro: "Challenges of Software Verification", Intelligent Systems Reference Library, 238, Springer Singapore, 2023, ISBN: 978-981-19-9601-6 (doi: 0.1007/978-981-19-9601-6)

JOURNALS

- [j7] L. Olivieri, L. Negrini, [V. Arceri](#), T. Jensen, F. Spoto: "Design and Implementation of Static Analyses for Tezos Smart Contracts", Distributed Ledger Technologies (2024) (doi: 10.1145/3643567)
- [j6] L. Negrini, [V. Arceri](#), A. Cortesi, P. Ferrara: "Tarsis: an effective automata-based abstract domain for string analysis", In Journal of Software: Evolution and Process (10.1002/smr.2647)
- [j5] L. Olivieri, L. Negrini, [V. Arceri](#), F. Tagliaferro, P. Ferrara, A. Cortesi, F. Spoto: "Information Flow Analysis for Detecting Non-Determinism in Blockchain (Artifact)", Dagstuhl Artifacts Ser. 9(2): 23:1-23:3 (2023) (doi: 10.4230/DARTS.9.2.23)
- [j4] [V. Arceri](#), M. Olliaro, A. Cortesi, I. Mastroeni: "Completeness of String Analysis for Dynamic Languages", Information and Computation 104791, 2021 (doi: 10.1016/j.ic.2021.104791)
- [j3] [V. Arceri](#), I. Mastroeni: "Analyzing Dynamic Code: A Sound Abstract Interpreter for evil eval", ACM Transactions on Privacy and Security (TOPS) Volume 24, Number 2, 2021 (doi: 10.1145/3426470)
- [j2] [V. Arceri](#), I. Mastroeni, S. Xu: "Static Analysis for ECMAScript String Manipulation Programs", Applied Science, 2020, 10(10), 3525, 2020 (doi: 10.3390/app10103525)
- [j1] [V. Arceri](#), S. Maffei: "Abstract Domains for Type Juggling", Electronic Notes in Theoretical Computer Science, Volume 331, 41-55, 2017 (doi: 10.1016/j.entcs.2017.02.003)

INTERNATIONAL CONFERENCES AND WORKSHOPS

- [c15] [V. Arceri](#), G. Dolcetti, E. Zaffanella: "Unconstrained Variable Oracles for Faster Static Analyses", In Proceedings of the 30th Static Analysis Symposium, SAS 2023 (doi: 10.1007/978-3-031-44245-2_5)
- [c14] L. Olivieri, L. Negrini, [V. Arceri](#), F. Tagliaferro, P. Ferrara, A. Cortesi, F. Spoto: "Information Flow Analysis for Detecting Non-Determinism in Blockchain", 37th European Conference on Object-Oriented Programming, ECOOP 2023 (doi: 10.4230/LIPIcs.ECOOP.2023.23)
- [c13] G. Boldini, A. Diana, [V. Arceri](#), V. Bonnici, R. Bagnara: "A Machine Learning Approach for Source Code Similarity via Graph-focused Features", In Proceedings of the 9th International Conference on Machine Learning, Optimization, and Data Science (LOD 2023) (10.1007/978-3-031-53969-5_5)
- [c12] [V. Arceri](#), G. Dolcetti, E. Zaffanella: "Speeding up Static Analysis with the Split Operator", Proceedings of the 12th ACM SIGPLAN International Workshop on the State Of the Art in Program Analysis (SOAP 2023) (<https://dl.acm.org/doi/10.1145/3589250.3596141>)

- [c11]** V. Bonnici, V. Arceri, A. Diana, F. Bertini, E. Iotti, A. Levante, V. Bernini, E. Neviani, A. Dal Palù: “*BIOCHAIN: towards a platform for securely sharing microbiological data*”, Proceedings of the 27th International Database Engineered Applications Symposium Conference (IDEAS 2023) (doi: 10.1007/978-3-031-21037-2_2)
- [c10]** V. Arceri, I. Mastroeni, E. Zaffanella: “*Decoupling the ascending and descending phases in Abstract Interpretation*”, Proceedings of the 20th Asian Symposium on Programming Languages and Systems (APLAS 2022) (doi: 10.1145/3589462.3589501)
- [c9]** L. Olivieri, F. Tagliaferro, V. Arceri, M. Ruaro, L. Negrini, A. Cortesi, P. Ferrara, F. Spoto, E. Talin: “*Ensuring Determinism in Blockchain Software with GoLiSA: An Industrial Experience Report*”, Proceedings of the 11th ACM SIGPLAN International Workshop on the State of the Art in Program Analysis (SOAP 2022) (doi: 10.1145/3520313.3534658)
- [c8]** V. Arceri, M. Olliaro, A. Cortesi, P. Ferrara: “*Relational String Abstract Domains*”, Proceedings of the 23th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI 2022) (doi: 10.1007/978-3-030-94583-1_2)
- [c7]** P. Ferrara, L. Negrini, V. Arceri, A. Cortesi: “*Static Analysis for Dummies: Experiencing LiSA*”, Proceedings of the 10th ACM SIGPLAN International Workshop on the State of the Art in Program Analysis (SOAP 2021) (doi: 10.1145/3460946.3464316)
- [c6]** I. Mastroeni, V. Arceri: “*Improving Dynamic Code Analysis by Code Abstraction*”, Proceedings of the 9th International Workshop on Verification and Program Transformation (VPT 2021) (doi: 10.4204/EPTCS.341.2)
- [c5]** L. Negrini, V. Arceri, P. Ferrara, A. Cortesi: “*Twinning Automata and Regular Expressions for String Static Analysis*”, Proceedings of the 22th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI 2021) (doi: 10.1007/978-3-030-67067-2_13)
- [c4]** V. Arceri, I. Mastroeni: “*A Sound Abstract Interpreter for Dynamic Code*”, Proceedings of 35th ACM/SIGAPP Symposium On Applied Computing (SAC 2020) (doi: 10.1145/3341105.3373964)
- [c3]** V. Arceri, M. Pasqua, I. Mastroeni: “*An Abstract Domain for Objects in Dynamic Programming Languages*”, Proceedings of 8th International Workshop on Numerical and Symbolic Abstract Domains (NSAD 2019) (doi: 10.1007/978-3-030-54997-8_9)
- [c2]** V. Arceri, M. Olliaro, A. Cortesi, I. Mastroeni: “*Completeness of Abstract Domains for String Analysis of JavaScript Programs*”, Proceedings of 16th International Colloquium of Theoretical Aspects of Computing (ICTAC 2019) (doi: 10.1007/978-3-030-32505-3_15)
- [c1]** V. Arceri, I. Mastroeni: “*Static Program Analysis for String Manipulation Languages*”, Proceedings of the 7th International International Workshop on Verification and Program Transformation (VPT 2019) (doi: 10.4204/EPTCS.299.5)

BOOK CHAPTERS

- [b3]** L. Negrini, V. Arceri, P. Ferrara, A. Cortesi: “*LiSA: A Generic Framework for Multilanguage Static Analysis*”, In Challenges of Software Verification. Intelligent Systems Reference Library, vol 238. Springer, Singapore, 2023 (doi: 10.1007/978-981-19-9601-6_2)
- [b2]** E. Zaffanella, V. Arceri: “*“Fixing” the Specification of Widenings*”, In Challenges of Software Verification. Intelligent Systems Reference Library, vol 238. Springer, Singapore, 2023 (doi: 10.1007/978-981-19-9601-6_4)
- [b1]** M. Olliaro, V. Arceri, A. Cortesi, P. Ferrara: “*Lifting String Analysis Domains*”, In Challenges of Software Verification. Intelligent Systems Reference Library, vol 238. Springer, Singapore, 2023 (doi: 10.1007/978-981-19-9601-6_7)

PHD THESIS

- [t1]** V. Arceri: “*Taming Strings in Dynamic Languages – An Abstract Interpretation-based Static Analysis Approach*”, PhD thesis defended at University of Verona on May 18, 2020

Community Service

- 2024 **Co-Program Chair**, NSAD 2024, 10th International Workshop on Numerical and Symbolic Abstract Domains
- 2024 **Organizer and Part of the Scientific Committee**, Lipari Summer School on Abstract Interpretation (<https://absint24.liparischool.it/>)
- 2024 **Program Committee member**, VALID 2024, 16th International Conference on Advances in System Testing and Validation Lifecycle
- 2023 **Program Committee member**, DBKDA 2023, 16th International Conference on Advances in Databases, Knowledge, and Data Applications
- 2023 **Program Committee member**, VALID 2023, 15th International Conference on Advances in System Testing and Validation Lifecycle
- 2023 **Session Chair**, SOAP 2023, 12th ACM SIGPLAN International Workshop on the State of the Art in Program Analysis (Static analysis track)
- 2023 **Artifact Evaluation Committee member**, SAS 2023, 30th Static Analysis Symposium
- 2023 **Reviewer**, SAS 2023, 30th Static Analysis Symposium
- 2023 **Reviewer**, KSEM 2023, 16th International Conference on Knowledge Science, Engineering and Management
- 2023 **Co-Program Chair**, CSV 2023, 2nd Challenges of Software Verification symposium
- 2023 **Program Committee member**, SOAP 2023, 12th ACM SIGPLAN International Workshop on the State of the Art in Program Analysis
- 2023 **Program Committee member**, LOD 2023, 9th International Conference on Machine Learning, Optimization, and Data Science
- 2023 **Main Editor**, Challenges of Software Verification, part of the book series Intelligent Systems Reference Library (volume 238), Springer-Nature, <https://link.springer.com/book/9789811996009>
- 2023 **Program Committee member**, Special Session on "Privacy and Data Protection", ICCCI 2023, 15th International Conference on Computational Collective Intelligence
- 2022 **Co-Program Chair**, CSV 2022, 1st Challenges of Software Verification workshop, organized on the occasion of the award ceremony of the Doctorate Honoris Causa in Computer Science at Ca' Foscari University of Venice to Professor Patrick Cousot
- 2022 **Reviewer**, SAS 2022, 29th Static Analysis Symposium
- 2022 **Artifact Evaluation Committee member**, SAS 2022, 29th Static Analysis Symposium
- 2022 **Reviewer**, CISIM 2022, 21th International Conference on Computer Information Systems and Industrial Management Applications
- 2022 **Program Committee member**, VALID 2022, 14th International Conference on Advances in System Testing and Validation Lifecycle
- 2022 **Session Chair**, VMCAI 2022, 23rd International Conference on Verification, Model Checking, and Abstract Interpretation (Privacy & Security track)
- 2021 **Program Committee member**, VALID 2021, 13th International Conference on Advances in System Testing and Validation Lifecycle
- 2019 **Reviewer**, VALID 2019, 11th International Conference on Advances in System Testing and Validation Lifecycle
- 2018 **Reviewer**, ESOP 2018, 27th European Symposium on Programming
- 2016 **Reviewer**, SSPREW 2016, 6th Software Security, Protection, and Reverse Engineering Workshop

Reviewer for the following journals: **International Journal on Software Tools for Technology Transfer** (2024), **Future Internet** (2024), **Electronics** (2024), **Symmetry** (2023), **Journal of Network and Computer Applications** (2021).

Editorial boards

- Member of the Editorial Board of the International Journal on Advances in Software (<https://www.iariajournals.org/software>)

MEMBERSHIP ORGANIZATIONS

From 2021 **GRIN**, GRuppo di INformatica

From 2021 **GNCS**, Gruppo Nazionale per il Calcolo Scientifico – IndAM

Grants

Principal Investigator, "LLMs Meet Static Analysis: improving quality and reliability of AI-generated code"

ISCRA PROJECT (CLASS C), CINECA

From Jan. 2024

The goal of the project is to conduct an extensive quality and safety evaluation of the code generated with some of the most popular and open-source LLMs employing static analyzers, that can detect vulnerabilities and run-time errors statically, without executing the code. Once this information is available, it will be included in the code-generation task, to guide the LLM itself to produce a more precise and safe output, in which static analysis is somehow introduced in the pipeline of the code-generation task.

Principal Investigator, "Formal verification of GPLs blockchain smart contracts"

€ 12'000

BANDO DI ATENEO 2022 DELLA RICERCA, UNIVERSITY OF PARMA

From Mar. 2023

The goal of this project is to provide a prototype of a generic static analyzer for verifying GPLs blockchain smart contracts. We will base our approach on abstract interpretation, a formal theoretical framework for reasoning about program semantic properties of interest. Unlike more popular techniques based on dynamic analyses, our approach allows us to come up with a sound static analyzer, i.e., none of the possible executions of the smart contract of interest will be neglected when analyzing it. Informally speaking: "If no bugs or vulnerabilities are found on a given smart contract, surely the smart contract has no bugs".

Technical head, "BIOCHAIN-AI: a platform for securely sharing and analysing microbiological data"

€ 9'000

BANDO DI ATENEO 2021 DELLA RICERCA, UNIVERSITY OF PARMA

Jul. 2022 - Jul. 2023

Principal investigator: Prof. Vincenzo Bonnici. This project aims at providing a prototype platform for managing biological knowledge, in particular data regarding microbial species, to be used by a consortium of public and private entities having the need of sharing their data and integrating their knowledge for gaining advantages by federated machine learning analyses. Members of the consortium share data under specific law agreements that must be traced in the digital world. For this reason, the proposed system relies on a blockchain-based security layer, able to immutably store the transaction history by all the member of the consortium.

Research Participant (involved in workpackages 1 and 4), "ARES: Analyzing security in modern Software"

€ 44'000

PROGETTO RICERCA DI BASE 2017, UNIVERSITY OF VERONA

2017 - 2019

Principal investigator: Prof. Isabella Mastroeni. Security is an enabling technology, hence security means power. Nowadays, in the era of Industry 4.0, this power is becoming more and more critical, since almost every phase of any production chain exploits Information Technology (IT) systems, which, if not adequately protected, may open dramatic security breaches. One pillar of any IT infrastructure is connection, everything is connected to the network, and this makes the network, and therefore anything used through it (e.g., cloud computing), a potential vehicle of attack. According to OWASP (Open Web Application Security Project), the most critical security risks on the web have been application level injection attacks for almost a decade, and still remain among the most critical web vulnerabilities. Hence, our task is to build sound-by-construction technologies aiming at improving the security degree of the web. We tackle the problem from two points of view: We aim at designing robust IT systems (secure-by-design) and we aim at successfully facing existing attack methodologies. In order to enforce security for both these two faces of the same coin, we propose new technologies able to face the emerging challenges due to modern dynamic languages, that, while providing features that simplify writing programs, allow statically unpredictable executions (critical when analyzing software), and make programs harder to understand (critical when analyzing malware). In particular, we aim at tackling two main challenges: The design of new static analysis techniques overcoming the obstacles due to dynamic features and/or combination of different languages; The design of new verification models for revealing information flow vulnerabilities, namely those vulnerabilities opening code injection, XSS and other similar security breaches on the web. These two directions of work must then converge in an innovative technology allowing us to soundly analyze information flows in modern (dynamic and/or multi-language) software.

Institutional Responsibilities

From Nov. 2021	Responsible for students orientation , Responsible for the prospective students' orientation for the Computer Science Bachelor Degree Programme in Computer Science	University of Parma
From Nov. 2021	Responsible for students orientation , Responsible for the prospective students' orientation for the Computer Science Master Degree Programme in Computer Science	University of Parma
From Nov. 2021	Member , Teaching committee, Bachelor Degree Programme in Computer Science	University of Parma
From Nov. 2021	Member , Teaching committee, Master Degree Programme in Computer Science	University of Parma

PREVIOUS INSTITUTIONAL RESPONSABILITIES

2021 - 2023	PLS Coordinator , Coordinator of the PLS (Piano Lauree Scientifiche) programme for Computer Science	<i>University of Parma</i>
2022	Ragazze Digitali Parma 2022 Scientific Head , Scientific head of Ragazze Digitali Parma 2022, a three weeks summer camp on programming dedicated to women high school students, with the aim of facing the digital gender gaps	<i>University of Parma</i>

Internships

UROP Trainee

London, United Kingdom

IMPERIAL COLLEGE LONDON

Jun. 2016 - Sep. 2016

Undergraduate Research Opportunities Programme
 Static analysis of PHP type juggling
 Advisor: Prof. Sergio Maffei

Temporary Research Fellow

Verona, Italy

UNIVERSITY OF VERONA

Dec. 2015 - Feb. 2016

Static analysis by abstract interpretation for μ PHP, an imperative core of PHP, with IK framework
 Advisor: Prof. Isabella Mastroeni

Tools and Software

LiSA: a Library for Static Analysis

From Sep. 2020

LiSA (Library for Static Analysis) eases the creation and implementation of static analyzers based on the Abstract Interpretation theory. LiSA provides an analysis engine that works on a generic and extensible control flow graph representation of the program to analyze. Abstract interpreters in LiSA are built for analyzing such representation, providing a unique analysis infrastructure for all the analyzers that will rely on it. Building an analyzer upon LiSA boils down to writing a parser for the language that one aims to analyze, translating the source code or the compiled code towards the control flow graph representation of LiSA. Then, simple checks iterating over the results provided by the semantic analyses of LiSA can be easily defined to translate semantic information into warnings that can be of value for the final user. LiSA is maintained by the Software and System Verification group @ Ca' Foscari University of Venice, Italy, and it is distributed under the MIT license, and it is available on GitHub (<https://github.com/lisa-analyzer/lisa>).

Tarsis: an improved finite-state automata-based string abstract domain

From Mar. 2020

Tarsis is a new abstract domain for string values based on finite state automata. Standard finite state automata abstract domain has been shown to provide precise abstractions of string values when all the components of such strings are known, but with high computational cost. Instead of considering standard finite automata built over an alphabet of single characters, Tarsis considers automata that are built over an alphabet of strings, comprising a special value to represent statically unknown strings. Tarsis is maintained by the Software and System Verification group @ Ca' Foscari University of Venice, Italy, and it is available on Github (<https://github.com/Unive-SSV/tarsis>).

Talks

INTERNATIONAL CONFERENCES AND WORKSHOPS

- Jan. 2022** Relational String Abstract Domains, 23th International Conference on Verification, Model Checking, and Abstract Interpretation, VMCAI 2022, Philadelphia, US
- Jun. 2021** Static Analysis for Dummies: Experiencing LiSA, 10th ACM SIGPLAN International Workshop on the State of the Art in Program Analysis, online
- May 2020** Taming Strings in Dynamic Languages – An Abstract Interpretation-based Static Analysis Approach, PhD Defence, University of Verona, Verona, Italy
- Mar. 2020** A Sound Abstract Interpreter for Dynamic Code, 35th ACM/SIGAPP Symposium on Applied Computing, SAC 2020, Brno, Czech Republic (online)
- Nov. 2019** Completeness of Abstract Domains for String Analysis of JavaScript Programs, 16th International Colloquium on Theoretical Aspects of Computing, ICTAC 2019, Hammamet, Tunisia
- Mar. 2019** Static Program Analysis for String Manipulation Languages, 7th International Workshop on Verification and Program Transformation, VPT 2019, Genova, Italy
- Sep. 2016** Abstract Domains for Type Juggling, 6th Numerical and Symbolic Abstract Domains Workshop, NSAD 2016, Edinburgh, Scotland

SEMINARS

- Dec. 2023** Invited seminar, "Taming strings in dynamic languages: An abstract interpretation-based static analysis approach", University of Verona
- Dec. 2021** Invited seminar, "Introduction to LiSA (Library for Static Analysis) and tutorial on of non-relational abstract domains implementation", University of Verona

OTHERS

- Feb. 2021** Applicazioni di blockchain e smart contract per i settori produttivi, Pallades (Palestre e laboratori avanzati per la digitalizzazione dell'economia e della società) course - POR FESR Regione Veneto (online)

Teaching

Dic. 2023	Lectures , Fundamentals of Programming in C++ for the Boston College student Lena Marfeo during the Fall semester 2023). 20 hours of lectures and 24 hours of supervision of the student (equivalent to 3 credits in Boston College).	<i>Boston College/University of Parma</i>
Sep. 2023	Lecturer , Fundamentals of Programming within the Computer Science B.Sc. in University of Parma (academic year 2023-2024). 120 hours of lectures.	<i>University of Parma</i>
Dec. 2022	Lectures , Analyzing dynamic code: a sound abstract interpreter for eval. Within the "Languages, interpreters, and compilers" Master course, University of Parma, Prof. Enea Zaffanella. 2 hours of lectures.	<i>University of Parma</i>
Sep. 2022	Lecturer , Fundamentals of Programming within the Computer Science B.Sc. in University of Parma (academic year 2022-2023). 120 hours of lectures.	<i>University of Parma</i>
April 2022	Lecturer , Introduction to LiSA (Library for Static Analysis) and implementation of non-relation abstract domains. Within the PhD course "A Guided Tour to Static Program Analysis: State-of-the-Art Tools and Techniques", promoted by the Indian Education Ministry, Global Initiative of Academic Networks (GIAN - https://gian.iitkgp.ac.in/). Online. 2 hours of lectures.	<i>Patna, India</i>
Jan. 2022	Lectures , Big data analytics e predictive maintenance. Training course for ACMI S.p.A.. 24 hours of lectures.	<i>University of Parma</i>
Sep. 2021	Lecturer , Fundamentals of Programming within the Computer Science B.Sc. in University of Parma (academic year 2021-2022). 112 hours of lectures.	<i>University of Parma</i>
Mar. 2021	Lecturer , Introduction to coding and data management - Practice (module 2) within the Digital Management B.Sc. in University Ca' Foscari of Venice (academic year 2020-2021). 10 hours of lectures.	<i>Ca' Foscari University of Venice</i>
Feb. 2021	Lectures , Introduction to LiSA (Library for Static Analysis). Within the "Software correctness, security, and reliability" Master course in the Department of Environmental Sciences, Informatics and Statistics, Ca' Foscari University of Venice, Prof. Agostino Cortesi. 2 hours of lectures.	<i>Ca' Foscari University of Venice</i>
Dec. 2020	Lectures , Introduction to LiSA (Library for Static Analysis) and implementation of non-relation abstract domains. Within the "Autonomous, Distributed and pervasive Systems" PhD course, Ca' Foscari University of Venice, Proff. S. Calzavara, P. Ferrara, A. Marin. 4 hours of lectures	<i>Ca' Foscari University of Venice</i>
Gen. 2021	Lectures , Introduction to LiSA (Library for Static Analysis) and implementation of non-relation abstract domains. Within the "Foundations of software analysis and verification" Master course, University of Verona, Prof. Isabella Mastroeni. 2 hours of lectures	<i>University of Verona</i>
Oct. 2018	Teaching Assistant , Teaching assistant for the "Logics" Bachelor course in the Computer Science B.Sc. in Department of Computer Science, University of Verona, Italy	<i>University of Verona</i>

Oct. 2017	Teaching Assistant , Teaching assistant for the "Programming Languages" and "Logics" Bachelor courses in the Computer Science B.Sc. in Department of Computer Science, University of Verona, Italy	<i>University of Verona</i>
Oct. 2016	Teaching Assistant , Teaching assistant for the "Foundations of Computing" and "Logics" Bachelor courses in the Computer Science B.Sc. in Department of Computer Science, University of Verona, Italy	<i>University of Verona</i>
Gen. 2016	Lectures , Introduction to λ Framework and implementation of an imperative, functional and concurrent language. Within the "Foundations of Computing (Module: Languages)" Master course in the Department of Computer Science, University of Verona, Prof. Massimo Merro. 6 hours of lectures.	<i>University of Verona</i>
Oct. 2015	Teaching Assistant , Teaching assistant for the "Foundations of Computing" Bachelor course in the Computer Science B.Sc. in Department of Computer Science, University of Verona, Italy	<i>University of Verona</i>
Oct. 2014	Teaching Assistant , Teaching assistant for the "Foundations of Computing" Bachelor course in the Computer Science B.Sc. in Department of Computer Science, University of Verona, Italy	<i>University of Verona</i>

Student Supervision

MASTER STUDENTS

Jul. 2023	Co-supervisor , Master thesis of Greta Dolcetti ("Abstract Compilation Techniques for Static Analysis"), 110/110 <i>cum laude</i> . Supervisor: Prof. Enea Zaffanella	<i>University of Parma, Italy</i>
Apr. 2023	Co-supervisor , Master thesis of Alessio Diana ("Computational models for task classification via explainable code similarity based on control flow graph features"), 110/110 <i>cum laude</i> . Supervisor: Prof. Vincenzo Bonnici	<i>University of Parma, Italy</i>
Apr. 2023	Co-supervisor , Master thesis of Giacomo Boldini ("Source code clustering via explainable code similarity based on control flow graph features"), 110/110 <i>cum laude</i> . Supervisor: Prof. Vincenzo Bonnici	<i>University of Parma, Italy</i>
Mar. 2023	Supervisor , Master thesis of Simone Gazza ("RustLiSA: a static analysis framework for Rust programs"), 110/110 <i>cum laude</i>	<i>University of Parma, Italy</i>
Jul. 2020	Co-supervisor , Master thesis of Sunyi Xu ("Static analysis of ECMAScript string manipulation operations"), 110/110 <i>cum laude</i> . Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>
Mar. 2020	Co-supervisor , Master thesis of Gabriele Centurino on existing static analyzers of Solidity smart contracts, 103/110, Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>
Mar. 2020	Co-supervisor , Master thesis of Diego Comencini ("JOE, a complete toolchain for the detection and classification of obfuscated JavaScript malware"), 110/110 <i>cum laude</i> , Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>

BACHELOR STUDENTS

Mar. 2024	Supervisor , Bachelor thesis of Vladimir Ciolpan ("Realizzazione di un robot software per automatizzare il processo di inserimento di dati in un portale web"), 90/110	<i>University of Parma, Italy</i>
Mar. 2024	Supervisor , Bachelor thesis of Lorenzo Ferrari ("Exploiting Overflows: Techniques in Stack, Heap, and Linux Kernel"), 92/110	<i>University of Parma, Italy</i>
Sep. 2023	Supervisor , Bachelor thesis of Davide Tarpini ("Orphan jump resolution in EVM bytecode by abstract interpretation"), 110/110 <i>cum laude</i>	<i>University of Parma, Italy</i>
Mar. 2023	Supervisor , Bachelor thesis of Matteo Boroni Grazioli ("Implementation in LiSA of the decoupling of ascending and descending phases in abstract interpretation"), 110/110 <i>cum laude</i>	<i>University of Parma, Italy</i>
Mar. 2023	Supervisor , Bachelor thesis of Lucrezia Porqueddu ("Studio ed Analisi dell'utilizzo di eval e dei costrutti string-to-code in Python"), 101/110	<i>University of Parma, Italy</i>
Mar. 2023	Supervisor , Bachelor thesis of Sergio Salvatore Evola ("Implementation of string abstract domains in LiSA"), 95/110	<i>University of Parma, Italy</i>

Oct. 2022	Supervisor , Bachelor thesis of Simone Leoni ("Finite-state automata abstract domain implementation in LiSA"), 110/110 <i>cum laude</i>	<i>University of Parma, Italy</i>
Oct. 2022	Supervisor , Bachelor thesis of Alex Sironi ("Control-flow graph generation for EVM bytecode"), 108/110	<i>University of Parma, Italy</i>
Jun. 2022	Supervisor , Bachelor thesis of Lisandro Covanti ("Design and development of API for the integration and usage of a vending machine"), 89/110	<i>University of Parma, Italy</i>
Mar. 2021	Co-supervisor , Bachelor thesis of Nicolò Barbato on the development of a Python frontend for LiSA. Supervisor: Prof. Agostino Cortesi	<i>Ca' Foscari University of Venice, Italy</i>
Jul. 2019	Co-supervisor , Bachelor thesis of Marco Crosara ("Analyzing string operations for dynamic languages"), 110/110 <i>cum laude</i> Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>
Jul. 2019	Co-supervisor , Bachelor thesis of Sunyi Xu ("Analyzing string operations for dynamic languages") 110/110 <i>cum laude</i> Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>
Jul. 2019	Co-supervisor , Bachelor thesis of Massimiliano Incudini("Implementazione di un tool di analisi statica tramite interpretazione astratta per Javascript"), 110/110 <i>cum laude</i> Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>
Jul. 2016	Co-supervisor , Bachelor thesis of Matteo Bonafini ("Implicit Taint analysis nella rilevazione di off-path packet injection"), 110/110 <i>cum laude</i> Supervisor: Prof. Isabella Mastroeni	<i>University of Verona, Italy</i>

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