CATERINA URBAN

ADDRESS	École Normale Supérieure, 45 rue d'Ulm, 75005 Paris, France
EMAIL	caterina.urban@inria.fr
WEBPAGE	https://caterinaurban.github.io
DBLP	http://dblp.org/pers/hd/u/Urban:Caterina
GOOGLE SCHOLAR	http://scholar.google.it/citations?user=4-u1_HIAAAAJ

CURRENT POSITION

- INRIA, Paris, France — **Research Scientist (Chargé de Recherche)**, Feb 2019 - Now

EDUCATION

- École Normale Supérieure, Paris, France — **Ph.D. in Computer Science**, Dec 2011 - July 2015
  Subject: Static Analysis by Abstract Interpretation of Functional Temporal Properties of Programs
  Advisors: Radhia Cousot (Emeritus Research Director, CNRS, Paris, France) and Antoine Miné (Research Scientist, CRNS, Paris, France)
  Final mark: summa cum laude
- Menlo College, Atherton, USA — Fifth **Summer School** on Formal Techniques, May 2015
- Università degli Studi di Udine, Italy — **Master's degree in Computer Science**, Fall 2009 - Fall 2011
  Final mark: summa cum laude
- Università degli Studi di Udine, Italy — **Bachelor's degree in Computer Science**, Fall 2006 - Fall 2009
  Final mark: summa cum laude

GRANTS

- **Fellow, Cluter IA Project**: "PR[AI]RIE - Paris School of AI (PR[AI]RIE-PSAI", Sep 2025 - Aug 2032
- **Partner, ANR Collaborative Research Project** (PI: Aurélie Hurault, previously João Marques-Silva): "ForML: Formally Certified Reasoning in Machine Learning", Jan 2024 - Dec 2027
- **Principal Investigator, Projet Ciblé du Programme de recherche (PEPR) Intelligence Artificielle**: "SAIF: Safe AI through Formal Methods", Oct 2023 - Sep 2027
- Professional Activities Travel Grant for POPL 2024, SIGPLAN, Jan 2024
- **Industrial Grant**, **Fujitsu**: "Formal Verification Techniques for Machine Learning Systems", Oct 2021 - Sep 2022
- **Industrial Grant**, **Airbus**: "State of the Art in Formal Methods for Artificial Intelligence", 2020
- **Principal Investigator**, **ETH Career Seed Grant, ETH Zurich**: "Static Analysis for Data Science Applications",
  30kCHF, Jan 2017 - Dec 2017

AWARDS AND HONORS

- Selected Paper for SCP Journal Special Issue on the Best Papers at TASE 2024
- **Invited Paper** at IJCAI 2016 - Sister Conference Best Paper Track
- **Honorable Mention Award** for the Prix de Thèse Gilles Kahn 2015
- Selected Paper for JAR Journal Special Issue on the Best Papers at CADE 2015
- **Best Paper Award** at CADE 2015
- Selected Paper for COMLAN Journal Special Issue on the Best Papers at VMCAI 2015
- **Best Poster Award** at SOFSEM 2011

RESEARCH EXPERIENCE

- ETH Zürich, Zurich, Switzerland — **Postdoctoral Researcher**, Sep 2015 - Jan 2019
  Supervisor: Peter Müller (Full Professor, ETH Zürich, Zürich, Switzerland)
- Carnegie Mellon Silicon Valley - NASA Ames Research Center, Mountain View, USA — **Ph.D. Student Intern**, Mar 2015 - July 2015
  Mentors: Temesghen Kahsai (Research Scientist, NASA Ames Research Center, Moffett Field, USA) and Arie Gurfinkel (Assistant Professor, Carnegie Mellon University, Pittsburgh, USA)

CAREER BREAKS

- **Maternity Leave**, Apr 2023 - Oct 2023
- **Maternity Leave**, Dec 2020 - Apr 2021
- **Maternity Leave**, Sep 2018 - Dec 2018

PROFESSIONAL EXPERIENCE

- **General Chair**: 20th International Conference on Integrated Formal Methods (iFM 2025)
- **Committee Chair**: Doctoral Dissertation Award @ International Joint Conferences on Theory and Practice of Software 2020 - 2025 (ETAPS 2020-2025), Posters @ Conference on Systems, Programming, Languages, and Applications 2022 (SPLASH 2022), Student Research Competition @ Conference on Systems, Programming, Languages, and Applications 2021-2022 (SPLASH 2021-2022), 29th Static Analysis Symposium (SAS 2022), 10th International Workshop on the State of the Art in Program Analysis (SOAP 2021)
- **Organizer**: Dagstuhl Seminar 25421 “Sound Static Program Analysis in Modern Software Engineering”, N40AI Workshop @ 51st Symposium on Principles of Programming Languages (POPL 2024), Mentoring Workshop @ International Joint Conferences on Theory and Practice of Software 2022 - 2024 (ETAPS 2022-2024), Mentoring Workshop @ Federated Logic Conference 2022 (FLOC 2022), Mentoring Workshop @ 33rd International Conference on Computer-Aided Verification (CAV 2021)
- **Coordinator**: Dagstuhl Seminar 16471 "Concurrency with Weak Memory Models: Semantics, Languages, Compilation, Verification, Static Analysis, and Synthesis”
- **Executive Board Member**: ETAPS Executive Board (2019-now)
- **Scientific Advisory Board Member**: Laboratoire Méthodes Formelles (LMF) de l’Université Paris-Saclay
- **Steering Committee Member (International Conferences)**: SAS (2023-2028)
- **Steering Committee Member (International Workshops)**: SOAP (2022-2024)
- **Steering Committee Member (International Summer Schools)**: FoPPS (2023-now)
- **Program Committee Member (International Conferences)**: OOPSLA 2026, SAS 2025, FoSSaCS 2025, POPL 2025, LPAR 2024, CAV 2024, TACAS 2024, CAV 2023, NFM 2023, ESOP 2023, ICTAC 2022, CAV 2022, POPL 2022, SBLP 2021, CAV 2021, NFM 2021, FAccT 2021, SAS 2020, VSTTE 2020, CAV 2020, ESOP 2020, VMCAI 2020, iFM 2019, EMSOFT 2019, LOPSTR 2019, CAV 2019, VMCAI 2019, EMSOFT 2018, iFM 2018, SAS 2018, CAV 2018, SAS 2017, SAS 2016, VMCAI 2016
- **Program Committee Member (International Workshops)**: SOAP 2020, TAPAS 2019, AVoCS 2019, NSV 2019, WST 2018, AVoCS 2018, HCVS 2018, SPLAH 2015 Demos,
- **Program Committee Member (Artifact Evaluations)**: PLDI 2019 Artifact Evaluation, POPL 2019 Artifact Evaluation, CAV 2015 Artifact Evaluation
- **Program Committee Member (Competitions)**: ACM SRC 2022, SPLASH 2020 SRC, PLDI 2018 SRC, SV-COMP 2015
- **Ethical Review Committee Member for International Conferences**: NeurIPS 2021
- **Associate Editor for International Journals**: Transactions on Programming Languages and Systems (2023-now)
- **Guest Editor for International Journals**: Formal Methods in System Design (Special Issue on SAS 2022), Formal Methods in System Design (Special Issue on CAV 2020)
- **Reviewer (International Journals)**: Foundations and Trends in Programming Languages (2025), Communications of the ACM (2022), Formal Methods in System Design (2022), Transactions on Programming Languages and Systems (2022), Software: Practice and Experience (2021), Transactions on Software Engineering (2018), Transactions on Software Engineering (2017), Transactions on Programming Languages and Systems (2017), Formal Methods in System Design (2017), Transactions on Programming Languages and Systems (2016), Acta Informatica (2016), Transactions on Programming Languages and Systems (2015)
- **Reviewer (International Conferences)**: OOPSLA 2022, FMCAD 2022, SAS 2021, POPL 2020, NFM 2019, POPL 2018, ESOP 2017, VMCAI 2017, LOPSTR 2016, FM 2016, NFM 2016, TACAS 2016, ASE 2015, SAS 2015, CAV 2015, CAV 2014, TCS-B 2014
- **Reviewer (Research Proposals)**: ERC (Remote Referee, 2021)
- **Reviewer (Book Manuscripts)**: MIT Press (2020)
- **Reviewer (Book Chapters)**: “Automatic Software Verification: An Overview of the State of the Art” (TBA)
- **Reviewer (PhD Manuscripts)**: Pankaj Kumar Kalita (Indian Institute of Technology Kanpur, India, 2025), Marco Zanella (Università degli Studi di Padova, Italy, March 2021)
- **PhD Defense Committee Member**: Linpeng Zhang (University College London, 2025), Olivier Martinot (Université Paris Cité, December 2024), Guillaume Vidot (Université Toulouse 2 - Jean Jaurès, France, December 2022), Guillaume Girol (CEA & Université Paris-Saclay, France, October 2022), Julien Girard-

Satabin (CEA & Université Paris-Saclay, France, November 2021), Emilio Incerto (Gran Sasso Science Institute, Italy, April 2019)

- **Other Committee Member**: Jury d'Admissibilité CRCN/ISFP at Inria de l'Université de Lorraine (2025), Selection Committee for Associate Professor in Computer Science at Université de Lille (2025), Hiring Committee for Associate Professor in Computer Science at Université de La Réunion (2024), Hiring Committee for (Assistant) Professor in Computer Science at École Polytechnique (2024), Assessment Committee for Associate Professor in Systems and Software Engineering at University of Copenhagen, Jury d'Admissibilité CRCN/ISFP at Inria Paris (2022), Commission des Emplois Scientifiques at Inria Paris (2021-2022)
- **Panel Member**: PLMW @ SPLASH 2024, W @ SPLASH 2022, VMI Career Event @ ETH Zurich (2022)
- **Publicity Chair (International Conferences)**: FLoC 2026, SAS 2018, SAS 2017

TEACHING EXPERIENCE

- **Lecturer** in the **Oregon Programming Languages Summer School 2025**, Eugene, USA — June-July 2025
- **Lecturer** in the Master Program "Master Parisien de Recherche en Informatique" (MPRI), **Université de Paris**, Paris, France — Fall 2024
- **Lecturer** in the **Lipari Summer School on Abstract Interpretation 2024**, Lipari, Italy — September 2024
- **Lecturer** in the **Summer School on Role and effects of ARTificial Intelligence in Secure ApplicatioNs 2024 (ARTISAN 2024)**, Valence, France — July 2024
- **Lecturer** in the **16th Summer School on Verification Technology, Systems & Applications (VTSA 2024)**, Esch-sur-Alzette, Luxembourg — July 2024
- **Lecturer** in the **École Jeunes Chercheuses et Jeunes Chercheurs en Programmation 2024 (EJCP 2024)**, Argelès-sur-Mer, France — June 2024
- **Lecturer** in the Master Program "Master Parisien de Recherche en Informatique" (MPRI), **Université de Paris**, Paris, France — Fall 2023
  Course: Abstract Interpretation (Lectures: 12 hours)
- **Lecturer** in the Master Program "Master Parisien de Recherche en Informatique" (MPRI), **Université de Paris**, Paris, France — Fall 2022
  Course: Abstract Interpretation (Lectures: 12 hours)
- **Lecturer** in the **4th International Programming Language Implementation Summer School (PLISS 2022)**, Bertinoro, Italy — Oct 2022
- **Lecturer** in the Advanced Track of the **13th International School of Rewriting (ISR 2022)**, Tbilisi, Georgia — Sep 2022
- **Lecturer** in the **2nd Inria-DFKI European Summer School on Artificial Intelligence (IDESSAI 2022)**, Saarbrücken, Germany — Aug 2022 - Sep 2022
- **Lecturer** in the Master Program "Master Parisien de Recherche en Informatique" (MPRI), **Université de Paris**, Paris, France — Fall 2021
  Course: Abstract Interpretation (Lectures: 10 hours)
- **Lecturer** in the Doctoral Program "Doctorate in Computer Science", **Gran Sasso Science Institute**, L'Aquila, Italy — Spring 2021
  Course: Abstract Interpretation and Applications Beyond the Beaten Track (Lectures: 6 hours)
- **Lecturer** in the Master Program "Master Parisien de Recherche en Informatique" (MPRI), **Université de Paris**, Paris, France — Fall 2020
  Course: Abstract Interpretation (Lectures: 6 hours)
- **Head Teaching Assistant** in the Bachelor Program "Bachelor in Computer Science", **ETH Zürich**, Zurich, Switzerland — Spring 2018
  Course: Formal Methods and Functional Programming (Exercise Sessions: 12 hours)
- **Teaching Assistant** in the Master Program "Master in Computer Science", **ETH Zürich**, Zurich, Switzerland — Fall 2017
  Course: Concepts of Object Oriented Programming (Exercise Sessions: 18 hours)
- **Teaching Assistant** in the Bachelor Program "Bachelor in Computer Science", **ETH Zürich**, Zurich, Switzerland — Spring 2017
  Course: Formal Methods and Functional Programming (Exercise Sessions: 12 hours)

- **Head Teaching Assistant** in the Master Program “Master in Computer Science”, **ETH Zürich**, Zurich, Switzerland — Fall 2016
  Course: Concepts of Object Oriented Programming (Exercise Sessions: 14 hours)
- **Teaching Assistant** in the Bachelor Program “Bachelor in Computer Science”, **ETH Zürich**, Zurich, Switzerland — Spring 2016
  Course: Formal Methods and Functional Programming (Exercise Sessions: 12 hours)
- **Teaching Assistant** in the Doctoral Program “Doctorate in Computer Science” and Master Program “Master in Computer Science”, **ETH Zürich**, Zurich, Switzerland — Fall 2015
  Seminar: Research Topics in Software Engineering
- **Teaching Assistant** in the Master Program “Master in Computer Science”, **ETH Zürich**, Zurich, Switzerland — Fall 2015
  Course: Concepts of Object Oriented Programming (Exercise Sessions: 10,5 hours)
- **Lecturer** in the Bachelor Program “Frontières du Vivant” (FdV), **Université Paris Descartes** (Paris 5), Paris, France — Spring 2015
  Course: Mathematics (Lectures: 10 hours, Exercise Sessions: 2 hours)
- **Invited Lecturer** in the Master Program “Master Parisien de Recherche en Informatique” (MPRI), **Université Paris Diderot** (Paris 7), Paris, France — Fall 2014
  Course: Abstract Interpretation (Lectures: 1,5 hours)
- **Lecturer** in the Bachelor Program “Frontières du Vivant” (FdV), **Université Paris Descartes** (Paris 5), Paris, France — Fall 2014
  Course: Mathematics (Lectures: 7,5 hours, Exercise Sessions: 3 hours)
- **Lecturer** in the Bachelor Program “Frontières du Vivant” (FdV), **Université Paris Descartes** (Paris 5), Paris, France — Spring 2014
  Course: Mathematics (Lectures: 6 hours, Exercise Sessions: 4 hours)
- **Lecturer** in the Bachelor Program “Frontières du Vivant” (FdV), **Université Paris Descartes** (Paris 5), Paris, France — Fall 2013
  Course: Mathematics (Lectures: 4 hours, Exercise Sessions: 10 hours)

MENTORING EXPERIENCE

- Guannan Wei, **Postdoc**, Inria & École Normale Supérieure, Sep 2024 - Aug 2025
- Alessandro De Palma, **Postdoc**, Inria & École Normale Supérieure, Nov 2023 - Now
- Marco Campion, **Postdoc**, Inria & École Normale Supérieure, Feb 2023 - Aug 2025
- Naïm Moussaoui-Remil, **PhD Thesis**, École Normale Supérieure, Nov 2023 - Oct 2026 (expected)
- Serge Durand, **PhD Thesis**, Université Paris-Saclay, Nov 2021 - Dec 2025 (expected)
- Denis Mazzucato, **PhD Thesis**, École Normale Supérieure, Oct 2020 - Dec 2024
- Greta Dolcetti (PhD Student @ University Ca’ Foscari of Venice, Italy)
  Research Internship, École Normale Supérieure, France, Sep 2024 - Dec 2024
- Giacomo Zanatta (PhD Student @ University Ca’ Foscari of Venice, Italy)
  Research Internship, École Normale Supérieure, France, Sep 2024 - Dec 2024
- Pierre Goutagny (Master Student @ École Normale Supérieure de Lyon, France)
  M2 Research Internship, École Normale Supérieure, Mar 2024 - Jul 2024 Loïc Chevalier (Master Student @ École Normale Supérieure, France)
  Supervised Research Project, Inria & École Normale Supérieure, Spring 2024
- Naïm Moussaoui-Remil (Master Student @ École Normale Supérieure de Rennes, France)
  M2 Research Internship, Inria & École Normale Supérieure, Mar 2023 - Aug 2023
- Kevin Pinochet (Master Student @ University of Chile, Chile)
  Research Internship, Inria & École Normale Supérieure, Jan 2023 - Apr 2023
- Abhinandan Pal (Bachelor Student @ IIIT Kalyani, India)
  Research Internship, Inria & École Normale Supérieure, Nov 2022 - Jan 2023
- Abhinandan Pal (Bachelor Student @ IIIT Kalyani, India)
  Research Internship, remote, May 2022 - Jul 2022
- Ali El Husseini (Master Student @ École Normale Supérieure Paris-Saclay, France)
  M2 Research Internship, École Normale Supérieure Paris-Saclay & Inria & École Normale Supérieure, Mar 2022 - Aug 2022
- Luca Negrini (Phd Student @ Università Ca’ Foscari Venezia, Italy)
  Research internship, Inria & École Normale Supérieure, Jan 2022 - Apr 2022

- Guruprerana Shabadi (Bachelor Student @ École Polytechnique, France)
  L3 Research Internship, Inria & École Normale Supérieure, Jan 2022 - Mar 2022
- Abhinandan Pal (Bachelor Student @ IIIT Kalyani, India)
  Research Internship, remote, Dec 2021 - Jan 2022
- Serge Durand (Master Student @ École Normale Supérieure Paris-Saclay, France)
  M1 Research Internship, École Normale Supérieure, France, Jun 2020 - Aug 2020
- Marco Zanella (Phd Student @ Università degli Studi di Padova, Italy)
  Research Internship, Inria & École Normale Supérieure, France, May 2020 - Aug 2020
- Radwa Sherif Abdelbar (Bachelor Student @ German University in Cairo, Egypt) - "Automated Checking of Implicit Assumptions on Textual Data"
  Bachelor's Thesis, ETH Zürich, Switzerland, Mar 2018 - Aug 2018
- Lowis Engel - "Usage Analysis of Data Stored in Map Data Structures"
  Master's Thesis, ETH Zürich, Switzerland, Feb 2018 - Aug 2018
- Madelin Schumacher - "Automated Generation of Data Quality Tests"
  Master's Thesis, ETH Zürich, Switzerland, Sep 2017 - Mar 2018
- Samuel Ueltschi - "Proving Temporal Properties by Abstract Interpretation"
  Master's Thesis, ETH Zürich, Switzerland, Mar 2017 - Sep 2017
- Mostafa Hassan (Bachelor Student @ German University in Cairo, Egypt) - "A Static Type Inference for Python"
  Bachelor's Thesis, ETH Zürich, Switzerland, Mar 2017 - Aug 2017
- Simon Wehrli - "Static Program Analysis of Data Usage Properties"
  Master's Thesis, ETH Zürich, Switzerland, Feb 2017 - Aug 2017
- Flurin Rindisbacher - "Interprocedural Analysis in Sample"
  Master's Thesis, ETH Zürich, Switzerland, Mar 2017 - Aug 2017
- Severin Münger - "Inference of Pointwise Specifications for Heap-Manipulating Programs"
  Master's Thesis, ETH Zürich, Switzerland, Sep 2016 - Mar 2017
- Nathanaël Courant (Bachelor Student @ École Normale Supérieure, France)
  L3 Research Internship, ETH Zürich, Switzerland, Jun 2016 - Jul 2016
- Lukas Neukom - "Termination Analysis of Heap-Manipulating Programs by Abstract Interpretation"
  Master's Thesis, ETH Zürich, Switzerland, Mar 2016 - Sep 2016
- Seraiah Walter - "Automatic Inference of Quantified Permissions by Abstract Interpretation"
  Master's Thesis, ETH Zürich, Switzerland, Feb 2016 - Aug 2016

PUBLICATIONS - INTERNATIONAL JOURNALS

- Alessandro De Palma, Serge Durand, Zakaria Chihani, François Terrier, and **Caterina Urban**, **On Using Certified Training towards Empirical Robustness**
  In Transactions on Machine Learning Research (TMLR), 2025.
- Vijay D'Silva and **Caterina Urban**, **Abstract Interpretation as Automated Deduction**
  In Journal of Automated Reasoning (JAR), 2017.
- **Caterina Urban** and Antoine Miné, **Inference of Ranking Functions for Proving Temporal Properties by Abstract Interpretation**
  In Computer Languages Systems and Structures (COMLAN), 2017.

PUBLICATIONS - INTERNATIONAL CONFERENCES

- Denis Mazzucato, Marco Campion, **Caterina Urban**. **Quantitative Static Timing Analysis**
  In Proc. 31st Static Analysis Symposium (SAS 2024) - **Radhia Cousot Best Paper Award** for Denis Mazzucato
  Awarded the Validated, Extensible, and Available Artifact Evaluation Badges
- Filip Drobnjakovic, Pavle Subotic, **Caterina Urban**. **An Abstract Interpretation-Based Data Leakage Static Analysis**
  In Proc. 18th International Symposium on Theoretical Aspects of Software Engineering (TASE 2024)
  Acceptance rate: 34.2%
- Naïm Moussaoui Remil, **Caterina Urban**, Antoine Miné. **Automatic Detection of Vulnerable Variables for CTL Properties of Programs**.
  In Proc. 25th Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR 2024)

- Denis Mazzucato, Marco Campion, **Caterina Urban**. **Quantitative Input Usage Static Analysis**
  In Proc. 16th International Symposium on NASA Formal Methods (NFM 2024)
  Acceptance rate: 38.2%
- Marco Campion, Mila Dalla Preda, Roberto Giacobazzi, **Caterina Urban**. **Monotonicity and the Precision of Program Analysis**
  In Proc. 51st Symposium on Principles of Programming Languages (POPL 2024)
  Acceptance rate: 29.6%
- Abhinandan Pal, Francesco Ranzato, **Caterina Urban**, Marco Zanella. **Abstract Interpretation-Based Feature Importance for Support Vector Machines**
  In Proc. 25th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI 2024)
  Acceptance rate: 40.5%
- Marco Campion, **Caterina Urban**, Mila Dalla Preda, Roberto Giacobazzi. A Formal Framework to Measure the Incompleteness of Abstract Interpretations
  In Proc. 30th Static Analysis Symposium (SAS 2023)
  Acceptance rate: 50%
- Satoshi Munakata, **Caterina Urban**, Haruki Yokoyama, Koji Yamamoto, Kazuki Munakata, **Verifying Attention Robustness of Deep Neural Networks against Semantic Perturbations**
  In Proc. 15th International Symposium on NASA Formal Methods (NFM 2023)
  Acceptance rate: 38.7%
- Satoshi Munakata, **Caterina Urban**, Haruki Yokoyama, Koji Yamamoto, Kazuki Munakata, **Verifying Attention Robustness of Deep Neural Networks against Semantic Perturbations**
  In Proc. 29th Asia-Pacific Software Engineering Conference (APSEC 2022) - Poster
- Francesco Ranzato, **Caterina Urban**, Marco Zanella, **Fairness-Aware Training of Decision Trees by Abstract Interpretation**
  In Proc. 30th International Conference on Information and Knowledge Management (CIKM 2021)
  Acceptance rate: 21.7%
- Denis Mazzucato, **Caterina Urban**, **Reduced Products of Abstract Domains for Fairness Certification of Neural Networks**
  In Proc. 28th Static Analysis Symposium (SAS 2021)
  Awarded the Validated, Extensible, and Available Artifact Evaluation Badges
  Acceptance rate: 55%
- **Caterina Urban**, Maria Christakis, Valentin Wüstholz, and Fuyuan Zhang, **Perfectly Parallel Causal-Fairness Certification of Neural Networks**
  In Proc. of the ACM on Programming Languages (PACMLPL), OOPSLA 2020
  Awarded the Functional, Reusable, and Available Artifact Evaluation Badges
  Acceptance rate: 36.1%
- **Caterina Urban**, **Static Analysis of Data Science Software**
  In Proc. 26th Static Analysis Symposium (SAS 2019) - **Invited Paper**
- **Caterina Urban**, Samuel Ueltschi, and Peter Müller, **Abstract Interpretation of CTL Properties**
  In Proc. 25th Static Analysis Symposium (SAS 2018)
  Awarded the Artifact Evaluation Badge
  Acceptance rate: 48.6%
- Mostafa Hassan, **Caterina Urban**, Marco Eilers, and Peter Müller, **MaxSMT-Based Type Inference for Python 3**
  In Proc. 30th International Conference on Computer Aided Verification (CAV 2018)
  Awarded the Artifact Evaluation Badge
  Acceptance rate: 30.2%
- Jérôme Dohrau, Alexander J. Summers, **Caterina Urban**, Severin Münger, and Peter Müller, **Permission Inference for Array Programs**
  In Proc. 30th International Conference on Computer Aided Verification (CAV 2018) - **Invited Talk at 1st Workshop on Parallel Logical Reasoning (PLR 2018)**
  Awarded the Artifact Evaluation Badge
  Acceptance rate: 30.2%

- **Caterina Urban** and Peter Müller, **An Abstract Interpretation Framework for Input Data Usage**
  In Proc. 27th European Symposium on Programming (ESOP 2018)
  Acceptance rate: 31.6%
- Nathanaëlle Courant and **Caterina Urban**, **Precise Widening Operators for Proving Termination by Abstract Interpretation**
  In Proc. 23rd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2017)
  Acceptance rate: 28.7%
- Vijay D'Silva and **Caterina Urban**, **Büchi, Lindenbaum, Tarski: A Program Analysis Appetizer**
  In Proc. 25th International Joint Conference on Artificial Intelligence (IJCAI 2016) - **Invited Paper**
- **Caterina Urban** and Arie Gurfinkel and Temesghen Kahsai, **Synthesizing Ranking Functions from Bits and Pieces**
  In Proc. 22nd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2016)
  Acceptance rate: 25.1%
- Vijay D'Silva and **Caterina Urban**, **Abstract Interpretation as Automated Deduction**
  In Proc. 25th International Conference on Automated Deduction (CADE 2015) - **Best Paper Award**
  Acceptance rate: 42.4%
- Vijay D'Silva and **Caterina Urban**, **Conflict-Driven Abstract Interpretation for Conditional Termination**
  In Proc. 27th International Conference on Computer Aided Verification (CAV 2015)
  Acceptance rate: 27.4%
- **Caterina Urban**, **FuncTion: An Abstract Domain Functor for Termination**
  In Proc. 21st International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2015)
  Acceptance rate: 27.4%
- **Caterina Urban** and Antoine Miné, **Proving Guarantee and Recurrence Temporal Properties by Abstract Interpretation**
  In Proc. 16th International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI 2015)
  Acceptance rate: 45.3%
- **Caterina Urban** and Antoine Miné, **A Decision Tree Abstract Domain for Proving Conditional Termination**
  In Proc. 21st Static Analysis Symposium (SAS 2014)
  Acceptance rate: 37.7%
- **Caterina Urban** and Antoine Miné, **An Abstract Domain to Infer Ordinal-Valued Ranking Functions**
  In Proc. 23rd European Symposium on Programming (ESOP 2014)
  Acceptance rate: 24.8%
- **Caterina Urban**, **The Abstract Domain of Segmented Ranking Functions**
  In Proc. 20th Static Analysis Symposium (SAS 2013)
  Acceptance rate: 41%
- Marino Miculan and **Caterina Urban**, **Formal Analysis of Facebook Connect Single Sign-On Authentication Protocol**
  In Proc. Student Research Forum of 37th International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM 2011) - **Best Poster Award**

PUBLICATIONS - INTERNATIONAL WORKSHOPS

- Greta Dolcetti, Agostino Cortesi, **Caterina Urban**, Enea Zaffanella, **Towards a High Level Linter for Data Science**
  In Proc. 10th International Workshop on Numerical and Symbolic Abstract Domains (NSAD 2024)
- Luca Negrini, Guruprerana Shabadi, and **Caterina Urban**, **Static Analysis of Data Transformations in Jupyter Notebooks**
  In Proc. 12th International Workshop on the State Of the Art in Program Analysis (SOAP 2023)
- Serge Durand, Augustin Lemesle, Zakaria Chihani, **Caterina Urban**, and François Terrier, **ReCIPH: Relational Coefficients for Input Partitioning Heuristic**
  In Proc. 1st Workshop on Formal Verification of Machine Learning (WFVML 2022) - Poster

- **Caterina Urban** and Antoine Miné, **To Infinity… and Beyond!**
  In Proc. 14th International Workshop on Termination (WST 2014)
- **Caterina Urban**, **Piecewise-Defined Ranking Functions**
  In Proc. 13th International Workshop on Termination (WST 2013)

PUBLICATIONS - BOOK CHAPTERS

- **Caterina Urban**, **Static Analysis for Data Scientists**
  In Vincenzo Arceri, Agostino Cortesi, Pietro Ferrara, Martina Olliaro, "Challenges of Software Verification", Intelligent Systems Reference Library, Volume 238, 2023.

OTHER PUBLICATIONS

- **Caterina Urban**, **Analyse Statique par Interprétation Abstraite de Propriétés Temporelles des Programmes**
  In 1024 - Bulletin de la Société Informatique de France, April 2016.
  http://www.societe-informatique-de-france.fr/wp-content/uploads/2016/04/1024-no8-Urban.pdf
- **Caterina Urban**, **Ce Qu'Achille a Fait Calculer à la Tortue**
  In Blog Binaire, March 2016.
  http://binaire.blog.lemonde.fr/2016/03/25/ce-quachille-a-fait-calculer-a-la-tortue/

INVITED TALKS

- **February 2024**: "(Hyper)Safety Certification of Neural Network Surrogates for Aircraft Braking Distance Estimation"
  Airbus, Toulouse, France
- **February 2024**: "Static Analysis Methods for Neural Networks"
  Dagstuhl Seminar 25061 *"Logic and Neural Networks"*, Schloss Dagstuhl, Germany.
- **November 2024**: "Formal Methods for Machine Learning"
  17th International Scientific Conference on Informatics (Informatics 2024), Poprad, Slovakia
- **October 2024**: "Abstract Domains for Machine Learning Verification"
  10th International Workshop on Numerical and Symbolic Abstract Domains (NSAD 2024), Pasadena, USA
- **October 2024**: "Abstract Interpretation-Based Certification of Hyperproperties for High-Stakes Machine Learning Software"
  31st Static Analysis Symposium (SAS 2024), Pasadena, USA
- **June 2024**: "Abstract Interpretation"
  Université de La Réunion, Saint-Denis, Réunion (remote)
- **June 2024**: "Formal Methods for Machine Learning ~~Verification~~"
  Inria Paris, Paris, France
- **April 2024**: "Machine Learning Interpretability and Verification"
  29th Journées Formalisation des Activités Concurrentes (FAC 2024), Toulouse, France
- **March 2024**: "Machine Learning Interpretability and Verification"
  Quarkslab, Paris, France
- **April 2023**: "Interpretability-Aware Verification of Machine Learning Software"
  29th International Symposium on Model Checking of Software (SPIN 2023), Paris, France
- **March 2023**: "Interpretability-Aware Verification of Machine Learning Software"
  CEA-LIST, Palaiseau, France
- **February 2023**: "Interpretability-Aware Verification of Machine Learning Software"
  Séminaire IRILL, Center for Research and Innovation on Free Software, Paris, France
- **July 2022**: "Data Usage across the Machine Learning Pipeline"
  Dagstuhl Seminar 22291 *"Machine Learning and Logical Reasoning: The New Frontier"*, Schloss Dagstuhl, Germany.
- **July 2022**: "Static Analysis for Data Scientists"
  "From Theory to Practice" Workshop, Verified Software Programme, Isaac Newton Institute for Mathematical Sciences, UK (remote)
- **June 2022**: "Static Analysis for Data Scientists"
  11th International Workshop on the State Of the Art in Program Analysis (SOAP 2022), San Diego, USA

- **May 2022**: “Static Analysis for Data Scientists"
  "*Challenges of Software Verification” Workshop*, Ca’ Foscari University, Venice, Italy.
- **May 2022**: “Interprétation Abstraite des Réseaux de Neurones”
  La Demi-Heure de Science, Inria Paris, Paris, France
- **Nov 2021**: “An Abstract Interpretation Recipe for Machine Learning Fairness”
  Journées du GT Vérif 2021, ENS Paris-Saclay, Gif-sur-Yvette, France
- **Nov 2021**: “An Abstract Interpretation Recipe for Machine Learning Fairness”
  CEA-LIST, Palaiseau, France
- **July 2021**: “An Abstract Interpretation Recipe for Machine Learning Fairness”
  4th Workshop on Formal Methods for ML-Enabled Autonomous Systems (FoMLAS), Los Angeles, USA (remote)
- **May 2021**: “Perfectly Parallel Fairness Certification of Neural Networks”
  École Normale Supérieure, Paris, France (remote)
- **Feb 2021**: “Formal Methods for Robust Artificial Intelligence: State of the Art”
  Airbus, Toulouse, France (remote)
- **Jan 2021**: “Perfectly Parallel Fairness Certification of Neural Networks”
  Lorentz Center Workshop “Robust Artificial Intelligence”, Lorentz Center, The Netherlands (remote)
- **Jan 2021**: “Formal Methods for Robust Artificial Intelligence: State of the Art”
  Lorentz Center Workshop “Robust Artificial Intelligence”, Lorentz Center, The Netherlands (remote)
  https://www.youtube.com/watch?v=ayXLWs4G4RU
- **Nov 2020**: “Static Analysis for Data Science”
  INSERM, Paris, France (remote)
- **Jul 2020**: “A Static Analyzer for Data Science Software”
  2nd Workshop on Democratizing Software Verification (DSV), Los Angeles, USA (remote)
  https://www.youtube.com/watch?v=f8Cjpt-rzxE&t=4374s
- **Jun 2020**: “Perfectly Parallel Fairness Certification of Neural Networks”
  https://webconf.gricad.cloud.math.cnrs.fr/b/kha-fem-gu3
  INRIA Rennes, Rennes, France (remote)
- **Jun 2020**: “Perfectly Parallel Fairness Certification of Neural Networks”
  https://bbb2.math.univ-paris-diderot.fr/b/sid-3jt-7ak
  IRIF, Paris, France (remote)
- **May 2020**: “Perfectly Parallel Fairness Certification of Neural Networks”
  Tel Aviv University, Tel Aviv, Israel (remote)
- **May 2020**: “Perfectly Parallel Fairness Certification of Neural Networks”
  Thales Research & Technology, Palaiseau, France (remote)
- **October 2019**: “Static Analysis of Data Science Software"
  https://youtu.be/DX_wOrq9J18
  26th Static Analysis Symposium (SAS 2019), Porto, Portugal
- **April 2019**: “What Programs Want: Automatic Inference of Input Data Specifications”
  Gran Sasso Science Institute (GSSI), L’Aquila, Italy.
- **May 2018**: “Static Program Analysis for a Software-Driven Society”
  INRIA Paris, Paris, France.
- **May 2018**: “Static Program Analysis for a Software-Driven Society”
  TU Wien, Vienna, Austria.
- **March 2018**: “Static Program Analysis for a Software-Driven Society”
  https://memento.epfl.ch/event/ic-colloquium-static-program-analysis-for-a-softwa/
  École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland.
- **March 2018**: “Static Program Analysis for a Software-Driven Society”
  https://www.stevens.edu/events/static-program-analysis-software-driven-society
  Stevens Institute of Technology, Hoboken, New Jersey, USA.
- **March 2018**: “Static Program Analysis for a Software-Driven Society”
  Max Planck Institute for Software Systems, Kaiserslautern, Germany.
- **October 2017**: “An Abstract Interpretation Framework for Input Data Usage”
  Shonan Meeting 100 “Analysis and Verification of Pointer Programs”, Shonan Village Center, Japan

- **September 2017**: “An Abstract Interpretation Framework for Input Data Usage”
  Shonan Meeting 108 “Memory Abstraction, Emerging Techniques and Applications”, Shonan Village Center, Japan
- **January 2017**: “Synthesizing Ranking Functions from Bits and Pieces”
  Université Pierre et Marie Curie (Paris 6), Paris, France.
- **May 2016**: “Bringing Abstract Interpretation to Termination and Beyond"
  Dagstuhl Seminar 16201 *“Synergies among Testing, Verification, and Repair for Concurrent Programs”*, Schloss Dagstuhl, Germany.
- **January 2016**: “Analyse Statique par Interprétation Abstraite de Propriétés Temporelles des Programmes”
  Congrès SIF 2016, Strasbourg, France.
- **August 2015**: “Abstract Interpretation as Automated Deduction”
  TU Wien, Vienna, Austria.
- **July 2015**: “Counterexample-Guided Inference of Ranking Functions”
  SRI International, Menlo Park, USA.
- **December 2014**: “Proving Guarantee and Recurrence Temporal Properties by Abstract Interpretation”
  University of Udine, Udine, Italy.
- **November 2014**: “Proving Guarantee and Recurrence Temporal Properties by Abstract Interpretation”
  ETH Zurich, Zurich, Switzerland.
- **October 2014**: “Automatic Inference of Ranking Functions by Abstract Interpretation”
  Queen Mary University of London, London, UK.
- **August 2014**: “Automatic Inference of Ranking Functions by Abstract Interpretation”
  Dagstuhl Seminar 14352 *“Next Generation Static Software Analysis Tools”*, Schloss Dagstuhl, Germany.
- **June 2014**: “Automatic Inference of Ranking Functions by Abstract Interpretation”
  University College London, London, UK.
- **May 2014**: “An Abstract Domain to Infer Ordinal-Valued Ranking Functions”
  INRIA Rennes, Rennes, France.
- **March 2014**: “Automatic Inference of Ranking Functions by Abstract Interpretation”
  INRIA Paris-Rocquencourt, France.
- **January 2014**: “Automatic Inference of Ranking Functions by Abstract Interpretation”
  IBM Thomas J. Watson Research Center, Yorktown Heights, USA.
- **November 2013**: “The Abstract Domain of Piecewise-Defined Ranking Functions”
  East China Normal University, Shanghai, China.
- **November 2013**: “The Abstract Domain of Piecewise-Defined Ranking Functions”
  2nd Workshop on Analysis and Verification of Dependable Cyber Physical Software (AVDCPS 2013), Changsha, China.
- **March 2013**: “The Abstract Domain of Segmented Ranking Functions”
  University of Udine, Udine, Italy.

LANGUAGES

- **Italian**: mother tongue
- **English**: very good, spoken and written
- **French**: good, spoken and written

WORK EXPERIENCE

- Onoranze Funebri Decor Pacis, Udine, Italy — **Contractor**, August 2013
  I developed an iOS application to ease the inventory and the client management of the funeral home, and to provide a nice visual catalog.
- Università degli Studi di Udine, Udine, Italy — **System Administrator**, Fall 2008 - Fall 2011
  I worked as system administrator on UNIX/Linux systems and on Microsoft Windows systems in the computer labs of the Faculty of Sciences.
- Federfarma Friuli Venezia Giulia, Udine, Italy — **Contractor**, 2010
  I designed an integer linear programming model to determine the shifts of the pharmacies of the region Friuli Venezia Giulia.
- Viten s.r.l, Udine, Italy — **Contractor**, March 2009
  I wrote a dozen queries for a database and I used Visual Basic 2005 for the connection and interface with Microsoft SQL Server.

OTHER

- I was a judge for the Southwestern Europe Regional Contest (SWERC) 2019-2020
- I have been an amateur developer for the iOS Platform from Spring 2012 to Spring 2014
- I was a tutor for high school and university students for mathematics and computer science during my studies at the University of Udine; during my doctoral studies, I taught Italian to a French high school student who was later admitted to a dual degree program between the Sorbonne University (Paris 1) in France and the University of Florence in Italy
- During my high school studies and my studies at the University of Udine (from December 2005 to February 2011), I worked part-time (15 hours/week) as a bartender in a multiplex cinema (Cinecity Art & Cinemas s.r.l., Udine, Italy)