

Mila Dalla Preda

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Profile

PLACE AND DATE OF BIRTH

Verona, November 1st 1977

LANGUGES

Italian and English

ACTUAL POSITION

From March 15th 2014. Ricercatore a Tempo Determinato (RTDa) funded by the MIUR FIRB 2013 project FACE (Formal Avenue for Chasing malwarE).

RESEARCH INTERESTS

- Formal methods for security: malware analysis, intellectual property protection, software integrity (code obfuscation, watermarking and tamper-proofing)
- Formal methods for the analysis of self-modifying programs: metamorphic malware, and distributed adaptive systems
- Static analysis and abstract interpretation

Education

MAY 16TH 2007

PhD in Computer Science, Dipartimento di Informatica, University of Verona.

MARCH 19TH 2003

Master Degree in Computer Science, University of Verona, score 110/110 e lode.

JULY 1996

High School Degreeen, Liceo Scientifico Statele "G. Fracastoro".

JULY 1995

High School Degree, Peekskill High School, NY, USA

Leaves

NOVEMBER 3RD 2009 - APRIL 3RD 2010

Maternity leave (Legge 30/12/71 N. 1204)

NOVEMBER 16TH 2011 - APRIL 16TH 2012

Maternity leave (Legge 30/12/71 N. 1204)

Curriculum vitae et studiorum

JANUARY 19TH 2015

Abilitazione Scientifica Nazionale for Associate Professor (01/B1 - Computer Science), D.D. 161 del 28/01/2013. Valid until January 19th 2021.

MARCH 1ST 2013 - FEBRUARY 28TH 2014

Post-Doc position at the Dipartimento di Informatica of the University of Verona, under the supervision of Dott.ssa Isabella Mastreoni.

OCTOBER 1ST 2011 - FEBRUARY 28TH 2013

Post-Doc position at the Dipartimento di Scienze dell'Informazione of the University of Bologna, under the supervision of Prof. Maurizio Gabbrielli.

JUNE 1ST 2011 - SEPTEMBER 30TH 2011

Post-Doc position at INRIA Sophia ANtripolis - Mediterranee.

AUGUST 1ST 2010 - MARCH 31ST 2011

Scholarship funded by project SMART AGGREGATION - Spinner 2013.

JANUARY 1ST 2008 - AUGUST 31ST 2008

Contract with the Department of Information and Communication Technology, University of Trento, funded by the european project RE-TRUST, under the supervision of prof. Yoram Ofek.

MAY 1ST 2007 - AUGUST 31ST 2010

Post-Doc position at the Dipartimento di Informatica of the University of Verona, under the supervision of Prof. Roberto Giacobazzi.

MAY 16TH 2007

PhD defense of the thesis "Code Obfuscation and Malware Detection by Abstract Interpretation". Defense committee Prof. Patrick Cousot (Departement d'Informatique, Ecole Normale Superieure, Parigi), Prof. Maurizio Gabrielli (Dipartimento di Informatica, University of di Bologna) and Prof. Massimo Merro (Dipartimento di Informatica, University of Verona).

JANUARY 1ST 2007 - APRIL 30TH 2007

Post-Doc position at the Department of Information and Communication Technology, University of Trento, under the supervision of Prof. Yoram Ofek. The post-doc position is funded by the european FET project Re-Trust (2006-2009).

JANUARY 2004

Winner of a scholarship for a PhD in Computer Science at the Dipartimento di Informatica of the University of Verona.

JANUARY 1ST 2004 - DECEMBER 31ST 2006

PhD at the Dipartimento di Informatica of the University of Verona.

SEPTEMBER 1ST 2003 - DECEMBER 31ST 2003

Research contract on the "Study of abstractions strongly preserving in abstract model checking" under the supervision of Prof. Roberto Giacobazzi, at the Dipartimento di Informatica of the University of Verona.

MARCH 19TH 2003

Receives the master degree in Computer Science at the University of Verona, evaluation 110/110 cum laude. Master thesis: "Completezza e stabilità in Abstract Model Checking". Advisor: Prof. Roberto Giacobazzi.

Research Visits

APRIL 2014

Visit at the University of Louisiana at Lafayette - Center for Advanced Computers Studies, (Lafayette, Louisiana) in the research group of Prof. Arun Lakhotia.

MAY 2011

Visit at the University of Louisiana at Lafayette - Center for Advanced Computers Studies, (Lafayette, Louisiana) in the research group of Prof. Arun Lakhotia

APRIL 2009

Visit at the University of Arizona - Department of Computer Science (Tucson, Arizona) in the research group of Prof. Saumya Debray

MAY 2008

Visit at the University of Arizona - Department of Computer Science (Tucson, Arizona) in the research group of Prof. Saumya Debray

MAY - AUGUST 2007

Visit at the University of Wisconsin - Department of Computer Science (Madison, Wisconsin) in the research group of Prof. Somesh Jha

JANUARY - APRIL 2007

Visit at the Università di Trento - Department of Information Technology (Trento, Italia) in the research group of Prof. Yoram Ofek

JANUARY - APRIL 2006

Visit at the University of Arizona - Department of Computer Science (Tucson, Arizona) in the research group of Prof. Saumya Debray

NOVEMBER 2005

Visit at the Universiteit Ghent - Department of Computer Science (Ghent, Belgio) in the research group of Dott. Matias Madou and Prof. Koen De Bosschere.

Research Projects

• Funded Projects

FIRB 2013

FACE - Formal Avenue for Chasing malwarE (2014-2017). MIUR project "Futuro in ricerca 2013" coordinated by the University of Milano and Verona (coordinator). Role: Principal Investigator. (acceptance rate 5,10%).

Abstract: Today's security threats are characterized by effective dissemination mechanisms (e.g., droppers, drive-by download), malicious mobile apps, and targeted attacks. The large amounts of malware samples are often mutations and porting of known families (also to

mobile platforms). Malicious mobile apps are difficult to analyze because they do not show their full malicious behavior if not properly stimulated. Modern malware attempts to evade both dynamic and static approaches, with anti-debugging, obfuscation and metamorphism techniques. In these cases, a semantic approach to hybrid (dynamic and static) analysis techniques would lead to a more precise understanding of the malware behavior and, therefore, to the development of more effective detection mechanisms. Indeed, formal approaches to program analysis are a promising research direction, although their application to malware is still quite poor. As a result, a uniform and formal roadmap that can be followed to mitigate modern malware is still missing. We believe that semantics-based formal approaches for modeling and reasoning on the evolving behavior of metamorphic malware will provide a significant contribution to both research community and industry. The main challenge is the isolation of the common malicious behavior shared across the metamorphic variants. FACE will leverage formal approaches for modeling the common malicious behaviors. We aim at modeling differences and invariants between metamorphic or ported malware variants. To this end, we plan to disassemble such variants and apply abstraction techniques to obtain a semantic model of the differences. To model the invariants, we design new abstract-interpretation-based domains for analyzing code properties and for extracting metamorphic signatures; to this end we will leverage also the analysis of (mutated) malware samples across multiple anti-malware tools.

SPINNER 2013

SMART AGGREGATION (2010-2011)- Sovvenzione Globale Spinner 2013 - Programma Operativo Regione Emilia-Romagna. Rore: Principal Investigator

JOINT-PROJECT 2007

Shadowcode: code protection in .net by abstract and dynamic steganography. The partners of the project are the University of Verona and the Consorzio Veneto dell'Informatica e del Tecnologico Avanzato (VITA). Ruolo: active researcher

PRIN 2007

Analisi e protezione del software mediante interpretazione astratta. MIUR project COFIN, coordinated between the University of Padova (coordinator), Parma e Verona. Ruolo: active researcher

EU FET PROJECT 2007

RE-TRUST: Remote EnTrusting by RUn-time Software auThentication (2007-2010), europeo FET project coordinated between the University of Trento (coordinator), Politecnico di Torino, Gemalto (France), Katholieke Universiteit (Leuven-Belgium) and SPIIRAS St.Petersburg Institute for Informatics and Automation of the Russian Academy of Sciences (Russia). Ruolo: active researcher

• Project proposal with a positive evaluation but not funded

FIRB 2012

ATHENA - Approcci formali contro i malware moderni. MIUR project "Futuro in ricerca 2012" coordinated between the University of Bologna, Milano and Verona (coordinator Dott. Isabella Mastroeni). Role: head unit of Bologna. Evaluation 100/100

EU - STREP ICT FET OPEN CALL 2008

FUCSIA - Obfuscation and Steganography by Abstract Interpretation. Proposal FP7-ICT-2007-C, coordinated between the University of Verona (coordinator Prof. R. Giacobazzi),

Imperial College - UK, ENS - Francia e Cloakware - Canada. Role: active researcher. Evaluation 4.1/5.

EU - STREP ICT FET OPEN CALL 2007

FUCSIA - Obfuscation and Steganography by Abstract Interpretation. Proposal FP7-ICT-2007-C, coordinated between the University of Verona (coordinator Prof. R. Giacobazzi), Imperial College - UK, ENS - Francia e Cloakware - Canada. Role: active researcher. Evaluation 4/5.

PRIN 2006

Analisi statica e dinamica per la certificazione automatica di sicurezza di programmi. MIUR project coordinated between the University of Venezia (coordinato), Parma, Pisa and Verona. Role: active researcher. Evaluation 46/60.

Event Organizations and Committees

• PC Chair

- Co-chair of the 6th Workshop on Program Protection and Reverse Engineering, PPREW 2016 co-located con ACSAC 2015, Los Angeles, CA, USA.
- Co-chair of the 5th Workshop on Program Protection and Reverse Engineering, PPREW 2015, co-located with ACSAC 2015, Los Angeles, CA, USA.
- Co-chair of the 4th Workshop on Program Protection and Reverse Engineering, PPREW-4 2014, co-located with ACSAC 2014, New Orleans, LA, USA.
- Co-chair of the Workshop on Program Protection and Reverse Engineering, PPREW 2013, co-located with POPL 2013, Roma, Italia.

• Program Committees

- 1st Workshop on FORmal methods for Security Engineering, ForSE 2017
- Membro dell' External Review Committee (ERC) del 44th ACM SIGPLAN Symposium on Principles of Programming Languages POPL 2017
- 9th International Symposium on Foundations & Practice of Security, FPS 2016
- 2nd IEEE International Workshop on Software PROtection, SPRO 2016
- 6th Numerical and Symbolic Abstract Domain Workshop, NSAD 2016
- IEEE/ACM International Symposium on Code Generation and Optimization, CGO 2016 (PC meeting fisico Boston)
- 4th International Conference on Advances in Computing, Communications & Informatics, ICACCI -Special Session on Malware Analysis and Forensics in Smart Phones 2015
- 8th International Symposium on Foundations & Practice of Security, FPS 2015
- 1st IEEE International Workshop on Software PROtection, SPRO 2015
- 35th annual ACM SIGPLAN conference on Programming Language Design and Implementation, PLDI 2015

- 41st International conference on Current Trends in Theory and Practice of Computer Science - Cryptography, Security & Verification track, SOFSEM 2015
- 7th International Symposium on Foundations and Practice of Security, FPS 2014
- 9th International Conference on Malicious and Unwanted Software, MALCOM 2014
- 3rd Workshop on Program Protection and Reverse Engineering, PPREW 2014
- 40th international conference on Current Trends in Theory and Practice of Computer Science - Cryptography, Security & Verification track of SOFSEM 2014
- 6th International Symposium on Foundations & Practice of Security, FPS 20013
- 20th Static Analysis Symposium, SAS 2013
- 5th IEEE international conference MALWARE 2012
- Software Security and Protection Workshop, SSP12
- Workshop on Program Protection and Reverse Engineering, PPREW 2012
- 4th IEEE international conference MALWARE 2010
- Doctoral Symposium of the 16th International Symposium on Formal Methods (FM'09)

● Organizing Committees

- Cyber Security Day in Verona Ottobre 6th 2014, event in the context of the Cyber Security Month organized by ENISA
- 5th International Summer School on Information Security and Protection, ISSISP 2014, Verona, July 2014
- International Static Analysis Symposium - SAS 2004, Verona

Reviewing Activities

● Conferences

- 1st Workshop on FORmal methods for Security Engineering, ForSE 2017
- 44th ACM SIGPLAN Symposium on Principles of Programming Languages POPL 2017
- 6th Numerical and Symbolic Abstract Domain Workshop, NSAD 2016
- IEEE/ACM International Symposium on Code Generation and Optimization, CGO 2016
- International Symposium on Foundations & Practice of Security, FPS 2013, 2014, 2015, 2016
- International Workshop on Software PRO-tection, SPRO 2015, 2016
- 25th International Symposium on Logic-Based Program Synthesis and Transformation, LOPSTR 2015
- Logic, Rewriting and Concurrency: Festschrift Symposium in Honor of Josè Maseguer. LRC 2015

- 4th International Conference on Advances in Computing, Communications & Informatics, ICACCI -Special Session on Malware Analysis and Forensics in Smart Phones 2015
- 8th International Symposium on Foundations & Practice of Security, FPS 2013, 2014, 2015
- International conference on Current Trends in Theory and Practice of Computer Science - Cryptography, Security & Verification track, SOFSEM 2014-2015
- 1st International Workshop on Software PRO-tection, SPRO 2015
- 35th annual ACM SIGPLAN conference on Programming Language Design and Implementation, PLDI 2015
- 11th International Conference on integrated Formal Methods, iFM 2014
- International Conference on Coordination Models and Languages, COORDINATION 2014
- Workshop on Program Protection and Reverse Engineering, PPREW 2012-2013-2014
- International Static Analysis Symposium, SAS 2004, 2005, 2007, 2013, 2014
- International Conference on Fundamentals of Software Engineering, FSEN 2013
- China International Conference on Information Security and Cryptology Inscrypt 2013
- Software Security and Protection Workshop, SSP 2012
- Computer Security Foundations Symposium, CSF 2012
- Malware 2010-2012
- ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation, PEPM 2010
- European Symposium on Programming, ESOP 2009
- Dependable Computing and Communication Symposium at the International Conference on Dependable Programming 2009
- Information Hiding, IH 2006-2007
- International Conference on Verification, Model Checking and Abstract Interpretation, VMCAI 2005, 2006
- Italian Conference on Theoretical Computer Science, ICTCS 2005

● Journals

- Journal of Systems and Software - Elsevier (2016)
- International Journal of Computers in Healthcare (IJCIH)- InderScience (2015)
- International Journal of Information Security - Springer (2015)
- Discrete and Applied Mathematics (2015)
- Higher-Order and Symbolic Computation (2011)

- Journal of Systems and Software (2011)
- IEEE Software Journal (2010)

Duties

2014 - NOW

Member of the Collegio Didattico di Corso di Laurea Magistrale in Ingegneria e Scienze Informatiche, Dipartimento di Informatica - University of Verona

2014 - NOW

Member of the Consiglio di Dipartimento - University of Verona

Invitations and Seminars

MARCH 2ND - MARCH 5TH 2015

Invited to participate at the NII Shonan Meeting entitled "Low level code analysis and applications to computer security". National Institute of Informatics (NII), Japan.

NOVEMBER 7TH 2014

Invited to the ARO Workshop on Continuously Upgradeable Software Security and Protection, Phoenix, AZ, USA.

OTTOBER 6TH 2014

Invited talk at the Cyber Security Day in Verona, event in the context of the Cyber Security Month organized by ENISA

JUNE 9TH - JUNE 13TH 2014

Invited at the Dagstuhl Seminar 14241 - Challenges in Analysing Executables: Scalability, Self-modifying Code and Synergy. Organizers: Roberto Giacobazzi (University of Verona, IT), Axel Simon (TU München, DE), Sarah Zennou (EADS-Suresnes, FR).

MAY 29TH 2013

Invited at the 27th CREST open workshop - Malware CREST27, UCL, London.

MAY 2011

Seminar entitled "Modeling Metamorphism by Abstract Interpretation", at the Center for Advanced Computer Studies, University of Louisiana at Lafayette.

NOVEMBER 2008

Seminari entitled "Advances in Code Obfuscation and Malware Detection by Abstract Interpretation", at the Dipartimento di Scienze dell'Informazione, University of Bologna.

JULY 2007

Seminar entitled "Code Obfuscation and Malware Detection by Abstract Interpretation", at the Computer Science Department, University of Madison, Wisconsin, USA.

MARCH-APRIL 2007

Series of seminars on an introduction to abstract interpretation, FBK, Trento.

NOVEMBER 2006

Seminar entitled "Code Obfuscation and Malware Detection by Abstract Interpretation", at the Department of Information and Communication Technology, University of Trento.

JULY 2004

Seminar entitled "Completeness Refinement in Abstract Symbolic Trajectory Evaluation", at the Dipartimento di Informatica, University of Verona.

OCTOBER 2002

Seminar entitled "Raffinamento e completezza in Abstract Model Checking", at the Dipartimento di Informatica, University of Verona.

Awards

- august 2006: QinetiQ (www.qinetiq.com) Award for research contributions with strong practical applications at the Doctoral Symposium associated to the Conference Formal Methods 2006, Hamilton, Canada, Agosto 2006.
- october 2007: Special mention from the a EATCS (European Association for Theoretical Computer Science) for PhD thesis in theoretical computer science.

Publications

• Journals

[J7] M. Dalla Preda and F. Maggi. *Testing Android Malware Detectors Against Code Obfuscation: A Systematization of Knowledge and Unified Methodology*. Accepted for publication in Journal of Computer Virology and Hacking Techniques 2016.

[J6] R. Giacobazzi, I. Mastroeni and M. Dalla Preda. *Maximal Incompleteness as Obfuscation Potency*. Accepted for publication in Formal Aspects of Computing Journal 2016. ISSN: 0934-5043.

[J5] M. Dalla Preda, R. Giacobazzi and S. Debray. *Unveiling Metamorphism by Abstract Interpretation of Code Properties*. Theoretical Computer Science (TCS), Volume 577, pp 71 - 97, 2015. ISSN: 0304-3975.

[J4] M. Dalla Preda, M. Gabbrielli, S. Giallorenzo, I. Lanese and J. Mauro. *Developing correct, distributed, adaptive software*. Science of Computer Programming (SCP), Volume 97, pages 41-46, 2015. ISSN: 0167-6423.

[J3] M. Dalla Preda and R. Giacobazzi. *Semantics-based Code Obfuscation by Abstract Interpretation*. Journal of Computer Security (JCS), volume 17, number 6, pages 855-908, 2009. ISSN: 0926-227X.

[J2] M. Ceccato, M. Dalla Preda, J. Nagra, C. Collberg and P. Tonella. *Trading off security and performance in barrier slicing for remote software trusting*. Special Issue of Journal of Automated Software Engineering (JASE), volume 16, number 2, pages 235-261, 2009. ISSN: 0928-8910.

[J1] M. Dalla Preda, M. Christodorescu, S. Jha and S. Debray. *A Semantics-based approach to Malware Detection*. ACM Transactions on Programming Languages and Systems (TOPLAS), volume 30, number 5, pagine 1-54. 2008. ISSN: 0164-0925.

• Conferences

[C26] M. Dalla Preda and M. Pasqua. *A semantics-based framework for software watermarking*. Accepted for publication at 6th Numerical and Symbolic Abstract Domain Workshop NSAD 2016.

[C25] M. Dalla Preda and V. Vidali. *Abstract similarity analysis*. Accepted for publication at 6th Numerical and Symbolic Abstract Domain Workshop NSAD 2016.

[C24] C. Zheng, M. Dalla Preda, J. Granula, S. Zanero and F. Maggi. *On-chip system call tracing: feasibility study and open prototype for Linux/ARM*. Accepted for publication at IEEE Conference on Communication and Network System CNS 2016.

[C23] M. Dalla Preda, R. Giacobazzi and I. Mastroeni. *Completeness in Approximate Transductions*. Accepted for publication at 23rd Static Analysis Symposium 2016.

[C22] M. Dalla Preda, M. Gabbrielli, S. Giallorenzo, I. Lanese and J. Mauro. *Dynamic Choreographies Safe Runtime Updates of Distributed Applications*. Accettato per la pubblicazione alla 17th IFIP International Conference on Coordination Models and Languages COORDINATION 2015. Grenoble, Francia. ISBN 978-3-319-19281-9.

[C21] M. Dalla Preda and I. Mastroeni. *Infections as Abstract Symbolic Finite Automata: Formal Model and Applications*. Accettato per la pubblicazione al 1st IEEE International Workshop on Software PRO-tection. (SPRO) 2015, Firenze, Italia. ISBN 978-1-4673-7094-3.

[C20] M. Dalla Preda, R. Giacobazzi, A. Lakhotia and I. Mastroeni. *Abstract Symbolic Automata: Mixed syntactic/semantic similarity analysis of executables*. Proceedings of the 42nd ACM Symposium on Principles of Programming Languages 2015 (POPL 2015), pagine 329-341, Gennaio 2015, Mumbai, India. ISBN 9781450333009.

[C19] M. Dalla Preda, S. Giallorenzo, I. Lanese, J. Mauro and M. Gabbrielli. *AIOCJ: A Choreography Framework for Safe Adaptive Distributed Applications*. Proceedings of the 7th International Conference on Software Language Engineering (SLE'14), Settembre 2014, Sweden. ISBN: 9783319112442.

[C18] M. Dalla Preda, I. Mastroeni and R. Giacobazzi. *Analyzing program dependences for malware detection*. Proceedings of the 3rd Workshop on Program Protection and Reverse Engineering (PPREW14), Gennaio 2014, San Diego, CA, USA. ISBN: 9781450326490.

[C17] M. Dalla Preda, I. Mastroeni and R. Giacobazzi. *Formal Framework for property-driven obfuscation*. Proceedings of the 19th International Symposium of Fundamentals of Computer Theory (FCT 2013). Volume 8070 of Lecture Notes in Computer Science, pages 133 - 144, Agosto 2013, Liverpool, UK. ISBN: 9783642401633.

[C16] A. Lakhotia, M. Dalla Preda and R. Giacobazzi. *Fast Location of Similar Code Fragments Using Semantic 'Juice'*. Proceedings of the 2nd Workshop on Program Protection and Reverse Engineering (PPREW'13). Gennaio 2013. Roma, Italy. ISBN: 9781450318570.

[C15] M. Dalla Preda, M. Gabbrielli, C. Guidi, J. Mauro and F. Montesi. *Service Integration via Target-Transparent Mediation*. Proceeding of the IEEE International Conference on Service-Oriented Computing and Applications, SOCA 2012, pages 1- 5, IEEE Computer Society Press. Dicembre 2012, Taipei, Taiwan. ISBN: 9781467347730.

[C14] M. Dalla Preda, M. Gabbrielli, C. Guidi, J. Mauro and F. Montesi. *Interface-based service composition with aggregation*. Proceedings of European Conference on Service-

Oriented and Cloud Computing (ESOCC'12), Volume 7592 of Lecture Notes in Computer Science, pages 48 - 63. Settembre 2012, Bertinoro, Italy. ISBN: 9783642334269.

[C13] M. Dalla Preda. *The Grand Challenge in Metamorphic Analysis. (Position Paper)*. Proceedings of the 6th International Conference on Information Systems, Technology and Management, ICISTM 2012. Volume 285 of Communications in Computer and Information Science, pages 439-444. Springer, Marzo 2012, Grenoble, France. ISBN 978-3-642-29165-4.

[C12] M. Dalla Preda, W. Feng, R. Giacobazzi, R. Greechie and A. Lakhoria. *Twisting Additivity in Program Obfuscation*. Proceedings of the Workshop on Program Protection and Reverse Engineering (PPREW12). Volume 285 of Communications in Computer and Information Science, pages 336-347. Springer, Marzo 2012, Grenoble, France. ISBN 978-3-642-29165-4.

[C11] M. Dalla Preda, M. Gabbrielli, I. Lanese, J. Mauro and G. Zavattaro. *Graceful Interruption of Request response Service Interactions*. Proceedings of the 9th International Conference on Service Oriented Computing (ICSOC11). Volume 7084 of Lecture Notes in Computer Science, pages 590-600. Springer-Verlag, Dicembre 2011, Paphos, Cyprus. ISBN: 9783642255342.

[C10] M. Dalla Preda and C. Di Giusto. *Hunting distributed malware with the k-calculus*. Proceedings of the 18th International Symposium on Fundamentals of Computation Theory (FCT11), volume 6914 of Lecture Notes in Computer Science, pages 102-113, Springer-Verlag. Agosto 2011, Oslo, Norway. ISBN: 978-3-642-22952-7.

[C9] M. Dalla Preda, R. Giacobazzi, S. Debray, K. Coogan and G. Townsden. *Modelling Metamorphism by Abstract Interpretation*. Proceedings of the 17th International Static Analysis Symposium (SAS'10), volume 6337 of Lecture Notes in Computer Science, pages 218-235, Springer-Verlag. Settembre 2010, Perpignan, France. ISBN: 9783642157684.

[C8] M. Ceccato, M. Dalla Preda, A. Majumdar and P. Tonella. *Remote software protection by orthogonal client replacement*. Proceedings of the 24th Annual ACM Symposium on Applied Computing (SAC'09-SE track), pagine 448-455, ACM SIGAPP press, Marzo 2009, Hawaii, USA. ISBN: 9781605581668.

[C7] M. Dalla Preda, R. Giacobazzi and E. Visentini. *Hiding Software Watermarks in Loop Structures*. Proceedings of the 15th International Static Analysis Symposium (SAS'08), volume 5079 of Lecture Notes in Computer Science, pagine 174-188, Springer-Verlag. Luglio 2008, Valencia, Spagna. ISBN: 9783540691631.

[C6] M. Ceccato, M. Dalla Preda, J. Nagra, C. Collberg and P. Tonella. *Barrier Slicing for Remote Software Trusting*. 7th IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM'07), pagine 27-36, Computer Society IEEE Press. Settembre 2007, Parigi, Francia. ISBN: 9780769528809.

[C5] M. Dalla Preda, M. Christodorescu, S. Jha and S. Debray. *A semantics-based approach to malware detection*. In Proceedings of the 34th ACM Symposium on Principles of Programming Languages 2007 (POPL'07), pagine 377-388. Gennaio 2007, Nice, France. ISBN: 9781595935755.

[C4] M. Dalla Preda, M. Madou, R. Giacobazzi and K. De Bosschere. *Opaque Predicate Detection by Abstract Interpretation*. In Proceedings of the 11th International Conference on Algebraic Methodology and Software Technology (AMAST'06). Volume 4019 of Lecture Notes in Computer Science, pagine 81-95, Springer-Verlag. Luglio 2006, Kuressaare, Estonia. ISBN: 9783540356332.

[C3] M. Dalla Preda and R. Giacobazzi. *Control Code Obfuscation by Abstract Interpretation*. In Proceedings of the 3rd IEEE International Conference on Software Engineering and Formal Methods (SEFM'05), pagine 301-310, IEEE Computer Society Press. Settembre 2005, Coblenza, Germania. ISBN: 9780769524351.

[C2] M. Dalla Preda and R. Giacobazzi. *Semantics-based Code Obfuscation by Abstract Interpretation*. Proceedings of the 32th International Colloquium on Automata, Languages and Programming (ICALP'05 - Track B). Volume 3580 of Lecture Notes in Computer Science, pagine 1325-1336, Springer-Verlag. Luglio 2005, Lisbona, Portogallo. ISBN: 9783540275800.

[C1] M. Dalla Preda. *Completeness Refinement in Abstract Symbolic Trajectory Evaluation*. Proceedings of the 11th Static Analysis Symposium (SAS'04), Volume 3148 of Lecture Notes in Computer Science, pagine 38-52, Springer-Verlag. Agosto 2004, Verona. ISBN: 9783540227915.

• International Workshops

[W4] V. Notani, M. Dalla Preda and R. Giacobazzi. *SHERBET: SHared codE seaRch with symBolic finitE auTomata*. Doctoral Symposium of Engineering Secure Software and Systems (ESSoS) 2016.

[W3] M. Dalla Preda and I. Mastroeni. *Chasing infections by unveiling program dependencies*. 1st International Workshop on Interference and Dependence, ID 2013. Gennaio 2013, Roma, Italia.

[W2] M. Dalla Preda. *Hunting obfuscated malware by abstract interpretation*. Doctoral Symposium of Formal Methods (FM'06), Agosto 2006, Hamilton, Canada.

[W1] M. Dalla Preda, M. Madou, R. Giacobazzi and K. De Bosschere. *Opaque Predicate Detection by Abstract Interpretation*. 1st International Workshop on Emerging Applications of Abstract Interpretation (EAAI'06). Marzo 2006. Vienna, Austria. Apparso anche come [++]

• PhD Thesis

M. Dalla Preda. *Code Obfuscation and Malware Detection by Abstract Interpretation*. Esame finale sostenuto il 16 Maggio 2007

• Technical Reports

[TR4] M. Dalla Preda and Michele Pasqua. *A semantics-based approach to software watermarking by abstract interpretation*. Technical Report RR 98 / 2016, Dipartimento di Informatica, Università di Verona, Febbraio 2016.

[TR3] M. Dalla Preda, M. Gabbrielli, C. Guidi, J. Mauro and F. Montesi. *A language for (smart) service aggregation: Theory and practice of interface-based service composition*. Technical report UBLCS- 2011-11, Dipartimento di Scienze dell'Informazione, Universtà di Bologna.

[TR2] M. Dalla Preda, M. Gabbrielli, S. Giallorenzo, I. Lanese and J. Mauro. *Deadlock Freedom by Construction for Distributed Adaptive Applications*. CoRR abs/1407.0970 (2014)

[TR1] M. Dalla Preda, S. Giallorenzo, I. Lanese, J. Mauro and M. Gabbrielli: *AIOCJ: A Choreographic Framework for Safe Adaptive Distributed Applications*. CoRR abs/1407.0975 (2014)

• Submitted

[SC1] R. Sarteà, M. Dalla Preda, A. Farinelli, R. Giacobazzi and I. Mastroeni. *Active Android Malware Analysis: An approach based on Stochastic Games*. Aprile 2016

[sJ2] M. Dalla Preda, M. Gabbrielli, S. Giallorenzo, I. Lanese and J. Mauro. *Dynamic Choreographies: from theory to practice*. Gennaio 2016, under Minor Revision

[sJ1] M. Dalla Preda and I. Mastroeni. *Characterizing Property Driven Obfuscation*. Sottomesso al Journal of Computer Security, Settembre 2014, under Major Revision.

• Analysis of the Publications (July 2016)

- 7 Journals, 26 Conferences
- H-index: 9 (Scopus), 12 (Google Scholar)
- Total citations: 230 (Scopus, 166 with no self-citations), 569 (Google Scholar)
- Publications without PhD Advisor: 54% of conferences, 57% of journals

Teaching

• Tutoring

- 2007-2008: Tutor of "Informatica di base", Prof. Massimo Merro, Dipartimento di Informatica, University of Verona.
- 2007-2008: Tutor of "Informatica di base", Prof. Andrea Fusiello, Dipartimento di Informatica, University of Verona.
- 2006-2007: Tutor of "Informatica di base" , Dott. sa Barbara Oliboni, Dipartimento di Informatica, University of Verona.
- 2005-2006: Tutor of "Matematica di base", Prof. Enrico Gregorio, Dipartimento di Informatica, University of Verona.
- 2004-2005: Tutor of "Informatica di base", Dott. Ugo Solitro, Dipartimento di Informatica, University of Verona.

• Courses

2014/2015, 2015/2016

- Static Analysis and code protection
- Learning Outcome: The goal is to reach a deep comprehension and development ability in program analysis and protection. The application area concerns the development of tools for analysis and code certification, reverse engineering of code, digital forensics and code protection against theft (IPP). Particular emphasis is devoted to code protection by code obfuscation, watermarking, tamper-proofing and code attack by malware.
- Syllabus: Mathematical bases: Lattice theory and Fixpoint theory; Attack and defense: Attack, Data Flow Analysis, Static Attack, Dynamic Attack, Program Monitoring, Levels of interpretation and specialization, Code Slicing; Approximation: fix point approximation, Abstract Interpretation, Completeness, incompleteness and obfuscation; Obfuscation

theory: impossibility and obfuscation via interpretation, Static Obfuscation and Dynamic Obfuscation; Tamper-proofing; Watermarking: definitions (water/birth/finger marking), Static Watermarking, Dynamic Watermarking, Abstract Watermarking; Similarity analysis, Law references and principles of digital forensics.

• Graduate Students

- Advisor of Luca Barile "Telephone mobile malware for Android" A.A. 2015/2016. Grade: 110/110.
- Advisor of Alberto Albiero: "Identificazione automatica della manomissione tramite hashing" A.A. 2014/2015. Grade: 106/110.
- Advisor of Vanessa Vidali: "Abstract Similarity Analysis For Python" A.A. 2014/2015. Grade 110/100 cum laude.
- Advisor of Filippo Vivaldi: "Taint Analysis per PHP usando il K-Framework" A.A. 2014/2015. Grade 100/100.
- Advisor of Alberto Fanini: "Alias Analysis per PHP basata sul K-Framework" A.A. 2014/2015. Grade 108/110.
- Advisor of Michele Pasqua: "Approccio semantico al Software Watermarking: Un modello generale basato su Interpretazione Astratta" A.A. 2014/2015. Grade 110/110 e lode.
- Co-Advisor of Matteo Rossignoli: "Behavioral models for self-modifying programs", A.A. 2014/2015. Grade 95/110.
- Co-Advisor Diego Marcolungo: "Normalizzazione del codice e metamorfismo in Java Bytecode", A.A. 2007/2008, Grade 109/110.
- Co-Advisor of Nicola Furia: "Malware e tecniche di rilevamento", A.A. 2007/2008, Grade 98/110.
- Co-Advisor of Alessandro Brunelli: "Tecniche di protezione del software in Java Bytecode", A.A. 2006/2007, Grade 108/110.
- Co-Advisor of Enrico Visentini: "Offuscamento di Codice mediante Loop Unrolling e Interpretazione Astratta", A.A. 2005/2006, Grade 110/110 e lode.
- Co-Advisor of Anna Veronesi: "Attacchi e Contrattacchi al Watermarking Astratto", A.A. 2005/2006, Grade 110/110 e lode.