

Marco Savi, PhD

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Last update: March 6, 2024

OVERVIEW

Main Duties

- Research on *computer networking* and *cloud computing*
- Research project management
- Preparation and editing of research project proposals (generation of around 850.000€ in competitive funding)
- Teaching to BSc, MSc and PhD students (~ 450 hours)

Research Topics (from more to less recent)

- Serverless Computing/Function as a Service in Distributed Networks
- Trustworthy Machine-Learning-Based Network Intrusion Detection
- Network Monitoring with Programmable Data Planes
- Distributed Learning for Multi-access Edge Computing
- Resource Allocation in Fog Computing
- SDN-based Network Orchestration of IP/Optical Layers
- Resource Optimization in NFV and Service Function Chaining
- Energy-Efficient Content Caching in Fixed-Mobile Convergent Networks
- Privacy and Security in Smart Grids

Research Methodologies

- Optimization models (linear programming) and algorithms (heuristics)
- Network simulation and emulation
- Queuing theory
- Signal processing

Bibliometrics

- H-index: 17 (Google Scholar), 15 (Scopus)
- Number of citations: 1083 (Google Scholar), 760 (Scopus)

Academic Qualifications

- *Italian Scientific Qualification* (ASN) for the role of Associate Professor in Information Processing Systems - SSD: ING-INF/05, Validity: from 15/06/2023 to 15/06/2034
- *Italian Scientific Qualification* (ASN) for the role of Associate Professor in Computer Science - SSD: INF/01, Validity: from 31/01/2022 to 31/01/2033
- *Italian Scientific Qualification* (ASN) for the role of Associate Professor in Telecommunications - SSD: ING-INF/03, Validity: from 11/06/2021 to 11/06/2032

CURRENT POSITION

Tenure-Track Assistant Professor (RTD-B, SSD: ING-INF/05 - Information Processing Systems)

- *Date*: November 2022 - now
- *University*: University of Milano-Bicocca, Milano, Italy
 - *Department*: Department of Informatics, Systems and Communication (DISCo)
 - *Laboratory*: Real-time Events and Decision Support (REDS)
 - * *Responsibility*: Deputy lab head
 - * *Lab head*: Dr. Fabio Sartori

PROFESSIONAL Non-Tenured Assistant Professor (RTD-A, SSD: ING-INF/03 - Telecommunications)
EXPERIENCE

- *Date:* April 2020 - October 2022
- *University:* University of Milano-Bicocca, Milano, Italy
 - *Department:* Department of Informatics, Systems and Communication (DISCo)
 - *Laboratory:* Real-time Events and Decision Support (REDS)
 - * *Lab head:* Dr. Fabio Sartori

Expert Researcher (SSD: ING-INF/05 - Information Processing Systems)

- *Date:* April 2018 - March 2020
- *Research institution:* Fondazione Bruno Kessler (FBK), Trento, Italy
 - *Research centers:* FBK-ICT (January 2020 - March 2020), FBK CREATE-NET (April 2018 - December 2019)
 - *Research unit:* Robust and Secure Distributed Computing (RiSING)
 - * *Research unit head:* Dr. Domenico Siracusa

Postdoc Researcher (SSD: ING-INF/05 - Information Processing Systems)

- *Date:* March 2016 - March 2018
- *Research institution:* Fondazione Bruno Kessler (FBK), Trento, Italy
 - *Research center:* FBK CREATE-NET
 - *Research unit:* Future Networks (FuN)
 - * *Research unit heads:* Dr. Domenico Siracusa and Dr. Roberto Riggio

Postdoc Researcher (SSD: ING-INF/03 - Telecommunications)

- *Date:* January 2016 - March 2016
- *University:* Politecnico di Milano, Milano, Italy
 - *Department:* Department of Electronics, Information e Bioengineering (DEIB)
 - *Laboratory:* Broadband Optical Networks, Security and Advanced Internet
 - * *Lab head:* Prof. Achille Pattavina

Contract Professor (SSD: ING-INF/03 - Telecommunications)

- *Dates:* February 2015 - June 2015
- *University:* University of Bergamo, Bergamo, Italy
- *Activities:* Teaching activities to BSc students

Visiting Researcher

- *University:* University of Alcalá, Alcalá, Spain
 - *Date:* November 2018 (2 weeks)
 - *Department:* Department of Automatics
 - *Host research group:* GIST-NetServ
 - * *Research group head:* Prof. Juan Antonio Carral
 - *Activities:* Starting a new research collaboration on topics related to SDN
- *University:* University of Melbourne, Melbourne, Australia
 - *Date:* August 2014 - February 2015 (6 months)
 - *Department:* Department of Electrical and Electronic Engineering
 - *Host research center:* Centre for Energy-Efficient Telecommunication (CEET)
 - * *Research center director:* Dr. Kerry Hinton
 - *Activities:* Research on energy efficiency in access/aggregation networks

EDUCATION

Doctor of Philosophy (PhD) in Information Technology (SSD: ING-INF/03 - Telecommunications)

- *Date:* January 2013 - June 2016
- *University:* Politecnico di Milano, Milano, Italy
 - *Department:* Department of Electronics, Information e Bioengineering (DEIB)
 - *Laboratory:* Broadband Optical Networks, Security and Advanced Internet
 - * *Lab head:* Prof. Achille Pattavina
- *Dissertation title:* Overcoming Performance, Cost and Energy Issues in Fixed and Mobile Convergent Networks
 - *Supervisor:* Prof. Giacomo Verticale
- *Grade Point:* With merit

Master of Science (MSc) in Telecommunications Engineering (Networking Area)

- *Date:* October 2010 - December 2012
- *University:* Politecnico di Milano, Milano, Italy
- *Grade Point:* 110/110 (summa cum laude)

Bachelor of Science (BSc) in Telecommunications Engineering

- *Date:* September 2007 - July 2010
- *University:* Politecnico di Milano, Milano, Italy
- *Grade Point:* 108/110

TEACHING EXPERIENCE

Teacher (~ 300 hours)

- Telecommunication Systems and Services (Graduate Course, 6 CFU)
 - *Academic Years:* 2021-2022 (50 hours), 2022-2023 (40 hours), 2023-2024 (40 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy
 - *Role:* Responsible of the course
- Networks and Operating Systems (Undergraduate Course)
 - *Academic Year:* 2022-2023 (32 hours), 2023-2024 (52 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy
- Expert Systems and Network Architectures for Distributed Wearable Environments (PhD Course, 2 CFU)
 - *Academic Years:* 2021-2022 (11 hours), 2023-2024 (11 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy
 - *Role:* Responsible of the course
- Information Systems (Graduate Course)
 - *Academic Years:* 2020-2021 (16 hours), 2021-2022 (16 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy
- Multimedia Internet Networks (Undergraduate Course, 6 CFU)
 - *Academic Year:* 2014-2015 (48 hours)
 - *University:* University of Bergamo, Bergamo, Italy
 - *Role:* Responsible of the course

Teaching Assistant (~ 100 hours)

- Foundations of Computer Science (Undergraduate Course)
 - *Academic Year:* 2022-2023 (10 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy
- Telecommunication Systems and Services (Graduate Course)
 - *Academic Year:* 2020-2021 (10 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy
- Databases (Undergraduate Course)
 - *Academic Years:* 2019-2020 (20 hours), 2020-2021 (20 hours)
 - *University:* University of Milano-Bicocca, Milano, Italy

- Multimedia Internet Networks (Undergraduate Course)
 - *Academic Year:* 2016-2017 (16 hours)
 - *University:* University of Bergamo, Bergamo, Italy
- Telecommunication Networks (Undergraduate Course)
 - *Academic Year:* 2013-2014 (24 hours)
 - *University:* University of Bergamo, Bergamo, Italy
- Networking Software Platforms (Undergraduate Course)
 - *Academic Years:* 2012-2013 (6 hours), 2013-2014 (6 hours)
 - *University:* Politecnico di Milano, Milano, Italy

Lab Assistant (20 hours)

- Telecommunication Networks and Internet (Undergraduate Course)
 - *Academic Year:* 2013-2014 (20 hours)
 - *University:* Politecnico di Milano, Milano, Italy

**ROLES AND
ACADEMIC
SERVICES**

Member of the Steering Committee (*Giunta*) of the National Inter-University Consortium for Telecommunications (CNIT)'s Scientific Board

- *Date:* March 2023 - now
- *Body description:* The Steering Committee of the CNIT's Scientific Board (*Consiglio Scientifico*) is composed of four elected members of the Scientific Board
- *Role:* Assisting the President in the definition of strategies to strengthen the development of CNIT's scientific activities; involvement in CNIT's strategy definition for VQR 2020-2024 (Evaluation of Quality of Research)

Director of Research Unit at CNIT

- *Research Unit:* University of Milano-Bicocca, Milano, Italy
- *Date:* October 2022 - now
- *Additional and Related Role:* Member of the CNIT's Scientific Board

Member of the Italian Academic Board of the PhD in Computer Science

- *PhD Cycles:* XXXVII, XXXIX, XL
- *Date:* October 2021 - now
- *University:* University of Milano-Bicocca, Milano, Italy

Information Engineer

- *Date:* December 2020 - now
- *Association:* Order of Engineers of the Province of Milano, Italy
- *Registration number:* 32877

Member of the DISCo Timetable Commission

- *Date:* January 2023 - now
- *University:* University of Milano-Bicocca, Milano, Italy
- *Duty:* Definition of the timetable and rooms for the lessons of the Bachelor and Master Degrees offered by the DISCo Department

**RESEARCH /
INNOVATION
PROJECTS**

Responsibilities in Projects

- WatchEDGE (Wide-area Agile and flying neTwork arCHitecture for AI-surveillance processing at the EDGE), 2024-2025 (with University of Milano-Bicocca)
 - *More details:* 3-years focused of the PNRR RESTART programme funded by Italian Ministry of University and Research (MUR)
 - *Role:* WatchEDGE/A1 Task Leader (project joined through Cascade Call)

- SHIELDED (Secure, Trustworthy, and Efficient Federated Learning for Intrusion Detection at the Edge), 2023-2025 (with University of Milano-Bicocca)
 - *More details:* 2-years PRIN 2022 PNRR project funded by Italian Ministry of University and Research (MUR)
 - *Role:* Responsible of Research Unit and Deputy Project Coordinator
- ReGAINs (Reducing the Gap between Artificial Intelligence and Society), 2023-2027 (with University of Milano-Bicocca)
 - *More details:* "Excellence Department" project of the DISCo Department, funded by Italian Ministry of University and Research (MUR)
 - *Role:* Referent for Activity 3 (Development of architectures for the analysis of big data volumes) of Objective 2 (Sustainable AI development)
- DECENTER (Decentralized Technologies for Orchestrated Cloud-to-Edge Intelligence), 2018-2020 (with Fondazione Bruno Kessler)
 - *More details:* 3-years European/Korean H2020/IITP project funded by European Commission and Korean Government
 - *Role:* Work Package 3 Leader and EU Deputy Project Coordinator
 - *Deliverables:* Editor of D3.1 (technical) and of D7.1-8 (ethics requirements), author of D2.1, D3.2 (technical) and D1.2, D1.3 (management)
- GÉANT GN4-3, 2019-2020 (with Fondazione Bruno Kessler/GARR)
 - *More details:* 4-years H2020 project funded by European Commission
 - *Role:* Responsible and coordinator of FBK's research activities with respect to Work Package 6-Task 1, as subcontractor of GARR Consortium
 - *Deliverables:* Author of D6.3, D6.5 (technical)
- 5G Experimentation in Prato (Italy), 2018-2020 (with Fondazione Bruno Kessler)
 - *More details:* 4-years project supported by Italian Ministry of Economic Development (MISE)
 - *Role:* Responsible and coordinator of FBK's activities on SDN aspects
 - *Reporting:* Writing of the required documentation

Participation in Projects

- Assessment of the communication network of an Italian hospital, 2022 (with University of Milano-Bicocca)
 - *More details:* Project funded by a public administration
 - *Role:* Contribution to the definition of the assessment methodology and to the assessment activity
 - *Reporting:* Contribution to the required documentation
- ACINO (Application-Centric IP/optical Network Orchestration), 2016-2018 (with Fondazione Bruno Kessler)
 - *More details:* 3-years H2020 project funded by European Commission
 - *Role:* Research on resource allocation
 - *Deliverables:* Author of D2.2, D3.3, D3.4, D3.5 (technical), of D1.9 (management) and of D6.5 (dissemination)
- COMBO (Convergence of Fixed and Mobile Broadband Access/aggregation Networks), 2013-2016 (with Politecnico di Milano)
 - *More details:* 3-years FP7 project funded by European Commission
 - *Role:* Research on content caching aspects
 - *Deliverables:* D3.1, D4.1 (technical)
- Feasibility study of Vectoring DSL multi-DSLAM and G.Fast (funded by an Italian telecommunication operator), 2013 (with Politecnico di Milano)
 - *More details:* Project funded by a private company
 - *Role:* Model definition and implementation
 - *Reporting:* Contribution to the required documentation

**ADDITIONAL
RESEARCH
EXPERIENCE
AND DUTIES**

Supervision, Co-supervision and Tutoring

- *Co-supervisor* of 2 PhD students
 - *Jacopo Talpini*, Machine Learning Based Network Intrusion Detection, University of Milano-Bicocca (2022-now)
 - *Damu Ding*, Design and Development of Network Monitoring Strategies in P4-enabled Programmable Switches, Fondazione Bruno Kessler/University of Bologna (2017-2021)
- Partial *co-supervisor* of 4 PhD students from Politecnico di Milano and Fondazione Bruno Kessler (not as formal supervisor/co-supervisor)
 - *Francescomaria Faticanti*, Strategic Allocation of Resources in Highly Distributed and Heterogeneous Computing and Information Systems under Concurrency and Multitenancy, Fondazione Bruno Kessler/University of Trento (2018-2021)
 - *Roberto Doriguzzi Corin*, Methods and Techniques for Dynamic Deployability of Software-Defined Security Services, Fondazione Bruno Kessler/University of Bologna (2017-2020)
 - *Antonio Marsico*, Enabling Novel Interactions between Applications and Software-Defined Networks, Fondazione Bruno Kessler/University of Trento (2015-2018)
 - *Ali Hmaity*, Reliability Strategies for Next Generation Cloud Networks, Politecnico di Milano (2015-2018)
- *Supervisor/co-supervisor* of MSc students (10+) from University of Milano-Bicocca, Fondazione Bruno Kessler and Politecnico di Milano
- *Supervisor/co-supervisor* of BSc students (10+) from University of Milano-Bicocca and Politecnico di Milano
- *Tutor* of 2 PhD student
 - *Alice Bernasconi*, University of Milano-Bicocca (2021-now)
 - *Effrosyni Sokli*, University of Milano-Bicocca (2023-now)

PhD Evaluation Committee Member

- *Iman Lotfimahyari*, Enhancing Performance in Programmable 5G Networks, Blockchains, and Cloud Gaming, Politecnico di Torino (2024) - Also thesis reviewer
- *Mingyuan Zang*, Secure and Trustworthy IoT Networks, Technical University of Denmark (2023) - Also thesis reviewer
- *Marco Zambianco*, Deep Reinforcement Learning for Inter-Numerology Interference Minimization in 5G RAN Slicing, Politecnico di Milano (2022)
- *Memedhe Ibrahim*, Innovative Cross-Layer Optimization Techniques for the Design of Filterless and Wavelength-Switched Optical Networks, Politecnico di Milano (2022)
- *Valerio Bruschi*, Closing the Gap between Performance and Efficiency in Programmable Networking, University of Rome Tor Vergata (2022) - Also thesis reviewer
- *Sergio Spanò*, Design of Hardware Architecture for the Acceleration of Machine Learning Algorithms, University of Rome Tor Vergata (2022)
- *Eder Ollora Zaballa*, Control and Data Plane Programming-driven SDN Management and Operation, Technical University of Denmark (2022) - Also thesis reviewer

Editorial Activity

- *Member of the Editorial Board* (Technical Committee) of Elsevier's Computer Communications (2020-now)
- *Guest Editor* for Elsevier's Computer Networks - Special Issue on "Network Softwarization and Intelligence at the Edge: Challenges and Opportunities" (2023-now)
- *Guest Editor* for Elsevier's Computer Networks - Special Issue on "Challenges and Solutions for Hybrid SDN" (2020-2021)
- *Member of the Editorial Board* (Editor) of MDPI Network (2020-now)
- *Member of the Editorial Board* (Review Editor) of Frontiers in Communications and Networks (2020-now)
- *Member of the Reviewer Board* of MDPI Future Internet (2020-now)
- *Guest Editor* for MDPI Electronics - Special Issue on "New Trends in SDN/NFV Architectures and Routing Solutions" (2021)
- *Guest Editor* for MDPI Sensors - Special Issue on "Network Traffic: Models, Challenges and Research Opportunities" (2022-2023)

Conference/Workshop Organizing Committee Member

- 3rd International Workshop on Edge Network Softwarization (ENS) 2024 (co-located with IEEE NetSoft 2024) - *General Co-Chair*
- 1st International Workshop on Trustworthy and eXplainable Artificial Intelligence for Networks (TX4Nets) 2024 (co-located with IFIP Networking 2024) - *Member of the Organizing Committee*
- IEEE LANMAN 2024 Conference - *Publicity Chair*
- MTSR 2023 Conference - *Chair for MTSR 2023*
- 2nd International Workshop on Edge Network Softwarization (ENS) 2023 (co-located with IEEE NetSoft 2023) - *TPC Co-Chair*
- 1st International Workshop on Edge Network Softwarization (ENS) 2022 (co-located with IEEE NetSoft 2022) - *General Chair*
- ACM CoNEXT 2022 Conference - *Web Chair*
- IEEE NetSoft 2022 Conference - *Web Co-Chair*
- European P4 Workshop (EuroP4) 2022 (co-located with ACM CoNEXT 2022) - *Publicity Chair*
- IEEE SECON 2021 Conference - *Publication Chair*

Technical Program Committee Member

- 5G&Co. 2024
- IEEE NetSoft 2023, 2024
- *LESS 2023, 2024 Workshop
- IEEE CSCN 2023
- IEEE ANTS 2022, 2023
- IEEE HPSR 2023, 2024
- IEEE SECON 2021, 2022, 2023
- IFIP NI Workshop 2022 (co-located with Networking 2022)
- ACM SDN-NFV Sec Workshop 2021 (co-located with CODASPY 2021)
- IEEE COINS 2020 - Cloud Computing Track
- IEEE STET Workshop 2018 (co-located with NetSoft 2018)
- IEEE ICC 2017 - Selected Areas in Communications: SDN & NFV
- IEEE GLOBECOM 2015 - Selected Areas in Communications: SDN

Grant Proposal Reviewer Invitations

- National Science Center, Poland
- National Research Agency (ANR), France
- Fondazione Cariplo, Italy

Academic Reviewer

- *Relevant Journals:* IEEE/ACM Transactions on Networking, IEEE Journal on Selected Areas in Communications, IEEE Communications Magazine, Computer Communication Review, IEEE Transactions on Smart Grid, IEEE Communications Letters, IEEE Transactions on Network and Service Management, IEEE Access, IEEE Transactions on Green Communications and Networking, IEEE Transactions on Industrial Informatics, IEEE/OSA Journal of Optical Communications and Networking, IEEE Networking Letters, Computer Networks, Computer Communications, Optical Switching and Networking, Journal on Network and Systems Management
- *Relevant Conferences:* IEEE ICC, IEEE GLOBECOM, IEEE SECON, IEEE Online GreenComm, IEEE/IFIP NOMS, IEEE COINS, ONDM, EuCNC, ICIN

Relevant Invited Talks, Talks, Panels, Seminars and Tutorials

- 8th January 2023: *Tutorial* "Development of Next-Generation ML-Based Security Solutions Exploiting the Capabilities of Programmable Data Planes and P4" at IEEE CCNC 2023
- 29th November 2022: *Invited Talk* "Programmable Data and Control Planes Interaction for Machine-Learning-Based DDoS Detection" at GÉANT SIG-NGN Meeting 2022
- 21st March 2022: *Talk* "Serverless Computing for NFV: Is it Worth it? A Performance Comparison Analysis" at 1st *LESS Workshop (co-located with IEEE PerCom 2022)
- 17th January 2022: *Talk* "DFaaS: Decentralized Function-as-a-Service for Federated Edge Computing" at INW 2022
- 9th November 2021: *Moderator* and *Panelist* of the Student Mentor Panel at IEEE CloudNet 2021
- 25th June 2021: *Expert Panelist* at 1st Workshop on Serverless Mobile Networking for 6G Communications (co-located with ACM MobiSys 2021)
- 22nd April 2021: *Invited Talk* "P4-based Network Traffic Entropy Estimation for the Detection of DDoS Attacks", at DRCN 2021 - Workshop "Beyond SDN. Programmable data plane: Abstraction, Architectures and Applications"
- 4th December 2020: *Talk* "The Role of Data Storage in the Design of Wearable Expert Systems", at MTSR 2020 (jointly with Fabio Sartori)
- 14th October 2020: *Talk* "Rethinking the Design of Wearable Expert Systems: The Role of Network Infrastructures", at WiMob 2020
- 5th February 2020: *Invited Talk* "Use Case for Data Plane Programming: Distributed Denial of Service Detection", at GÉANT Symposium 2020
- 30th January 2020: *Talk* "An Incrementally-deployable P4-enabled Architecture for Network-wide Heavy-hitter Detection" at INW 2020
- 12th November 2018: *Seminar* "Empowering Network Monitoring through Programmability" at University of Alcalà, Department of Automatics
- 12th October 2018: *Invited Talk* "Empowering Network Monitoring through Programmability" at SDN NFV World Congress 2018
- 17th May 2017: *Tutorial* "ACINO: From Application Blending to Application Centricity" at ONDM 2017 (organizer and sole speaker)
- 20th November 2015: *Talk* "Impact of Processing Costs on Service Chain Placement in Network Functions Virtualization" at IEEE NFV-SDN 2015
- 11th December 2013: *Talk* "A Decisional Attack to Privacy-friendly Data Aggregation in Smart Grids" at IEEE GLOBECOM 2013

Academic Collaborations with National/International Research Groups

- *University of Bologna* (Italy) on Programmable Data Planes and data/control plane interaction (2022-now) – 1 joint publication
- *University of Catania* (Italy) on Edge Computing with FANETs (2022-now) – 1 joint publication
- *Fondazione Bruno Kessler* (Italy) on programmable data planes and fog computing (2020-now) – 4 joint publications
- *Politecnico di Milano* (Italy) on various topics related to SDN and NFV (2016-now) – 4 joint publications
- *University of Ljubljana* (Slovenia) on SLA in fog computing (2020-2021) – 2 joint publications
- *University of Alcalá* (Spain) on hybrid SDN (2018-2021) – 2 joint publications
- *University of Avignon* (France) on resource allocation in fog computing (2020) – 1 joint publication
- *Queen's University Belfast* (United Kingdom) on security in NFV (2019-2020) – 1 joint publication
- *Korea Electronics Technology Institute* (Republic of Korea) on resource sharing in fog computing (2019-2020) – 2 joint publications
- *Queen Mary University of London* (United Kingdom) on Programmable Data Planes in hybrid networks (2019-2020) – 2 joint publications
- *RISE-ICT/Acreo* (Sweden) on resource negotiation in multi-layer networks (2017-2018) – 2 joint publications
- *Athens Information Technology* (Greece) on resource allocation in multi-layer networks (2016-2018) – 6 joint publications
- *Lund University* (Sweden) on latency in Access Networks (2015-2016) – 3 joint publications
- *JCP-Connect* (France) and *Argela* (Turkey) on Caching in Access Networks (2014-2015) – 2 joint publications
- *Fraunhofer Research Institution for Applied and Integrated Security* (Germany) on privacy in Smart Grids (2012-2015) – 3 joint publications

Industrial Collaborations

- *Storm Reply GmbH* (Italy) on Edge Computing (2021-2022)
- *Athonet srl* (Italy) on Network Function Virtualization (2020-now)

GRANTS AND AWARDS

Research Grants

- WatchEDGE Project (2024-2025), funded by Italian Ministry of University and Research under PNRR RESTART's Spoke 8 Cascade Call (80.000€ granted to University of Milano-Bicocca)
 - *Roles:* Team leader and responsible of proposal writing (name: SPRINT) for the University of Milano-Bicocca's Research Unit
- SHIELDED Project (2023-2025), funded by Italian Ministry of University and Research under PRIN 2022 PNRR call (87.000€ granted to University of Milano-Bicocca)
 - *Roles:* Team leader and responsible of proposal writing for the University of Milano-Bicocca's Research Unit
- EDWARD Project (2023-2025), individual project funded by University of Milano-Bicocca under Fondo di Ateneo Quota Competitiva (FAQC) call (13.400€)
 - *Roles:* Team leader and responsible of proposal writing
- H2020 DECENTER Project (2018-2021), funded by the European Commission (650.500€ granted to Fondazione Bruno Kessler)
 - *Role:* Member of the FBK's team leading and coordinating the proposal writing (also including Dr. Domenico Siracusa and Mr. Raffaele Giaffreda)

- H2020 GN4-3 Project (2019-2022), funded by the European Commission
 - *Role:* Member of the FBK’s team participating to the proposal writing, as subcontractor of GARR Consortium

Best Paper Awards

- Paper "Virtual Network Function Placement For Resilient Service Chain Provisioning" - RNDM 2016 Workshop
- Paper "Estimating Logarithmic and Exponential Functions to Track Network Traffic Entropy in P4" - IEEE ComSoc Technical Committee on Network Operation and Management (CNOM) Best Paper Award 2022

Research Awards

- Young Talents Award 2023 (1st Prize, 5.000€ of research grant) and 2021 (3rd Prize, 1.000€ of research grant)
 - *Issuer:* University of Milano-Bicocca, Milano, Italy
 - *Patron:* Accademia Nazionale dei Lincei
 - *Macro-area:* Mathematics, Computer Science, Industrial and Information Engineering

Travel/Registration Grants

- CoNEXT 2020 Conference

TECHNICAL SKILLS

Operating Systems: Microsoft Windows, Linux
Programming/Scripting/Databases: C, Java, Matlab, HTML, Python, MySQL
Operation Research: AMPL, CPLEX
Productivity/Typesetting: Microsoft Office Suite, LaTeX, WordPress
Network Emulation/Simulation: NS2, Cisco Packet Tracer, Net2Plan, Netkit, Mininet

LANGUAGE PROFICIENCY

Italian: Native language
English: Proficiency (C1), TOEIC Certificate, April 2010, grade: 790/990

PUBLICATIONS Journal Papers

1. R. Doriguzzi-Corin, L. A. Dias-Knob, L. Mendozzi, D. Siracusa, **M. Savi**, Introducing Packet-Level Analysis in Programmable Data Planes to Advance Network Intrusion Detection, in *Computer Networks*, vol. 239, pp. 110162, Feb. 2024
2. S. Troia, **M. Savi**, G. Nava, L. M. Moreira Zorello, T. Schneider, G. Maier, Performance Characterization and Profiling of Chained CPU-bound Virtual Network Functions, in *Computer Networks*, vol. 231, pp. 109815, May 2023
3. F. Faticanti, **M. Savi**, F. De Pellegrini, D. Siracusa, Locality-aware Deployment of Application Microservices for Multi-Domain Fog Computing, in *Computer Communications*, vol. 203, pp. 180-191, Apr. 2023
4. D. Ding, **M. Savi**, D. Siracusa, Tracking Normalized Network Traffic Entropy to Detect DDoS Attacks in P4, in *IEEE Transactions on Dependable and Secure Computing*, vol. 19, no. 6, pp. 4019-4031, Nov. 2022
5. S. Troia, M. Mazzara, **M. Savi**, L. M. Moreira Zorello, G. Maier, Resilience of Delay-sensitive Services with Transport-based Monitoring in SD-WAN, in *IEEE Transactions on Network and Service Management*, vol.19, no. 3, pp. 2652-2663, Sept. 2022
6. F. Sartori, **M. Savi**, J. Talpini, Tailoring mHealth Apps on Users to Support Behavior Change Interventions: Conceptual and Computational Considerations, in *Applied Sciences*, vol. 12, no. 8, pp. 1-19, Apr. 2022

7. **M. Savi**, M. Tornatore, G. Verticale, Impact of Processing-resource Sharing on the Placement of Chained Virtual Network Functions, in *IEEE Transactions on Cloud Computing*, vol. 9, no. 4, pp. 1479-1492, Oct. 2021
8. E. Rojas, R. Amin, C. Guerrero, **M. Savi**, A. Rastegarnia, Challenges and Solutions for Hybrid SDN, in *Computer Networks*, vol. 195, pp. 108198, Aug. 2021 (editorial)
9. **M. Savi**, F. Olivadese, Short-Term Energy Consumption Forecasting at the Edge: A Federated Learning Approach, in *IEEE Access*, vol. 9, pp. 95949-95969, Jul. 2021
10. R. Berto, P. Napoletano, **M. Savi**, A LoRa-Based Mesh Network for Peer-to-Peer Long-Range Communication, in *Sensors*, vol. 21, no. 13, pp. 1-12, Jun. 2021
11. D. Ding, **M. Savi**, F. Pederzoli, M. Campanella, D. Siracusa, In-Network DDoS Victim Identification Using Programmable Commodity Switches, in *IEEE Transactions on Network and Service Management*, vol. 17, no. 2, pp. 1191-1202, Jun. 2021
12. J. Alvarez-Horcajo, I. Martinez-Yelmo, D. Lopez-Parajes, J. A. Carral, **M. Savi**, A Hybrid SDN Switch Based on Portable P4 Code, in *IEEE Communications Letters*, vol. 25, no. 5, pp. 1482-1485, May 2021
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Conference Papers

1. N. Di Cicco, J. Talpini, M. Ibrahimi, **M. Savi**, M. Tornatore, Uncertainty-Aware QoS Forecasting in Optical Networks with Bayesian Recurrent Neural Networks, to appear in *IEEE International Conference on Communications (ICC)*, May 2023
2. A. Al Sadi, **M. Savi**, A. Melis, D. Berardi, M. Prandini, F. Callegati, Real-time Pipeline Reconfiguration of P4 Programmable Switches to Efficiently Detect and Mitigate DDoS Attacks, in *Conference on Innovation in Clouds, Internet and Networks (ICIN)*, Mar. 2023 (demo paper)
3. J. Talpini, F. Sartori, **M. Savi**, A Clustering Strategy for Enhanced FL-Based Intrusion Detection in IoT Networks, to appear in *International Conference on Agents and Artificial Intelligence (ICAART)*, Feb. 2023
4. F. Sartori, **M. Savi**, K. Shala, A. Moglia and J. Talpini, Knowledge Artifacts to Support Dietary: the Diet Module of the PERCIVAL Project, in *International Conference on Metadata and Semantics Research (MTSR)*, Nov. 2022
5. L. Galluccio, C. Grasso, G. Maier, R. Raftopoulos, **M. Savi**, G. Schembra, S. Troia, Reinforcement Learning for Resource Planning in Drone-Based Software-defined Networks, to appear in *Mediterranean Communication and Computer Networking Conference (MedComNet)*, Jun. 2022
6. D. Ding, **M. Savi**, F. Pederzoli, D. Siracusa, Design and Development of Network Monitoring Strategies in P4-enabled Programmable Switches, to appear in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, Apr. 2022
7. **M. Savi**, A. Banfi, A. Tundo, M. Ciavotta, Serverless Computing for NFV: Is it Worth it? A Performance Comparison Analysis, in *IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*, Mar. 2022
8. M. Ciavotta, D. Motterlini, **M. Savi**, A. Tundo, DFaaS: Decentralized Function-as-a-Service for Federated Edge Computing, in *IEEE International Conference on Cloud Networking (CloudNet)*, Nov. 2021
9. D. Ding, **M. Savi**, F. Pederzoli, D. Siracusa, INVEST: Flow-based Traffic Volume Estimation in Data-plane Programmable Networks, in *IFIP Networking Conference*, Jun. 2021
10. F. Sartori, **M. Savi**, R. Melen, The Role of Data Storage in the Design of Wearable Expert Systems, in *International Conference on Metadata and Semantics Research (MTSR)*, Dec. 2020
11. **M. Savi**, F. Sartori, R. Melen, Rethinking the Design of Wearable Expert Systems: The Role of Network Infrastructures, in *IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)*, Oct. 2020

12. F. Faticanti, **M. Savi**, F. De Pellegrini, P. Kochovski, V. Stankovski, D. Siracusa, Deployment of Application Microservices in Multi-Domain Federated Fog Environments, in *IEEE International Conference on Omni-layer Intelligent Systems (COINS)*, Sept. 2020
13. D. Ding, **M. Savi**, D. Siracusa, Estimating Logarithmic and Exponential Functions to Track Network Traffic Entropy in P4, in *IEEE/IFIP Network Operations and Management Symposium (NOMS)*, Apr. 2020 (**CNOM best paper award 2022**)
14. **M. Savi**, D. Santoro, K. Di Meo, D. Pizzolli, M. Pincheira, R. Giaffreda, S. Cretti, S. W. Kum, D. Siracusa, A Blockchain-based Brokerage Platform for Fog Computing Resource Federation, in *Conference on Innovation in Clouds, Internet and Networks (ICIN)*, Feb. 2020 (demo paper)
15. D. Ding, **M. Savi**, G. Antichi, D. Siracusa, Incremental Deployment of Programmable Switches for Network-wide Heavy-hitter Detection, in *IEEE Conference on Network Softwarization (NetSoft)*, Jun. 2019
16. F. Pederzoli, **M. Savi**, D. Siracusa, E. Salvadori, Optimization of Secure Quantum Key Distribution Backbones in Core Transport Networks, in *Optical Fiber Communication Conference (OFC)*, Mar. 2019
17. A. Marsico, **M. Savi**, D. Siracusa, E. Salvadori, An Automated Service-downgrade Negotiation Scheme for Application-centric Networks, in *Optical Fiber Communication Conference (OFC)*, Mar. 2018
18. I. Tomkos, C. Rozic, **M. Savi**, P. Skoldstrom, V. Lopez, M. Chamania, D. Siracusa, C. Matrakidis, D. Klondis, Application Aware Multilayer Control and Optimization of Elastic WDM Switched Optical Networks, in *Optical Fiber Communication Conference (OFC)*, Mar. 2018
19. C. Rozic, **M. Savi**, C. Matrakidis, D. Klondis, D. Siracusa, I. Tomkos, Application-centric Multi-layer Resource Allocation in Availability-aware SDN-orchestrated Networks, in *European Conference on Optical Communication (ECOC)*, Sept. 2017
20. A. Marsico, M. Santuari, **M. Savi**, D. Siracusa, A. Ghafoor, S. Junique, P. Skoldstrom, An Interactive Intent-based Negotiation Scheme for Application-centric Networks, in *IEEE Conference on Network Softwarization (NetSoft)*, Jul. 2017 (demo paper)
21. **M. Savi**, C. Rozic, C. Matrakidis, D. Klondis, D. Siracusa, I. Tomkos, Benefits of Multi-Layer Application-aware Resource Allocation and Optimization, in *European Conference on Networks and Communications (EuCNC)*, Jun. 2017
22. C. Rozic, **M. Savi**, C. Matrakidis, D. Klondis, D. Siracusa, I. Tomkos, A Framework for Dynamic Multi-layer Resource Allocation in Application-centric Networking, in *Optical Fiber Communication Conference (OFC)*, Mar. 2017
23. **M. Savi**, F. Pederzoli, D. Siracusa, An Application-aware Multi-layer Service Provisioning Algorithm based on Auxiliary Graphs, in *Optical Fiber Communication Conference (OFC)*, Mar. 2017
24. S. Host, W. Tarneberg, P. Odling, M. Kihl, **M. Savi**, M. Tornatore, Network Requirements for Latency-critical Services in a Full Cloud Deployment, in *International Conference on Software, Telecommunications and Computer Networks (SoftCOM)*, Sept. 2016
25. A. Hmaity, **M. Savi**, F. Musumeci, M. Tornatore, A. Pattavina, Virtual Network Function Placement For Resilient Service Chain Provisioning, in *International Workshop on Resilient Networks Design and Modeling (RNDM)*, Sept. 2016 (**best paper award**)
26. **M. Savi**, A. Hmaity, G. Verticale, S. Host, M. Tornatore, To Distribute or Not to Distribute? Impact of Latency on Network Function Distribution at the Edge of FMC Networks, in *International Conference on Transparent Optical Networks (ICTON)*, Jul. 2016

27. **M. Savi**, M. Tornatore, G. Verticale, Impact of Processing Costs on Service Chain Placement in Network Functions Virtualization, in *IEEE Conference on Network Function Virtualization and Software Defined Networks (NFV-SDN)*, Nov. 2015
28. **M. Savi**, O. Ayoub, F. Musumeci, Z. Li, G. Verticale, M. Tornatore, Energy-efficient Caching for Video-on-Demand in Fixed-Mobile Convergent Networks, in *IEEE Online Conference on Green Communications (Online GreenCom)*, Nov. 2015
29. Z. Li, J. C. Point, S. Ciftci, O. Eker, G. Mauri, **M. Savi**, G. Verticale, ICN Based Shared Caching in Future Converged Fixed and Mobile Network, in *IEEE International Conference on High Performance Switching and Routing (HPSR)*, Jun. 2015
30. **M. Savi**, G. Verticale, M. Tornatore, Energy-Efficient VoD Content Delivery and Replication in Integrated Metro/Access Networks, in *IEEE Latin-American Conference on Communications (LatinCom)*, Nov. 2014
31. R. Fratini, **M. Savi**, G. Verticale, M. Tornatore, Using Replicated Video Servers for VoD Traffic Offloading in Integrated Metro/Access Networks, in *IEEE International Conference on Communications (ICC)*, Jun. 2014
32. C. Rottondi, **M. Savi**, D. Polenghi, G. Verticale, C. Krauss, A Decisional Attack to Privacy-friendly Data Aggregation in Smart Grids, in *IEEE Global Communications Conference (GLOBECOM)*, Dec. 2013
33. C. Rottondi, **M. Savi**, D. Polenghi, G. Verticale, C. Krauss, Implementation of a Protocol for Secure Distributed Aggregation of Smart Metering Data, in *International Conference on Smart Grid Technology, Economics and Policies (SG-TEP)*, Dec. 2012

Posters and Abstracts (not included in proceedings)

1. M. Campanella, P. Benacek, I. Golub, X. Jeannin, D. Parniewicz, **M. Savi**, F. Loui, How NRENs can benefit from P4, in *P4 Workshop in Europe (EUROP4)*, Sept. 2019
2. D. Ding, **M. Savi**, D. Siracusa, Estimation of Logarithmic and Exponential Functions Entirely in P4-programmable Data Planes, in *P4 Workshop in Europe (EUROP4)*, Sept. 2019
3. Z. Li, Y. Liu, J. C. Point, S. Ciftci, O. Eker, **M. Savi**, M. Tornatore, G. Verticale, Shared Cache as a Service in Future Converged Fixed and Mobile Network, in *European Conference on Networks and Communications (EuCNC)*, Jul. 2015