

Francesco Silvestri

Curriculum vitae

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PERSONAL DATA

First name	Francesco	Birth place	Asolo (TV), Italy
Last name	Silvestri	Gender	Male
Nationality	Italiana	Marital status	Married, two kids
Birth date	August 15, 1981		

RESEARCH TOPICS

My research targets algorithms and data structures, with an emphasis on big data and high performance. In particular, I have been extensively working on: similarity search, graph and trajectory mining, MapReduce and multicore algorithms, memory-efficient algorithms, algorithmic fault tolerance.

EDUCATION

- 04/2009 **Ph.D. in Computer Engineering**, *University of Padova*
Supervisor: Andrea Pietracaprina; dissertation title: “Oblivious Computations on Memory and Network Hierarchies”.
- 09/2005 **M.S. in Computer Engineering** (“Laurea Quinquennale”), *University of Padova, summa cum laude*
Supervisors: Andrea Pietracaprina and Geppino Pucci; thesis title “Simulation of D-BSP Parallel Programs on the Ideal Cache Hierarchy”.

PROFESSIONAL APPOINTMENTS

- Since 12/2019 **Associate Professor in Computer Engineering**, *Department of Information Engineering, University of Padova*
- 12/2016 - 11/2019 **Assistant Professor in Computer Engineering**, *Department of Information Engineering, University of Padova*
- 01/2015 - 11/2016 **Postdoctoral Researcher**, *IT University of Copenhagen*, ERC Project SSS (Scalable Similarity Search), Host: Rasmus Pagh
- 10/2013 - 03/2014 **Part-time Lecturer and Visiting Scholar**, *IT University of Copenhagen*, host: Rasmus Pagh
- 02/2009 - 12/2014 **Postdoctoral Researcher**, *Department of Information Engineering, University of Padova*, Host: Andrea Pietracaprina
- 10/2007 - 04/2008 **Visiting Scholar**, *Department of Computer Science, University of Texas at Austin*, host: Vijaya Ramachandran

TEACHING

Courses

- 2020-now **Algorithm Design**, *Galilean School of Higher Education*
- 2020-now **Big Data Computing**, *University of Padova*
- 2017-now **Computer Architecture**, *University of Padova*
- 2016 **Algorithm Engineering**, *IT University of Copenhagen*
- 2016, 2015 **Advanced Algorithms Seminars**, *IT University of Copenhagen*
- 2015 **Algorithm Design Project**, *IT University of Copenhagen*
- 2013 **Algorithm Design II**, *IT University of Copenhagen*
- Before 2014 **Teaching assistant**, *Data Mining (2014,2013), Large Data Sets (2010, 2008), Introduction to Probability (2007), Algorithms and Data Structures I (2006)*, University of Padova

Pedagogical training

- 2018 **Program “Teaching for Learning” for assistant professors**, *University of Padova*
A series of workshops (31 hours) on methods and tools for improving teaching quality.
- 2014-2016 **Workshops on university teaching**, *IT University of Copenhagen*, Workshops topics: Teaching computational competencies; Use your voice; Project and Thesis Supervision; Flipped Learning; Introduction to teaching at ITU; Develop your professional skills as an examiner
- 2014 **Course “University Teaching 101”**, *Johns Hopkins University*

PUBLICATIONS

Over 50 publications in international journals and conferences. H-index 15, total number of citations > 850 (from Google Scholar) See <http://www.dei.unipd.it/~silvestri/publications/> for the complete list of publications.

AWARDS

- 2023 **Best Paper Award**, *Proc. 26th International Conference on Database Theory (ICDT)*
Award for the paper: Shiyuan Deng, Francesco Silvestri and Yufei Tao, “The I/O Complexity of Enumerating Subgraphs of Constant Sizes.”
- 2021 **ACM SIGMOD Research Highlight Award**
Award for the paper “M. Aumüller, R. Pagh and F. Silvestri. Fair Near Neighbor Search: Independent Range Sampling in High Dimensions. In Proc. of ACM Symposium on Principles of Database Systems (PODS), 2020”.
- 2019 **Runner up for the Facebook AI System Hardware/Software Co-Design research awards**
88 submitted projects: 8 projects were awarded as winners, 8 as runners-ups.
- 2010 **Best Paper Award in the Algorithmic Track**, *24th IEEE International Parallel & Distributed Processing Symposium, USA*
Award for the paper: R. A. Chowdhury, F. Silvestri, B. Blakeley, V. Ramachandran, “Oblivious Algorithms for Multicores and Networks of Processors”
- 2008 **IEEE TCPP Travel Award**, *Ph.D. Forum of the 22nd IEEE International Parallel & Distributed Processing Symposium, USA*

2007 **IEEE TCPP Travel Award**, *21st IEEE International Parallel & Distributed Processing Symposium, USA*

RESEARCH GRANTS

- 2023-2025 **Marsden Fund - New Zealand**, *Associate P.I. of the Marsden Fund (P.I. Ninh Pham) with the project "Federated Nearest Neighbour Search: Theory and Practice"*
- 2022-2023 **Huawei Young Talents program**, *P.I. of sponsorship by Huawei for the activities on competitive programming of The Coding DEI*
- 2022-2024 **Uni-Impresa, University of Padova**, *P.I. of project "Big-Mobility: Big Data Analytics for Mobility", in collaboration with Motion Analytica S.r.l.*
- 2021-2022 **SMACT IRISS Project on quality and fault prediction for high precision mechanical components**, *SMACT Competence Center for Industry 4.0 (P.I.)*
- 2020-2021 **SMACT IRISS Project on graph database**, *SMACT Competence Center for Industry 4.0 (P.I.)*
- 2018-2019 **BIRD project, Dept. of Inf. Engineering, University of Padova**, *P.I. of the project "Trajectory analytics for gait analysis"*
- 2018 **University of Padova**, *Travel grant for international collaborations*
- 2014-2017 **MIUR-PRIN project**, *AMANDA: Algorithmics for MASSive and Networked DATA*, Role: task leader
- 2013, 2011 **University of Padova**, *Senior Research Fellowship*
- 2013, 2011 **Amazon Web Services (AWS)**, *AWS in Education research grant*
- Since 2006 **Participation in the following projects**: Progetto SID 2017 (2019-2017), ERC SSS (2014-2019), MIUR Projects AMANDA (2014-2017), ALGODEEP (2010-2012), MAINSTREAM (2007-2009), ALGONEXT (2004-2006); University of Padova Strategic Project STPD08JA32 (2010-2012); AURORA Project of Trento Province and INFN (2009-2011); European Project FET-IST FP6 AEOLUS (2005-2009).

SERVICE TO THE SCIENTIFIC COMMUNITY

Student supervision

- PhD students Fabrizio Boninsegna (10/2022 - expected graduation 2025)
- Research collaborators Lorenzo Padoan (02/2023-11/2024), Stefano Alberton (02/2023-03/2023)
- Master and bachelor 18 master students and 13 bachelor students since 2016.

Program and organizing committees

Program Committees European Symposium on Algorithms (ESA, Track A: 2023; Track B: 2019, 2015), ACM Principles of Database Systems Symposium (PODS, 2023, 2017), IPDPS GrAPL (2023), ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD, 2023,2022), Int. Symposium on Algorithms and Computation (ISAAC, 2022), Int. European Conference on Parallel and Distributed Computing (Euro-Par, 2022), SIAM International Conference on Data Mining (SDM, 2022), The Web Conference (WWW, 2022-2018), International Symposium on Algorithmic Aspects of Cloud Computing (ALGO CLOUD, 2020), IEEE Cluster (Cluster, 2019-2017), International Colloquium on Automata, Languages, and Programming (ICALP, 2019), International Conference on Parallel Processing (ICPP, 2019), Workshop on Algorithms and Systems for MapReduce and Beyond (BeyondMR, 2018-2017), International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD, 2017-2016), International Joint Conference on Artificial Intelligence (IJCAI, 2016) IEEE International Parallel & Distributed Processing Symposium (IPDPS, 2016-2015, 2013), ACM/IEEE Supercomputing Conference (SC, workshop selection 2015, poster selection 2014-2013), Workshop on Massive Data Algorithmics (MASSIVE, 2014), IEEE International Conference on Big Data (BigData, 2013).

Organizing Committees IEEE International Parallel & Distributed Processing Symposium (IPDPS, publicity chair, 2023, 2022, 2017; publicity co-chair, 2016-2013), IEEE Cluster (Cluster, publicity co-chair, 2015), ACM International Conference on Supercomputing (ICS, submission co-chair, 2012), European Summer School in Information Retrieval (ESSIR, 2009).

Editorial boards Guest Editor of the special issue "Big Data Algorithmics" of the journal "Algorithms" (2019).

Project reviewing

Grants National Science Center of Poland (2018)

University service

2023-now **Member of the commission for teaching timetable**, *University of Padova*

2021-now **Member of the "Commissione Scientifica Area n.11"**, *University of Padova*

2017-now **Member of the Formative Tutoring Program**, *Department of Information Engineering, University of Padova*

2018-now **Member of the PhD School Board**, *Department of Information Engineering, University of Padova*

Other activities

2018-now **Organizer and founder of "The Coding DEI"**, *Department of Information Engineering, University of Padova*

2018-now **Popularizing algorithms**, *Introducing algorithms and computational thinking to kids (5-10 years)*

PROFESSIONAL EXPERIENCES

Professional Qualifications

2017 National Scientific Qualification as associate professor in Computer Science (INF/01) and Computer Engineering (ING-INF/05).

2006 Admitted to the Italian Engineering Association.

Main scientific collaborations

Ongoing University of Bonn (A. Driemel), City University of New York (M. Goswami), IT University of Copenhagen (M. Aumüller, R. Pagh), University of Rome "Tor Vergata" (G. Italiano), Free University of Bozen (F. Vella).

Past MIT (I. Razenshteyn), Korea Advanced Institute of Science and Technology (U Kang), University of Delaware (M. Taufer), Brown University (E. Upfal), Universidade Federal do Rio Grande do Sul (P. Rech), Sapienza University of Rome (I. Finocchi), University of Texas at Austin (V. Ramachandran), Stony Brook University (R. A. Chowdhury).

Participation to invitation-only workshops

2023 Dagstuhl Seminar "Scalable Data Structures"

2021 Dagstuhl Seminar "Scalable Data Structures"

2019 Facebook AI Systems Faculty Summit

2019 Dagstuhl Seminar "Theoretical Foundations of Storage Systems"

2019 Dagstuhl Seminar "Data Structures for the Cloud and External Memory Data"

2018 Workshop on Scalable Approaches to High Performance and High Productivity Computing

2017 Dagstuhl Seminar "Theory and Applications of Hashing"

2017 Hawaii Workshop on Parallel Algorithms and Data Structures

2016 Dagstuhl Seminar "Data Structures and Advanced Models of Computation on Big Data"

2014 Workshop on Scalable Approaches to High Performance and High Productivity Computing

2012 Workshop on Scalable Approaches to High Performance and High Productivity Computing

2010 Workshop on Scalable Approaches to High Performance and High Productivity Computing.

Invited seminars

2022 Campus "Digital Transformation Training" by SMACT Competence Center for managers and entrepreneurs. Talk: "Big Data"

2020 Indo-German Spring School on Algorithms for Big Data. Title: Accelerating algorithms with Tensor Core Units

2019 Accademia Galileiana di Scienze, Lettere ed Arti. XIX Seminario di Tecnologie dell'Informazione. Title: "Chi si somiglia si piglia" algoritmi per trovare somiglianze nei Big Data.

2018 Free University of Bozen. Title: Distance-sensitive Hashing.

2018 University of Rome "Tor Vergata", Title: Distance-sensitive Hashing.

2017 IT University of Copenhagen. Title: Locality-sensitive hashing for curves.

2014 ENS de Lyon. Title: The Input/Output Complexity of Triangle Enumeration.

2014 University of Southern Denmark. Title: The Input/Output Complexity of Triangle Enumeration.

2013 IT University of Copenhagen. Title: Space-Round Tradeoffs for MapReduce Computations.

2011 Workshop on Recent Advances in Data Structures (Chennai, India). Title: Resilient Data Structures.

2010 Sapienza University of Rome. Title: Obliviousness in the Parallel Settings.

Languages

- Italian: mother tongue;
- English: full professional proficiency;