

## Education, Titles, and Academic Appointments

- Oct, 2022 – present **Research Fellow (RTD-a, SSD INF/01)**, *Link Campus University, Rome (Italy)*.
- Nov, 2020 – Oct, 2022 **Post-doctoral Fellow (Assegnista di ricerca)**, *Università degli studi di Roma La Sapienza, Rome (Italy)*.
- Dec 3rd, 2021 **Qualification as Information Engineer professionalist**.
- 2017 – 2020 **Dual Degree PhD, Engineering in Computer Science**, *Università degli Studi di Roma La Sapienza, Rome (Italy)*, **Informatique, Télécommunications et Électronique de Paris (EDITE)**, *Sorbonne Université, Paris (France)*.
- 2014 – 2017 **Masters of Science in Engineering in Computer Science**, *Università degli Studi di Roma La Sapienza, Rome (Italy)*, 110/110.
- 2009 – 2013 **Bachelor of Science in Computer and Control Engineering**, *Università degli Studi di Roma La Sapienza, Rome (Italy)*, 104/110.
- PhD Schools
- 2019 **HTCS 2019 - Hot Topics in Cyber Security**, (30h), *Università degli Studi di Roma La Sapienza, Rome (Italy)*.
- 2018 **ResCom 2018 - Data science, Network Science and Machine Learning**, (40h), *Porquerolles (France)*.

## Teaching Activities

- a.y. 2022 – 2023 **Information Technologies, Co-Instructor**, 9 CFU, Bachelor Degree in Innovative Technologies for Digital Communication, *Link Campus University, Rome (Italy)*
- a.y. 2022 – 2023 **Dependable Distributed Systems, Co-Instructor** (docente a contratto), 3 CFU, Master Degree in Engineering in Computer Science, *Università degli Studi di Roma La Sapienza, Rome (Italy)*
- a.y. 2021 – 2022 **Laboratorio di Architetture Software e Sicurezza Informatica, Co-Instructor** (docente a contratto), 3 CFU, Bachelor Degree in Ingegneria Informatica ed Automatica, *Università degli Studi di Roma La Sapienza, Rome (Italy)*
- a.y. 2020 – 2021 **Capacity Planning, Co-Instructor** (docente a contratto), 3 CFU, Master Degree in Engineering in Computer Science, *Università degli Studi di Roma La Sapienza, Rome (Italy)*
- Tutoring and Teaching Assistant
- a.y. 2020 – 2021 **Fondamenti di Informatica 1, Co-tutor**, 9 CFU, Bachelor Degree in Ingegneria Informatica ed Automatica, *Università degli Studi di Roma La Sapienza, Rome (Italy)*.

a.y. 2018 – **Fondamenti di Informatica 1, Tutor**, 9 CFU, Bachelor Degree in Ingegneria  
2019 Informatica ed Automatica, Università degli Studi di Roma *La Sapienza*, Rome (Italy).

## Research Projects

### PANACEA

Dec, 2020 – H2020 SU-TDS-02-2018 PANACEA - Protection and privAcy of hospital and health  
Jan, 2021 iNfrastructures with smArt Cyber sEcurity and cyber threat toolkit for dAta and people (webpage)

Role *Participant and Contributor*: Black-Box Unit testing, Deliverable D3.14 - DRMP and SISP Verification Report

Description PANACEA will deliver a complete cybersecurity toolkit providing a holistic approach for Health Care Institutions made up of a combination of technical (SW platforms for dynamic risk assessment, secure information sharing & security-by-design) and non-technical (procedures, governance models, people behavior tools).

### ESTATE

Apr, 2019 – ANR-16-CE25-0009-03 ESTATE (French national project) - Enhancing safety and  
Oct, 2020 self-stabilization in time-varying distributed environments (webpage)

Role *Participant and Contributor*: Several peer-reviewed scientific publications (J1, C2, C4, C5, C7, C8)

Description The core of ESTATE consists in laying the foundations of a new algorithmic framework for enabling Autonomic Computing in distributed and highly dynamic systems and networks. In other words, we plan to design a model that includes the minimal algorithmic basis allowing the emergence of dynamic distributed systems with self-\*capabilities

### Research fellowship (assegno di ricerca)

Nov, 2020 - Definizione di Algoritmi di comunicazione affidabile resistenti a Guasti Bizantini in  
ongoing reti dinamiche

Role *Contributor (assegnista di ricerca)*: peer-reviewed scientific publications (C2, submitted) and a co-supervised master thesis (ongoing)

Description The research project aims at overcoming part of the limitations present in the state-of-art fault-tolerant solutions for reliable communication and broadcast problems in dynamic distributed systems, which are a fundamental building block of more complex distributed systems problems, such as consensus and distributed ledger. Briefly, most of the contributions defined so far either assume complete knowledge of the dynamics of the system or work correctly with high probability. Currently, an improved solution to the Byzantine Reliable Broadcast problem in unknown networks has been defined in [C2] and a performance evaluation for the state-of-art solution solving the Byzantine Reliable Broadcast in churn-prone systems is under investigation with a master thesis.

## CBFTFDS

Nov, 2022 - CBFTFDS - Concrete Byzantine Fault Tolerance and Forecasting in Distributed  
Oct, 2023 Systems

Role Proposer and individual investigator

Description The project aims at providing tools supporting fault forecasting and fault tolerance capabilities of distributed systems targeted by malicious attackers. The first aim of this work is to identify and readapt tools and methodologies for cybersecurity and risk assessment to evaluate and verify the system model assumptions that can reasonably be considered in an actual distributed system deployment. The second goal of this project is the readaptation and definition of solutions to fundamental distributed system problems that leverage cybersecurity assessment. Therefore, the main target of this work is to narrow the gap between fault-tolerant distributed system solutions and the actual deployment by performing cybersecurity and risk assessments.

## Research Interests

My primary research interests are focused on fault-tolerant **static and dynamic distributed systems**, with particular emphasis on **Byzantine fault tolerance** (i.e., the resilience against arbitrary misbehavior, even malicious). More in detail, I've been investigating reliable information diffusion problems, such as communication and broadcast, in contexts affected by arbitrary failures, where the aim is to guarantee the reliable exchange of information or an eventual consistent shared state among processes despite the potential compromise of part of the peers in the system. I'm currently expanding my attention to several related fields: (a) the **modeling of dynamic distributed systems** and the solving of some fundamental problems in the field; (b) the **modeling of attacks** affecting distributed peer systems; (c) the **dependability and performance evaluations** of distributed systems; (d) **web3, Distributed Ledger Technologies**, and decentralized oracle networks.

## Bibliometric Information

Tot. Google Citations	Tot. Scopus Citations	Google H-index	Scopus h-index
33	14	3	2

## List of publications

### Journal Papers

- [J1] S. Bonomi, J. Decouchant, G. Farina, V. Rahli, and S. Tixeuil, "Practical byzantine reliable broadcast on partially connected networks," *Special issue on Dependability and Scalability of Distributed Systems in the Presence of Faults and Security Threats in Journal of Parallel and Distributed Computing*, Submitted.
- [J2] S. Bonomi, G. Farina, and S. Tixeuil, "Multi-hop byzantine reliable broadcast with honest dealer made practical," *J. Braz. Comput. Soc.*, vol. 25, no. 1, 9:1–9:23, 2019. DOI: 10.1186/s13173-019-0090-x.

- [J3] J. Adamek, G. Farina, M. Nesterenko, and S. Tixeuil, "Evaluating and optimizing stabilizing dining philosophers," *J. Parallel Distributed Comput.*, vol. 109, pp. 63–74, 2017. DOI: 10.1016/j.jpdc.2017.05.003.

#### Conference Papers

- [C1] S. Bonomi, G. Farina, and S. Tixeuil, "Reliable broadcast despite mobile byzantine faults," in *ACM Symposium on Principles of Distributed Computing (PODC 2023)*, Submitted.
- [C2] S. Bonomi, J. Decouchant, G. Farina, V. Rahli, and S. Tixeuil, "Comment réduire efficacement l'entropie des sources malveillantes d'information," in *AlgoTel 2022 - 24èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, Saint-Rémy-Lès-Chevreuse, France, May 2022. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-03657365>.
- [C3] S. Bonomi, J. Decouchant, G. Farina, V. Rahli, and S. Tixeuil, "Practical byzantine reliable broadcast on partially connected networks," in *41st IEEE International Conference on Distributed Computing Systems, ICDCS 2021, Washington DC, USA, July 7-10, 2021*, IEEE, 2021, pp. 506–516. DOI: 10.1109/ICDCS51616.2021.00055.
- [C4] S. Bonomi, G. Farina, and S. Tixeuil, "Bloquer efficacement les "fake news" sans connaître leurs réseaux de propagation," in *ALGOTEL 2021 - 23èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, La Rochelle, France, Jun. 2021. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-03220840>.
- [C5] S. Bonomi, G. Farina, and S. Tixeuil, "Boosting the efficiency of byzantine-tolerant reliable communication," in *Stabilization, Safety, and Security of Distributed Systems - 22nd International Symposium, SSS 2020, Austin, TX, USA, November 18-21, 2020, Proceedings*, S. Devismes and N. Mittal, Eds., ser. Lecture Notes in Computer Science, vol. 12514, Springer, 2020, pp. 29–44. DOI: 10.1007/978-3-030-64348-5\_3.
- [C6] S. Bonomi, G. Farina, and S. Tixeuil, "Broadcasting information in multi-hop networks prone to mobile byzantine faults," in *Networked Systems - 8th International Conference, NETYS 2020, Marrakech, Morocco, June 3-5, 2020, Proceedings*, ser. Lecture Notes in Computer Science, vol. 12129, Springer, 2020, pp. 112–128. DOI: 10.1007/978-3-030-67087-0\_8.
- [C7] S. Bonomi, G. Farina, and S. Tixeuil, "Une méthode efficace pour éviter la propagation des fake news," in *ALGOTEL 2020 – 22èmes Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications*, Lyon, France, Sep. 2020. [Online]. Available: <https://hal.archives-ouvertes.fr/hal-02875967>.
- [C8] S. Bonomi, G. Farina, and S. Tixeuil, "Multi-hop byzantine reliable broadcast made practical," in *8th Latin-American Symposium on Dependable Computing, LADC 2018, Foz do Iguaçu, Brazil, October 8-10, 2018*, IEEE, 2018, pp. 155–160. DOI: 10.1109/LADC.2018.00026.
- [C9] S. Bonomi, G. Farina, and S. Tixeuil, "Reliable broadcast in dynamic networks with locally bounded byzantine failures," in *Stabilization, Safety, and Security of Distributed Systems - 20th International Symposium, SSS 2018, Tokyo, Japan, November 4-7, 2018, Proceedings*, ser. Lecture Notes in Computer Science, vol. 11201, Springer, 2018, pp. 170–185. DOI: 10.1007/978-3-030-03232-6\_12.

## ■ Bibliographic Online References

Google Scholar **T1BK7IQAAAAJ**.

Orcid **0000-0002-4792-5305**.

Scopus **57194491984**.

## ■ Scientific Community

2017 – present **Peer to peer anonymous reviewer**, *ACM Symposium on Principles of Distributed Computing (PODC)*, *International Symposium on Algorithms and Computation (ISAAC)*, *Elsevier Journal of Parallel and Distributed Computing (JPDC)*, *Elsevier Journal of Computer and System Sciences (JCSS)*, *International Symposium on Reliable Distributed Systems (SRDS)*, *International Symposium on Distributed Computing (DISC)*.

## ■ Seminars, Presentations and Invited talks

Jun 1st, 2022 "*Comment réduire efficacement l'entropie des sources malveillantes d'information*" at Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications (ALGOTEL 2022)

Set 24th, 2021 "*Bloquer efficacement les "fake news" sans connaître leurs réseaux de propagation*" at Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications (ALGOTEL 2021)

Nov 21st, 2020 "*Boosting the efficiency of byzantine-tolerant reliable communication*" at International Symposium on Stabilizing, Safety, and Security of Distributed Systems (SSS 2020)

Oct 1st, 2020 "*Une méthode efficace pour éviter la propagation des fake news*" at Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications (ALGOTEL 2020)

Jun 3rd, 2020 "*Broadcasting Information in Multi-hop Networks prone to Mobile Byzantine Faults.*" at the International Conference on Networked Systems (NETYS 2020)

Set 30th, 2019 "*Tractable Reliable Communication in static and dynamic compromised networks.*" at GT Algodist seminars, LaBRI, Bordeaux

Apr 2nd, 2019 "*Tractable Reliable Broadcast with honest dealer in Multihop Networks.*" at Workshop ANR DESCARTES / ESTATE, Roscoff

Set 4th, 2019 "*Tractable Reliable Communication in static and dynamic compromised networks.*" at Laboratory of Information, Networking and Communication Sciences (LINCS), Paris

Nov 5th, 2018 "*Reliable Broadcast in Dynamic Networks with Locally Bounded Byzantine Failures*" at International Symposium on Stabilizing, Safety, and Security of Distributed Systems (SSS 2018)

Oct 8th, 2018 "*Multi-hop byzantine reliable broadcast made practical*" at 8th Latin-American Symposium on Dependable Computing (LADC 2018)

## Scholarships & Funding

- 2022 *Bando Ricerca Ateneo 2022 - Progetto di Avvio alla ricerca*, CBFTFDS - Concrete Byzantine Fault Tolerance and Forecasting in Distributed Systems, Università degli studi di Roma La Sapienza, (webpage)
- 2018 *VINCI grant 2018*, mobility funding for co-advised PhD thesis, Université Franco-Italienne/Università Italo-Francese (UFI/UIF), (webpage)
- 2016 *Erasmus+ KA1, "North South traineeship"*, Scholarship for European internship activity

## Other Academic Activities

- May, 2021 – **Co-supervisor for 1 master thesis** for the master's degree in Engineering in present Computer Science, Università degli studi di Roma La Sapienza
- 2022 – **Supervisor for 8 bachelor thesis** for the bachelor degree in Engineering in Computer and Control Engineering, Università degli studi di Roma La Sapienza
- Sep, 2019 – **Co-advisor for academic project:** On modeling Android vulnerabilities spreading Jun, 2020 (webpage)
- Dec, 2018 – **Co-advisor for academic project:** On reconstructing information cascades from May 2019 the streaming Twitter API (webpage)
- 2016 **Research Internship** (6 months) at *LIP6 - Sorbonne Université* (Paris)

## Other Working Activities

- Mar, 2021 – **Consulting assignment:** Design and development of an application to support Jun 2021 the collection and correction of students' Python scripts for the bachelor course "Fondamenti di Informatica I", Dipartimento di Ingegneria Informatica, Automatica e Gestionale *A. Ruberti* – Università degli Studi di Roma *La Sapienza*
- Mar, 2017 – **Teacher** for coding courses in C, Python and PHP for *Archimede Informatica*, Rome Jul, 2017 (Italy)

## Languages

Italian	<b>Mothertongue</b>	
English	<b>B1</b>	(self-evaluation)
French	<b>A1</b>	(self-evaluation)

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