Ivan Mercanti

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Ivan Mercanti is a postdoc at the Department of Mathematics and Computer Science at the University of Perugia. He received his PhD in Computer Science and Systems Engineering at IMT School for Advanced Studies, Lucca. His research activities mainly focus on Distributed Ledger Technology (DLT), a consensus of replicated, shared, and synchronized digital data geographically spread across multiple sites, countries, or institutions. In particular, he is studying cryptocurrencies like Bitcoin or Ethereum. He is a member of the CINI Cyber Security Research Lab UniPG, and the Italian Distributed Ledger Technology Working Group.

Education

2018 – 2022 **Ph.D. in Computer Science and Systems Engineering**, *IMT School for Advanced Studies*, Lucca, Italy

Thesis title: *"Models and applications for the cryptocurrencies ecosystem"*. Advisors: Prof. Stefano Bistarelli (University of Perugia), Prof. Rocco De Nicola (IMT School for Advanced Studies, Lucca). Reviewers: Prof. Massimo Bartoletti (University of Cagliari), Prof. Damiano Di-Francesco-Maesa (University of Cambridge).

2015 – 2017 **M.Sc. in Computer Science**, *University of Perugia*, Italy, Final mark: 110/110

Thesis title: *"Analysis of non-standard bitcoin transactions"*. Advisor: Prof. Stefano Bistarelli (University of Perugia), Prof. Francesco Santini (University of Perugia).

2012 – 2015 **B.Sc. in Computer Science**, *University of Perugia*, Italy, Final mark: 98/110

Thesis title: *"Peculiarities in bitcoin markets"*. Advisor: Prof. Stefano Bistarelli (University of Perugia).

Teaching Activity

2020 – present **Cultore della Materia, course of "Introduzione alla Sicurezza Informatica"**, Department of Mathematics and Computer Science, University of Perugia, Italy

SSD: INF/01

2018 – present	**Cultore della Materia, course of "System, Social and Mobile Security"**, Department of Political Science, University of Perugia, Italy SSD: INF/01
2013 – present	**Member of *Applab***, *University of Perugia*, Italy Intern group of the Department of Mathematics and Computer Science at the University of Perugia, whose purpose is to carry out laboratory work finalized in thesis work and internship. applab.dmi.unipg.it

Research Activity

Participation in Research Groups

2018 – present	**Cyber Security Research Lab: Research Group on Cybersecurity of the University of Perugia** SSD: INF/01 - The Lab is a member of the CINI National Cybersecurity Lab. cybersecuritylab.unipg.it
2018 – present	**Italian Distributed Ledger Technology Working Group** SSD: INF/01 - The Lab is a member of the the CINI working group on Blockchain. dltgroup.dmi.unipg.it/

Visiting

2019	University of Stirling, Stirling, UK. Host: Prof. Andrea Bracciali. February – May 2022.

Publications

Journal Articles

[1] Stefano Bistarelli, Ivan Mercanti, and Francesco Santini. "An Analysis of Non-standard Transactions". In: *Frontiers Blockchain* 2 (2019), p. 7.

[2] Stefano Bistarelli, Ivan Mercanti, Paolo Santancini, and Francesco Santini. "End-to-End Voting with Non-Permissioned and Permissioned Ledgers". In: *J. Grid Comput.* 17.1 (2019), pp. 97–118.

[3] Stefano Bistarelli, Rocco De Nicola, Letterio Galletta, Cosimo Laneve, Ivan Mercanti, and Adele Veschetti. "Stochastic modeling and analysis of the bitcoin protocol in the presence of block communication delays". In: *Concurrency and Computation: Practice and Experience* (), e6749.

Conference Papers

[1] Stefano Bistarelli, Ivan Mercanti, Francesco Faloci, and Francesco Santini. "Highlighting poor anonymity and security practice in the blockchain of Bitcoin". In: *SAC '21: The 36th ACM/SIGAPP Symposium on Applied Computing, Virtual Event, Republic of Korea, March 22-26, 2021*. Ed. by Chih-Cheng Hung, Jiman Hong, Alessio Bechini, and Eunjee Song. ACM, 2021, pp. 265–272.

[2] Stefano Bistarelli, Gianna Figà-Talamanca, Francesco Lucarini, and Ivan Mercanti. "Studying forward looking bubbles in Bitcoin/USD exchange rates". In: *Proceedings of the 23rd International Database Applications & Engineering Symposium, IDEAS 2019, Athens, Greece, June 10-12, 2019*. Ed. by Bipin C. Desai, Dimosthenis Anagnostopoulos, Yannis Manolopoulos, and Mara Nikolaidou. ACM, 2019, 15:1–15:9.

[3] Ivan Mercanti, Stefano Bistarelli, and Francesco Santini. "An Analysis of Non-standard Bitcoin Transactions". In: *Crypto Valley Conference on Blockchain Technology, CVCBT 2018, Zug, Switzerland, June 20-22, 2018*. IEEE, 2018, pp. 93–96.

[4] Stefano Bistarelli, Ivan Mercanti, and Francesco Santini. "A Suite of Tools for the Forensic Analysis of Bitcoin Transactions: Preliminary Report". In: *Euro-Par 2018: Parallel Processing Workshops - Euro-Par 2018 International Workshops, Turin, Italy, August 27-28, 2018, Revised Selected Papers*. Ed. by Gabriele Mencagli, Dora B. Heras, Valeria Cardellini, Emiliano Casalicchio, Emmanuel Jeannot, Felix Wolf, Antonio Salis, Claudio Schifanella, Ravi Reddy Manumachu, Laura Ricci, Marco Beccuti, Laura Antonelli, José Daniel García Sánchez, and Stephen L. Scott. Vol. 11339. Lecture Notes in Computer Science. Springer, 2018, pp. 329–341.

[5] Stefano Bistarelli, Alessandra Cretarola, Gianna Figà-Talamanca, Ivan Mercanti, and Marco Patacca. "Is Arbitrage Possible in the Bitcoin Market? (Work-In-Progress Paper)". In: *Economics of Grids, Clouds, Systems, and Services - 15th International Conference, GECON 2018, Pisa, Italy, September 18-20, 2018, Proceedings*. Ed. by Massimo Coppola, Emanuele Carlini, Daniele D'Agostino, Jörn Altmann, and José Ángel Bañares. Vol. 11113. Lecture Notes in Computer Science. Springer, 2018, pp. 243–251.

Conference Presentations

2021 ○ Highlighting Poor Anonymity and Security Practice in the Blockchain of Bitcoin. SAC 21: the 36th Annual ACM Symposium on Applied Computing, Online, 22 March 2021.

      ○ Stochastic Modelling and Analysis of the Bitcoin Protocol. ITASEC 2021, Trends in Distributed Ledger Technologies (Trends in DLT 2021), Online, 7 April 2021.

2019 ○ Studying forward looking bubbles in Bitcoin/USD exchange rates. IDEAS 2019, 23rd International Database Applications & Engineering Symposium , Athens (Greece). 11 June 2019.

2018 ○ An Analysis of Non-standard Bitcoin Transactions. CVCBT 2018, Crypto Valley Conference on Blockchain Technology, Zug (Switzerland). 20-22 June 2018.
○ A Suite of Tools for the Forensic Analysis of Bitcoin Transactions: Preliminary Repor. Euro-Par 2018: Parallel Processing Workshops - Euro-Par 2018 International Workshops, Turin (Italy), 27-28 August 2018.
○ Is Arbitrage Possible in the Bitcoin Market? (Work-In-Progress Paper). GECON 2018, Economics of Grids, Clouds, Systems, and Services - 15th International Conference, Pisa (Italy). 18-20 September 2018.

Conference Participations

2021 ○ SAC 21: the 36th Annual ACM Symposium on Applied Computing, Online, 22 March 2021.
○ ITASEC 2021, Trends in Distributed Ledger Technologies (Trends in DLT 2021), Online, 7 April 2021.

2020 ○ ITASEC 2020 - The Italian Conference on CyberSecurity, Ancona (Italy). 4-7 February 2020.

2019 ○ DLT 2019 - 2nd Distributed Ledger Technology Workshop, Pisa (Italy). 12 February 2019.
○ ITASEC 2019 - The Italian Conference on CyberSecurity, Pisa (Italy). 13-15 February 2019.
○ IDEAS 2019, 23rd International Database Applications & Engineering Symposium , Athens (Greece). 10-12 June 2019.

2018	○ Pula 2018, The Scientific School on Blockchain - Pula (Italy), 12-15 June 2018.
	○ CVCBT 2018, Crypto Valley Conference on Blockchain Technology, Zug (Switzerland). 20-22 June 2018.
	○ Euro-Par 2018: Parallel Processing Workshops - Euro-Par 2018 International Workshops, Turin (Italy), 27-28 August 2018.
	○ GECON 2018, Economics of Grids, Clouds, Systems, and Services - 15th International Conference, Pisa (Italy). 18-20 September 2018.
2014	○ Todi Appy Days - Todi, September 28 2014.
2013	○ CSS3 & HTML5, Developing cross device applications - Pisa, 31 May 2013.

Organisation Committees

2019	○ **Organiser**, DLT Workshop 2019 - The 2nd Distributed Ledger Technology Workshop.
2018	○ **Organiser**, DLT Workshop 2018 - The first Distributed Ledger Technology Workshop.

Reviewer Activity

- ○ M-pref 2022
- ○ WTSC 2022
- ○ ITASEC 2022
- ○ ECAI 2022
- ○ KR 2022
- ○ WTSC 2021
- ○ SEMF 2021
- ○ ICTCS 2021
- ○ ITASEC 2021
- ○ GECON 2021
- ○ ITASEC 2020
- ○ ICTAI 2020
- ○ Euro-Par 2020
- ○ GECON 2020
- ○ GraMSec 2020
- ○ CP 2020
- ○ BES 2020
- ○ AI3 2019
- ○ PRIMA 2019
- ○ AI4I 2019
- ○ Euro-Par 2019
- ○ IJCAI 2019
- ○ AIxIA 2018
- ○ Euro-Par 2018

Research Tools

- BlockchainVis Suuite (`http://blockchainvis.dmi.unipg.it/`), a suite of tool mainly dedicated to the visual analysis of flows of Bitcoin transactions and other connected activities; ref. publications [4, 1]