

MARCO ZECCHINI

SCIENTIFIC INTEREST

The main areas of my research are the *Internet of Things*, *Data Mining*, *Blockchain technologies* and *Digital Identity* in decentralized applications.

WORK & SCIENTIFIC EXPERIENCES

DATA SCIENCE PHD CANDIDATE UNIVERSITÀ DI ROMA, "LA SAPIENZA"

11/2019 - PRESENT

The major objective of my PhD is to investigate the evolution of the digital identity management from centralized to decentralized applications. Moreover, I am studying the dichotomy between the centralized creation of digital identity attributes (still relying on third trusted party) and the decentralized nature of the blockchain.

GUEST RESEARCHER INSTITUTE OF DATA ENGINEERING - TECHNICAL UNIVERISTY HAMBURG

04/2022 - PRESENT

The major objective of my visit to the Institute of Data Engineering directed by Prof. Stefan Schulte is to investigate digital identity management in applications running on multiple blockchains with particular focus on a trustless transfer of blockchain account state.

BLOCKCHAIN CONSULTANT POSTI S.R.L.

04/2021 - PRESENT

- *Design* of a blockchain solution for issuing digital certificates to track on-chain the data integrity of foodstuffs.
- *Development* of a system issuing ERC-721 token for each production lot through the smart contract language "Solidity".
- *Maintenance* of this system through both unit and integration testing solutions.

STAGE RESEARCHER ISTAR, "IOT LAB", ISCTE - INSTITUTO UNIVERSITÁRIO DE LISBOA

03/2019 – 06/2019

- *Data cleaning and analysis* of hourly energy consumption data at a school in Amadora, Lisbon, for a period of 3 years.
- *Design and development* of a model for forecasting energy consumption and related costs in order to influence user behavior.
- *Evaluation and visualization* of performance of such a model.

TEACHING ASSISTANT "INTERNET OF THINGS" AND "SMART OBJECT"

COURSES UNIVERSITÀ DI ROMA, "LA SAPIENZA"

A.A. 2018/2019 & A.A. 2019/2020 & A.A. 2020/2021 & A.A. 2021/2022

I was a teaching assistant for the courses "Internet of Things" and "Smart Objects" of the "Product Design" master degree program. They mainly focused on "XOD" a visual programming language for microcontrollers. I held some lessons of the course "Internet of Things" of the "Engineering in Computer Science" master degree program. They focused on OS solutions for microcontrollers (with particular focus on "Mbed OS"), on the "LoraWAN" networks, "LoRa" and "The Things Network" and on blockchain technologies.

PUBLICATIONS | Journal publications:

- ❖ D. Pennino, M. Pizzonia, A. Vitaletti, M. Zecchini: Blockchain as IoT Economy Enabler: A Review of Architectural Aspects, *Journal of Sensor and Actuator Networks*, 2022, <https://doi.org/10.3390/jsan11020020>
- ❖ D. Pennino, M. Pizzonia, A. Vitaletti, M. Zecchini: Efficient Certification of Endpoint Control on Blockchain, *IEEE Access*, vol. 9, pp. 133309-133334, 2021. DOI: [10.1109/ACCESS.2021.3115343](https://doi.org/10.1109/ACCESS.2021.3115343).
- ❖ A. Cirillo, V. Dalena, A. Mauro, F. Mogavero, D. Pennino, M. Pizzonia, A. Vitaletti, M. Zecchini: Empowering citizens by a blockchain-Based Robinson list*, *International Journal of Computers and Applications*, 2021. DOI: [10.1080/1206212X.2021.1986245](https://doi.org/10.1080/1206212X.2021.1986245)

Conference publications:

- ❖ F. Mogavero, I. Visconti, A. Vitaletti, M. Zecchini: The Blockchain Quadrilemma: When Also Computational Effectiveness Matters, *BRAIN 2nd Workshop on Blockchain theory and Applications 2021* held in conjunction with *IEEE Symposium on Computers and Communications (ISCC)*, Athens, Greece, September 5-8, 2021. [10.1109/ISCC53001.2021.9631511](https://doi.org/10.1109/ISCC53001.2021.9631511)
- ❖ M. Zecchini, A. A. Griesi, I. Chatzigiannakis, I. Mavrommati, D. Amaxilatis, O. Akrivopoulos: Using IoT Data-Driven Analysis of Water Consumption to support Design for Sustainable Behaviour during the COVID-19 Pandemic, *2021 6th South-East Europe Design Automation, Computer Engineering, Computer Networks and Social Media Conference (SEEDA-CECNSM)*, Preveza, Greece, September 24-26, 2021. DOI: [10.1109/SEEDA-CECNSM53056.2021.9566237](https://doi.org/10.1109/SEEDA-CECNSM53056.2021.9566237)
- ❖ M. Zecchini, A. A. Griesi, I. Chatzigiannakis, D. Amaxilatis, O. Akrivopoulos: Identifying Water Consumption Patterns in Education Buildings Before, During and After COVID-19 Lockdown Periods, *2021 IEEE International Conference on Smart Computing (SMARTCOMP)*, Irvine, CA, USA, August 23-27, 2021. DOI: [10.1109/SMARTCOMP52413.2021.00069](https://doi.org/10.1109/SMARTCOMP52413.2021.00069)
- ❖ A. Cirillo, A. Mauro, D. Pennino, M. Pizzonia, A. Vitaletti, M. Zecchini: Decentralized Robinson List. *CRYBLOCK 3rd Workshop on Cryptocurrencies and Blockchains for Distributed Systems* held in conjunction with *Conference on Mobile Computing and Networking (MobiCom)*, London, UK, September 21-25, 2020. DOI: [10.1145/3410699.3413790](https://doi.org/10.1145/3410699.3413790)
- ❖ D. Pennino, M. Pizzonia, A. Vitaletti, M. Zecchini: Binding of Endpoints to Identifiers by On-Chain Proofs. *BRAIN 1st Workshop on Blockchain theory and Applications 2020* held in conjunction with *IEEE Symposium on Computers and Communications (ISCC)*, Rennes, France, July 7-10, 2020. DOI: [10.1109/ISCC50000.2020.9219594](https://doi.org/10.1109/ISCC50000.2020.9219594)
- ❖ A. Bracciali, I. Chatzigiannakis, A. Vitaletti, M. Zecchini: Citizens Vote to Act: smart contracts for the management of water resources in smart cities. *IEEE International Conference on Societal Automation (SA 2019)*, Krakow, Poland, September 4-6, 2019. DOI: [10.1109/SA47457.2019.8938093](https://doi.org/10.1109/SA47457.2019.8938093)
- ❖ M. Zecchini, A. Bracciali, I. Chatzigiannakis, A. Vitaletti: Smart Contract Design Patterns: a use case on water management. *International Workshop on Future Perspective of Decentralized Applications (FPDAPP 2019)*, held in conjunction with the *25th International European Conference on Parallel and Distributed Computing (EUROPAR)*, Gottingen, Germany, August 26-30, 2019. DOI: [10.1007/978-3-030-48340-1_18](https://doi.org/10.1007/978-3-030-48340-1_18)

RESEARCH PROJECT

COPYRIGHT MANAGEMENT ON 5G NETWORK OVER BLOCKCHAIN, ITALIAN
MINISTRY OF ECONOMIC DEVELOPMENT (MISE)
03/2020 – 09/2021

I have been involved in this project which had the purpose of studying how to manage rightholders copyright on blockchain technologies. The result of this analysis brought us to tokenize on the Algorand Mainnet the rights for each world territory of rightholders and to assign in-chain the management of these right to a collecting society (e.g. SIAE). The project was realized jointly with Sapienza, SIAE (Italian Society of Authors and Publishers) and Chainside. Press release: [SIAE, Italy's largest collective management organisation, represents authors' rights as digital assets managed on the Algorand blockchain.](#)

AWARD

“ASSET CREATION AND MANAGEMENT PLATFORM CHALLENGE” - SPONSORED BY
ALGORAND FOUNDATION
FUTURE OF BLOCKCHAIN 2020

With a team of six people, I participated as a finalist to the [Future of Blockchain](#) international competition with the "[Decentralized Robinson List](#)" project. We won the *Asset Creation and Management Platform Challenge* sponsored by Algorand

EDUCATION

ENGINEERING IN COMPUTER SCIENCE UNIVERSITÀ DI ROMA, “LA SAPIENZA”
MASTER DEGREE, 110/110 CUM LAUDE, 09/2016 – 01/2019

This course of study, held entirely in English, gave me the chance to increase my knowledge of computer engineering, focusing in detail on embedded programming and IoT technologies. The title of my thesis is "*Design, development and evaluation of a water monitoring system based on IoT and Blockchain technologies*". Average of votes: **29/30**.

MESTRADO EM ENGENHARIA DE TELECOMUNICAÇÕES E INFORMÁTICA ISCTE
- INSTITUTO UNIVERSITÁRIO DE LISBOA, LISBON
ERASMUS+, 01/2017 – 06/2017

Study experience in Lisbon. Developed knowledge: *Embedded Systems, Digital Communication with Satelites, Software Engineering.*

INGEGNERIA INFORMATICA E AUTOMATICA UNIVERSITÀ DI ROMA, “LA SAPIENZA”,
BACHELOR DEGREE, 108/110, 09/2013 – 12/2016

The title of my bachelor thesis is "[TRACE YOUR STACK](#)". Average of votes: **26.7/30**

SCIENTIFIC HIGH SCHOOL “TALETE” SCIENTIFIC HIGH SCHOOL LICENCE
FINAL GRADE 100/100, 09/2009 – 07/2013

LANGUAGES

ITALIAN

MOTHER TONGUE

ENGLISH

ADVANCED LEVEL (C1)

- *Reading: Advanced level (C1)*
- *Writing: Advanced level (C1)*
- *Speaking: Advanced level (C1)*

Certification. First Certificate in English, University of Cambridge, 2012

PORTUGUESE

UPPER INTERMEDIATE LEVEL (B2)

- *Reading: Upper Intermediate level (B2)*
- *Writing: Upper intermediate level (B2)*
- *Speaking: Upper intermediate level (B2)*

Certification. Curso de Lingua e Cultura Portuguesa – Nivel B1, Faculdade de Ciências Sociais e Humanas - Universidade Nova de Lisboa, 2017.

VOLUNTEERING | AGESCI BOY SCOUT MASTER

09/2014 – 01/2017

Boy Scout Master, fully recognized by the Italian main scout association AGESCI, with 8-12 years old children. I have, also, attended two master training camps to improve my skills.

HOBBY & INTERESTS

- *Musician*: good skills of guitarist due to the many years of study
- *Athlete*: subscription several times to federal tournaments of football and futsal.
- *Alpinist*: passionate about alpinism and touring skiing. Discreet climber. Member of the "Italian Alpine Club" (C.A.I).