

# Mario Sangiorgio

SOFTWARE ENGINEER · PHD

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*I'm passionate about writing efficient and reliable software systems.  
I'm interested in distributed systems, machine learning, programming languages and program analysis*

## Experience

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### Apple

SOFTWARE ENGINEER · SWIFT

*London, United Kingdom*

*November 2018 - Present*

- Built the Swift-based infrastructure supporting several mission critical iCloud services
- Worked with application teams to help them onboard on our platform
- Migrated services to the internal Kubernetes platform
- Collaborated with the SRE team to ensure production systems work well
- Contributed to server-side Swift open source projects

### G-Research

SOFTWARE DEVELOPER · C#, F#, C++

*London, United Kingdom*

*January 2014 - November 2018*

- Developed several real-time and low-latency services (the platform hosting the trading strategies, a market-data preprocessor and the execution engine that interacts with the exchanges) and their supporting infrastructure (initialisation data generation and provisioning, service coordination and load balancing, collection of monitoring information)
- Developed user interfaces used to control/monitor live trading and to analyse the behaviour of the trading strategies
- Modernised the overall architecture of the system extracting (micro)services from a large monolithic codebase and re-designed the interaction between several components to increase their reliability and reduce the impact of failures
- Contributed to the adoption of continuous delivery, increased the test coverage and replaced brittle tests with more reliable ones
- Led the work on some projects and mentored several new members as they joined the team

### Politecnico di Milano

TEACHING ASSISTANT · SOFTWARE ENGINEERING UNDERGRADUATE COURSE · JAVA

*Milan, Italy*

*Spring 2011, spring 2012, spring 2013*

- Taught part of the lectures of the course
- Organised the laboratory assignments
- Tutored the students on their project work

## Education

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### Politecnico di Milano

PHD IN COMPUTER SCIENCE AND ENGINEERING · GRADUATED WITH MERIT

*Milano Italy*

*January 2011 - December 2013*

- Major research topic: static and dynamic program analysis, modelling software behaviour and specification inference
- Minor research topic: data mining and social network analysis applied to scientific literature
- Published papers in international conferences and journals
- Full scholarship awarded by the Italian government

### Massachusetts Institute of Technology

VISITING PHD STUDENT

*Boston, MA, United States*

*September 2012 - December 2012*

- Contributed to a research project exploring data-driven approaches to program synthesis
- Full scholarship awarded by the Rocca fellowship

### University of Illinois at Chicago

MASTER OF SCIENCE IN COMPUTER SCIENCE · GRADE POINT AVERAGE: 3.72/4.00

*Chicago, IL, United States*

*March 2009 - May 2011*

- Double degree program

### Politecnico di Milano

MASTER OF SCIENCE IN COMPUTER ENGINEERING · FINAL MARK: 110/110 SUMMA CUM LAUDE

*Milano, Italy*

*October 2008 - December 2010*

- Full scholarship awarded by the university

### Alta Scuola Politecnica

DIPLOMA · GRADUATED WITH MERIT

*Milano, Italy*

*October 2008 - December 2010*

- Attended the multi-disciplinary courses
- Full scholarship awarded by the university

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## Skills

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- Programming** Swift, C#, Java, C++, F#, JavaScript, Rust, Python, Go, Scala, Elixir  
**Expertise** Software design, backend development, distributed systems, program analysis, data mining  
**Languages** Italian, English

## Certifications

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- 2020 **Certified Kubernetes Application Developer**, Linux Foundation

## Extracurricular Activity

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### Implementation of an interpreter and a bytecode virtual machine

PERSONAL PROJECT · PROGRAMMING LANGUAGES

November 2016 - April 2020

- Re-implemented the Lox programming language (from Bob Nystrom's *Crafting Interpreters* book)
- Gained a better understanding on how programming languages are designed and implemented
- Learnt Rust and used it in a real codebase

### Solved the Advent of Code 2017 problems with various programming languages

PERSONAL PROJECT · ALGORITHMS

December 2017

- Used a different programming language for every problem, appreciating their relative differences and strengths
- Improved my algorithmic skills

### Bot playing Scopa, an Italian card game

PERSONAL PROJECT · ARTIFICIAL INTELLIGENCE

2016

- Modelled the *Scopa* card game using an efficient state representation
- Implemented a bot based on the *Monte Carlo method* to deal with uncertainty
- Explored an improvement using a variant of *Monte Carlo Tree Search*

## Honours & Awards

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- 2013 **Best student**, IBM EMEA  
 2012 **Best paper award**, Models in Software Engineering workshop