



# Matteo Marra

SOFTWARE ENGINEER · DISTRIBUTED SYSTEMS EXPERT

Brussels, Belgium

Age: 30 - Country of Origin: Italy

✉ contact.mmarra@gmail.com

## Experience

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### Nokia Bell Labs

RESEARCHER SOFTWARE ENGINEER

Antwerp, Belgium

February 2023 - Now

- Distributed stream processing research
- Focus on Industry 4.0 applicability of stream processing
- Digital Twins in Stream Processing
- Working in Node.js and Python

### Vrije Universiteit Brussel

POST-DOC RESEARCHER

Brussels, Belgium

May 2022 - Dec 2022

- Programming languages research in the context of truffle-based languages.
- Supporting a PhD student in the context of debugging IoT WebAssembly applications.

### Vrije Universiteit Brussel

PHD IN COMPUTER SCIENCE

Brussels, Belgium

Oct. 2017 - May 2022

- Topic: *Debugging support for Big Data processing applications*
- Focus on novel debugging solutions for highly parallel and distributed systems.
- Prototyped a debugger and other tools for Spark-based and Map/Reduce applications.
- Built a distributed Smalltalk-based prototype of Spark and Map/Reduce.
- Funded by Fonds Wetenschappelijk Onderzoek with an FWO-SB grant number: 1S63418N
- Supervisors: Elisa Gonzalez Boix, Guillermo Polito

### Elements S.R.L.

SOFTWARE ENGINEER

Remote, Italy & Belgium

Jul. 2015 - Sep. 2017

- Development of *Elements Data Reader 3*, an highly concurrent software to visualize, store and analyze in real time single-and multi-channel acquisitions from an amplifier in the context of nanosensor applications.
- Maintenance of *Elements Data Analyzer*
- Used C++, Qt5 and qwt

### Elements S.R.L. - Università di Bologna

INTERNSHIP AND BACHELOR THESIS

Cesena, Italy

Mar. 2015 - Jul 2015

- Brief introduction to C++, Qt5 and qwt
- Development of *Elements Data Analyzer*, software to visualize and analyze single-and multi-channel acquisitions from nanosensor amplifiers, suitable for different nanosensor applications, with C++, Qt5 and qwt
- Development of an high throughput acquisition module from a FTD2XX device

## Education

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### Vrije Universiteit Brussel

DOCTOR OF SCIENCE

Brussels, Belgium

Oct. 2017 - May 2022

- PhD in Computer Science
- Title of the dissertation: *A Live Debugging Approach for Big Data Processing Applications*
- Supervisors: Elisa Gonzalez Boix (VUB), Guillermo Polito (CNRS).

## Vrije Universiteit Brussel

MSC APPLIED SCIENCE AND ENGINEERING: COMPUTER SCIENCE

- Graduated *with great distinction*
- Specializing in profile: Software Languages and Software Engineering
- Master thesis over debugging Data Intensive and non stoppable applications in live programming.  
In collaboration with: *Software Languages Lab (VUB, Brussels) - RMOD (INRIA, Lille)*

Brussels, Belgium

Sep. 2015 - Jul. 2017

## Università di Bologna

LAUREA TRIENNALE IN INGEGNERIA E SCIENZE INFORMATICHE - BACHELOR IN COMPUTER SCIENCE AND ENGINEERING

- Graduated with grade 110/110 *cum laude*
- **Erasmus+ program** in Universidad Carlos III de Madrid, Spain (Sep 2014 - Jan. 2015)

Cesena, Italy

Sep. 2012 - Jul. 2015

## Skills

<b>Primary Programming Languages</b>	Java, Javascript, Typescript, Pharo Smalltalk, Scala, C++
<b>Secondary Programming Languages</b>	C, Common Lisp, Erlang
<b>Scripting and Other Languages</b>	Latex, Bash, SPARQL, SQL, HTML, CSS
<b>Big Data Frameworks</b>	Apache Spark, Apache Yarn, Hadoop Map/Reduce

## Languages

<b>Italian</b>	Mother tongue
<b>English</b>	Full Professional Proficiency
<b>Spanish</b>	Limited Working Proficiency
<b>French</b>	Limited Working Proficiency

## Publications

### Out-of-things Debugging: a Live Debugging Approach for Internet of Things.

<Programming>

ROJAS CASTILLO C J, **MARRA M**, GONZALEZ BOIX E

2022

To appear in the Art, Science and Engineering of Programming, Vol 7(2)

### Event-Based Out-of-place Debugging.

MPLR '22

LAUWERTS T, ROJAS CASTILLO C J, GURDEEP SINGH R, **MARRA M**, SCHOLLIERS C, GONZALEZ BOIX E

2022

To appear in proceedings of the 19th International Conference on Managed Programming Languages & Runtimes (MPLR '22)

### Practical Online Debugging of Spark-Like Application.

QRS '21

**MARRA M**, POLITO G, AND GONZALEZ BOIX E

2021

Proceedings of the 21st IEEE International Conference on Software Quality, Reliability, and Security (QRS '21)

### A Survey on Mobile Applications for Smart Agriculture: Making Use of Mobile Software in Modern Farming.

SN CS

OTEYO I N, **MARRA M**, KIMANI S, DE MEUTER W, AND GONZALEZ BOIX E

2021

SN Computer Science, 2(4)

### Framework-Aware Debugging with Stack Tailoring

DLS '20

**MARRA M**, POLITO G, AND GONZALEZ BOIX E

2020

Proceedings of the 16th ACM SIGPLAN International Symposium on Dynamic Languages (DLS '20) (pp. 71-84)

### A Debugging Approach for Live Big Data Applications

SCICO

**MARRA M**, POLITO G, AND GONZALEZ BOIX E

2020

Science of Computer Programming, Vol. 194 (32p.)

### Towards Scalable Blockchain Analysis

WETSEB '19

BRAGAGNOLO S, **MARRA M**, POLITO G, AND GONZALEZ BOIX E

2019

Proceedings of 2nd edition of the International Workshop on Emerging Trends in Software Engineering for Blockchain

## A Debugging approach for Big Data Applications in Pharo

IWST '18

MARRA M, BERA C, AND GONZALEZ BOIX E

2018

Proceedings of the 13th edition of the International Workshop on Smalltalk Technologies

## Out-of-place Debugging: a Debugging Architecture to Reduce Debugging Interference

<Programming>

MARRA M, POLITO G, AND GONZALEZ BOIX E

2018

The Art, Science and Engineering of Programming, Vol 3(2)

## Debugging Cyber-Physical Systems with Pharo: An Experience Report

IWST '17

MARRA M, GONZALEZ BOIX E, COSTIOU S, KERBOEUF M, PLANTEC A, POLITO G, AND DUCASSE S

2017

Proceedings of the 12th edition of the International Workshop on Smalltalk Technologies

## Real-Time Statistics on Ion-Channel Recordings using a Novel All-In-One BLM Educational Kit with Embedded Miniaturized Amplifier

Bio J

ROSSI M, THEI F, BENNATI M, HUSHI B, MARRA M, CRESCENTINI M

2016

Biophysical Journal, vol 110, p 506a

# Teaching and Supervising

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## Metaprogramming and Reflection

Vrije Universiteit Brussel

TEACHING ASSISTANT OF THE MASTER COURSE

17/18, 18/19, 19/20, 20/21, 21/22

- Basics and metaprogramming in Pharo Smalltalk
- Basics and metaprogramming in Common Lisp

## Cloud Computing and Big Data Processing

Vrije Universiteit Brussel

TEACHING ASSISTANT OF THE MASTER COURSE

17/18, 18/19, 19/20, 20/21, 21/22, 22/23

- Big Data Processing with Apache Spark

## Bachelor Thesis Supervision

Vrije Universiteit Brussel

OPTIMIZING THE BIG DATA

21/22

Author: Jean Nivonsay

## Master Thesis Supervision

Vrije Universiteit Brussel

OUT-OF-THINGS DEBUGGING: AN ONLINE DEBUGGING APPROACH FOR INTERNET OF THINGS

20/21

Author: Carlos Rojas Castillo