



# Matteo Di Pirro

SOFTWARE ENGINEER

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## Education

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### KU Leuven

ERASMUS STUDENT

- Development of secure software
- Embedded and distributed systems
- Fact checking

*Leuven (Belgium)*

*Sept. 2017 - Feb. 2018*

### Università degli Studi di Padova

MSc IN COMPUTER SCIENCE

- Thesis: How Solid is Solidity? An In-depth Study of Solidity's Type-Safety.
- Majors
  - Design and development of reliable systems
  - Software and theory of programming languages
- Magna cum Laude

*Padua (Italy)*

*Sept. 2016 - Sept. 2018*

### Università degli Studi di Padova

BSc IN COMPUTER SCIENCE

- Thesis: Management of an Identity and Access management cloud-based system.
- Magna cum Laude

*Padua (Italy)*

*Sept. 2013 - Sept. 2016*

### ITIS Francesco Severi

HIGH SCHOOL

- Thesis: Speech recognition in Android.
- Mark 100/100

*Padua (Italy)*

*Sept. 2008 - June. 2013*

## Skills

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### Programming

Node.js, Python, Java (also for Android; use of RMI, JEE, and Google Application Engine),

C, C++, Solidity, Haskell, JavaScript

### Databases

MySQL, MongoDB

### Versioning

Git, SVN

### Documents

LaTeX

### Languages

Italian (mother tongue), English (fluent), French (intermediate - DELF B1)

## Work Experience

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### Kynetics

SOFTWARE ENGINEER

*Padua (Italy)*

*Apr. 2019 - Present*

### The AKKAdemy / Akka Technologies

GRADUATE SOFTWARE ENGINEER

*Geneva (Switzerland) and*

*Sophia-Antipolis (France)*

*Jan. 2019 - Apr. 2019*

### Athesys SRL

SOFTWARE ENGINEER

*Padua (Italy)*

*May. 2016 - Jul. 2016*

- Designed an overall microservices-based architecture cooperating with an existing environment.
- Developed a module for an Identity and Access Management cloud-based (IDaaS) system (Monokee).
- Implemented several RESTful APIs in Node.js, in particular using the Express.js library and storing data in a MongoDB database.
- Developed a built-in logging system to monitor user activities.

## **CNR (Consiglio Nazionale delle Ricerche) - Institute of Biomedical Engineering**

PROGRAMMER

*Padua (Italy)*

*Jun. 2012 - Jul. 2012*

- Designed and developed a basic content management system (CMS) for an European research group.
- Implemented both front-end (HTML, CSS) and back-end (PHP, JavaScript, MySQL).

## Selected projects

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### LinQedIn

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- LikedIn-like local social network with basic client and admin functionality
- Clients can sign-up, manage their profile and their contacts network and search for people
- Permission-based search engine: different filters available for different types of users
- Admins can manage the application with no restrictions

### Actors Model

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- Mock system abstracting a simplified actors model
- Actors can send and receive messages
- Actors can be local or remote
- Synchronization between receiving and processing messages
- Actors are created and located via a centralized entity, the actor system

### MaaS

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- SaaS (Software as a Service) application for companies to keep track of their products
- Connection with arbitrary MongoDB databases query-able using a Domain Specific Language
- I gained expertise about the roles involved in the software life-cycle
- Writing of a holistic documentation for a complex application

### Haskell Secure Library

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- Investigation on language-based information security
- Enforcing fine-grained data integrity and confidentiality properties
  - Non-interference (possibly defining declassification policies)
  - Input validation
  - Trusted computations on untainted data

### Football Fact-Checking

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- Application used to validate claims and check facts related to football
- Some facts were hard-coded, whereas others were taken from Twitter
- The fact checking algorithm uses a built-in knowledge graph

### 18F97J60 Microchip

KU Leuven

- Basic timer counting time and flashing LEDs when scheduled
- DHCP relay forwarding packets from/to clients and servers. It was developed using the TCP/IP Microchip's stack.

### Car rental company

KU Leuven

- Developed three versions of a car rental company in Java
  - Java RMI: manual synchronization and no support for persistence and distributed transactions
  - Java EE: using JPA (for persistence purposes) and JTA (for distributed transactions)
  - Google App Engine to investigate on the differences with JEE

## Publications

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### PROCEEDINGS OF INTERNATIONAL CONFERENCES

- Di Pirro, Matteo and Conti, Mauro and Lazzeretti, Riccardo. "Ensuring information security by using Haskell's advanced type system". In *Security Technology (ICCST), 2017 International Carnahan Conference on*, pp 1–6. IEEE, 2017
- Crafa, Silvia and Di Pirro, Matteo, and Zucca, Elena. "Is Solidity Solid Enough?". In *3<sup>rd</sup> Workshop on Trusted Smart Contracts*, 2019
- Crafa, Silvia and Di Pirro, Matteo. "Solidity 0.5: when typed does not mean type safe.". In *Technical Report. arXiv:1907.02952*, 2019

### THESIS

- Di Pirro, Matteo. "How Solid is Solidity? An In-dept Study of Solidity's Type Safety". Master Thesis. Università degli Studi di Padova, 2018