



MATTEO MAGNINI

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IN SHORT

Research Fellow at Department of Computer Science and Engineering (DISI), University of Bologna. Main research activities comprehends the fields of Artificial Intelligence, Machine Learning and Symbolic Techniques such as Symbolic Knowledge Extraction and Symbolic Knowledge Injection.

EDUCATION

State Exam

Industrial and Information Engineer

Jun., 2021

University of Bologna, Italy

- Qualification for the profession of engineer.

Master's degree

Computer Science and Engineering

Oct., 2018 → Mar., 2021

University of Bologna, Italy

- Studies in the field of programming paradigms, computational models, distributed systems, robotics, machine learning, artificial vision, web applications, business intelligence, data mining, big data.
- 110/110 *cum laude*

Master's degree thesis

An information theory analysis of critical Boolean networks as control software for robots

Mar. 26, 2021

Relator: Prof. Andrea Roli

- Identifying relationships between robots, controlled by critical random Boolean networks, successfully achieving the assigned task and defined information theory functions on sensors and actuators.
- External site: <https://amslaurea.unibo.it/23062>

Bachelor's degree

Computer Science and Engineering

Sep., 2015 → Dec., 2018

University of Bologna, Italy

- Studies in the field of programming languages, operating systems, software engineering, algorithms, networking and web.
- 110/110 *cum laude*

Bachelor's degree thesis

Ottimizzazione Combinatoria mediante Deep Reinforcement Learning: Sperimentazione nella Logistica di Magazzino.

Dec. 14, 2018

Relator: Prof. Gianluca Moro

- Training and analysis of a neural network using Deep Reinforcement Learning to optimise the allocation of commodity in a warehouse with respect to picking frequency.
- External site: <https://amslaurea.unibo.it/17000>

High-school diploma

Scientific curriculum

2009 → 2014

Liceo Scientifico "A. Righi", Cesena (FC), Italy

- Final mark 100/100

EXPERIENCE

Teacher at professional education course

IFTS course

May 17-19, 2022

FORMart

- Talks topics: Business Intelligence and Big Data.
- References: Prof. Alessandro Ricci

Teaching assistant for the course “Fondamenti di Informatica”

School of Engineering and Architecture

Feb., 2022 → Now

University of Bologna, Italy

- Computer architecture. Representation of Information. Algorithms and data structures. C programming language.
- Supervisor: Dr. Roberto Casadei
- Course Info: <https://apice.unibo.it/xwiki/bin/view/Courses/FINF2022>

Research Fellow

Department of Computer Science and Engineering (DISI)

Oct., 2021 → Now

University of Bologna, Italy

- Project title: “Strumenti di logica computazionale per estrazione e iniezione di conoscenza simbolica da e verso predittori subsimbolici”
- Goal: producing a software for the symbolic extraction/injection from/into sub-symbolic predictors
- Supervisor: Prof. Andrea Omicini

ETL product specialist

Healthcare division

May 2021 → Oct., 2021

Onit Group, Cesena, Italy

- Datawarehouse, database, web-services, customer care.
- Reference: Cecilia Zanella

Tutor DM

Educational services sector

Feb., 2021 → Mar. 2021

University of Bologna, Italy

- Technical support for mixed teaching and lessons supervision for Covid-19 prevention.

Master’s Degree students Representative in Course Council

Computer Science and Engineering

Jul., 2019 → Mar. 2021

University of Bologna, Italy

- <https://corsi.unibo.it/magistrale/IngegneriaScienzeInformatiche/coordinatore-consiglio>

Master’s Degree students Representative in AQ Council

Computer Science and Engineering

Jul., 2019 → Mar. 2021

University of Bologna, Italy

- <https://corsi.unibo.it/magistrale/IngegneriaScienzeInformatiche/commissioni>

Internship

LIAM Lab

Oct., 2017 → Jan., 2018

Spilamberto (MO), Italy

- Study of OPCUA communication protocol
- Supervisor: Prof. Matteo Sartini

DEVELOPMENT OF RESEARCH-RELATED SOFTWARE

PSyKE

Nov., 2021 → Ongoing

- a (python) platform for symbolic knowledge extraction from sub-symbolic predictors.
- <https://github.com/psykei/psyke-python>

PSyKI

Apr., 2021 → Ongoing

- a (python) platform for symbolic knowledge injection into sub-symbolic predictors.
- <https://github.com/psykei/psyki-python>

LANGUAGE SELF-ASSESSMENT

| | Listening | Reading | Interaction | Speaking | Writing |
|---------|-----------------|---------|-------------|----------|---------|
| Italian | Native language | | | | |
| English | C1 | C1 | B2 | B2 | B2 |
| French | B2 | B2 | B1 | B1 | B1 |

TECHNICAL STRENGTHS

| | |
|------------------------|---|
| Programming Paradigms | imperative, object oriented, functional, logic |
| Software configuration | Windows and Linux installation and configuration |
| Programming Languages | Python, Java, Scala, C, C++, C#, Prolog, R, Lua, JavaScript, Php |
| Data Analysis Tools | R, Python + Pandas, NumPy, Scikitlearn, Keras, Weka and Meka |
| Networking | Socket (TCP & UDP), HTTP, RESTful WebAPI |
| Databases | SQL, MySQL, MongoDB, Vertica |
| Development tools | Git, Mercurial, Maven, Gradle, Docker |
| Markup languages | Markdown, \LaTeX , HTML |
| IDEs | PyCharm, IntelliJ Idea, Visual Studio, Eclipse, Android Studio, RStudio |

ADDITIONAL INFORMATION

About me: I am an engineer and software developer with experience in machine learning and data mining. I can both work in team or alone. I always prefer deep analysis and discussion on the problem along with wide research in literature before solving it.

Interests: Artificial Intelligence, Machine Learning, Logic, Data Mining, Artificial Vision, Robotics (swarm robotics and adaptation).

June 7, 2022

Matteo Magnini

LIST OF PUBLICATIONS

- [Magnini et al., (in press) 2022a] Magnini, M., Ciatto, G., and Omicini, A. Kins: Knowledge injection via network structuring. In *CILC 2022 – Italian Conference on Computational Logic. Proceedings of the 37th Italian Conference on Computational Logic*, CEUR Workshop Proceedings. CEUR-WS, Bologna, Italy, (in press) 2022a.
- [Magnini et al., (in press) 2022b] Magnini, M., Ciatto, G., and Omicini, A. On the design of psyki: A platform for symbolic knowledge injection into sub-symbolic predictors. In D. Calvaresi, A. Najjar, M. Winikoff, and K. Främling, editors, *Explainable and Transparent AI and Multi-Agent Systems - Fourth International Workshop, EXTRAAMAS 2022, Virtual Event, May 9-10, 2022, Revised Selected Papers*, Lecture Notes in Computer Science. Springer, (in press) 2022b.