

Indaco Biazzo

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Summary

I'm a Ph.D. graduate in physics. I have strong analytical and mathematical modeling skills. With several years of experience in big data and complex systems domains, I managed big data and machine learning computational analysis, data visualization, and web presentation of results.

Research

My research interests follow several lines. One is related to the so-called Science of City. The accumulation of a huge amount of data in the last years allows, nowadays, to base on new quantitative studies the research on one of the most complex systems: the urban system. Another line of research is on the cross-field interaction between statistical physics of complex systems with optimization algorithms, inference problems, and neural networks. Another line of research is about visualization and presentation of the scientific results: new interactive platforms and visualization tools could be crucial to reduce the barrier between different disciplines and reduce the learning curve.

teaching experience

Physics I, teaching assistant - Politecnico di Torino

Turin, Italy — 2010

Computer Science, I.I.S. E. Majorana

Turin, Italy — 2014

Experience

Post-Doc, Politecnico di Torino - DISAT

Turin, Italy — 12/2017-

I'm working on inference problems in epidemic spreading, urban mobility studies, and data visualization on interactive maps.

Post-Doc, Università La Sapienza - Physics Dip. / ISI Foundation

Rome-Turin, Italy — 01/2017- 08/2017

Postdoc in the [SocialDynamics](#) Lab of Prof. Vittorio Loreto at the physics department of Università la Sapienza of Roma.

Researcher, ISI Foundation

Turin, Italy — 2014 - 2016

I worked in the [Citizen Science & Smart Cities Lab](#) of Prof. Vittorio Loreto at ISI. I was interested in urban mobility studies, city information lab, data visualization, and social systems using complex systems tools.

Accomplishments

- Ideation, creation, and implementation of citychrone.org platform.
- Urban mobility studies.

- Implementation of [CityChronoTable](#).
- Gamification experience and citizen science ([kreyon project](#)).

Researcher, Politecnico di Torino

Torino, Italy — 2013-2014

I worked in the group (CMP) of Prof. Riccardo Zecchina.
I focused on applying new algorithms borrowed from statistical physics of complex systems to optimization problems and quantum physics.

Accomplishments

- Innovative use of message passing algorithms to quantum physics problems.
- Comparison studies between message passing Algorithms and linear programming techniques in optimization problems.

Education

Politecnico di Torino

Ph.D. — 2010-2014

Ph.D. student, Physics Department, Politecnico di Torino; Supervisor: R. Zecchina.
Title of the Ph.D. thesis: "Cavity algorithms under global constraints: classical and quantum problems."

Università la Sapienza di Roma

Master in Physics — 2009

Thesis supervised by Prof. Giorgio Parisi and Dott. Francesco Zamponi.
Final mark 110/110 e lode.

Ecole Normale Supérieure de Paris

Thesis — 2009

Preparation of the Master's thesis, supervised by Dr. Francesco Zamponi.

Università la Sapienza di Roma

Bachelor in Physics — 2007

Bachelor's thesis supervised by Prof. Luciano Pietronero and Dott. Andrea Gabrielli.
Final mark 109/110.

University of Geneva

Erasmus — 2005-2006

High school diploma

Liceo Scientifico "Taletè" in Roma, Italy. 2002

Skills

- Expert user of Unix-based operating systems (Linux and Mac Os X).
- Advanced knowledge of C++, Python, and nodeJS/javascript.
- Advanced knowledge of PyTorch for neural networks implementations.
- Good knowledge of MongoDB.
- Good knowledge of web development, web-based map libraries, and meteor platform.

Languages

[Italian – native language]
[English – Good knowledge]
[French – Elementary knowledge]

References

Available upon request.

Selected papers

Theory of amorphous packings of binary mixtures of hard spheres
I Biazzo, F Caltagirone, G Parisi, F Zamponi
Physical review letters 102 (19), 195701

Performance of a cavity-method-based algorithm for the prize-collecting Steiner tree problem on graphs
I Biazzo, A Braunstein, R Zecchina
Physical Review E 86 (2), 026706

Bethe free-energy approximations for disordered quantum systems
I Biazzo, A Ramezanpour
Phys. Rev. E 89, 062137

General scores for accessibility and inequality measures in urban areas
I Biazzo, B Monechi, V Loreto
Royal Society open science 6 (8), 190979

Epidemic mitigation by statistical inference from contact tracing data
A Baker, I Biazzo, A Braunstein, G Catania, L Dall'Asta, A Ingrosso, ...
Proceedings of the National Academy of Sciences 118 (32)

Epidemic inference through generative neural networks
I Biazzo, A Braunstein, L Dall'Asta, F Mazza
arXiv:2111.03383

Accounts

Twitter: [@ocadni](#)

GitHub: <https://github.com/ocadni>

Personal links: www.indacobiazzo.me