

Carlo Bottai | Curriculum Vitæ

University of Milan-Bicocca, P.zza dell'Ateneo Nuovo 1 – 20126 – Milan, Italy

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Current position

Postdoctoral Fellow

Dept of Economics, Management and Statistics, University of Milan-Bicocca

Project: "Look through the website's glasses: Using big data for classifying and describing Italian innovative SMEs"

PI: Caterina Liberati (UniMiB)

Milan (IT)

since Dec 2021

Research interests

Economics of Innovation
Technology Policy

Geography of Innovation
Economic and Business History

Complex Networks Economics

Education

EST, University of Turin & Collegio Carlo Alberto

PhD in Economics (Vilfredo Pareto Doctorate in Economics)

Thesis title: Essays on the Economics and Geography of Technological Diversification

Supervisor: Prof. Aldo Geuna

Committee: Profs. Ron Boschma, Stefano Breschi, Magda Fontana

Turin (IT)

Oct 2015 – May 2019

CID - Kennedy School of Government, Harvard University

Visiting student

Growth Lab (supervisor Dr Frank Neffke; director Prof. Ricardo Hausmann)

Cambridge (MA)

Sep – Dec 2018

INET at the Oxford Martin School and Math. Institute, University of Oxford

Visiting student

Complexity Economics group (supervisor Dr Torsten Heinrich; director Prof. J. Doyne Farmer)

Oxford (UK)

Oct – Dec 2017

Collegio Carlo Alberto

Master of Arts in Economics and Complexity, average grade 28 /30

Focused on Complexity Economics, Agent-based Modelling, Complex Network Analysis.

All courses are taught in English.

Moncalieri, Turin (IT)

Aug 2014 – Sep 2015

Alma Mater Studiorum · Bologna University

Master's degree in Economics, summa cum laude

Bologna

Sep 2009 – Oct 2013

University of Florence

Bachelor's degree in Political Sciences

Florence

Sep 2005 – Dec 2009

Work Experience

Postdoctoral Fellow

Eindhoven University of Technology (EPO APR Grant)

Project: Government-sponsored research and technical standards: Evidence from standard-essential patents

PI: Emilio Raiteri (TU/e)

Grant: European Patent Office (EPO) – Academic Research Programme 2020 (<https://www.epo.org/learning/materials/academic-research-programme.html>)

Eindhoven (NL)

Sep 2021 – Nov 2021

Marie Curie-Skłodowska Postdoctoral Fellow

EuroTech Universities Alliance (MSCA-COFUND scheme grant)

Eindhoven (NL)

Sep 2019 – Aug 2021

Project: Insights on the “real impact” of science
Host: Dept of Industrial Engineering & Innovation Sciences, Eindhoven University of Technology (TU/e)
Co-host: College of Management of Technology, École Polytechnique Fédérale de Lausanne (EPFL)
Supervisors: Emilio Raiteri (TU/e) and Gaétan de Rassenfosse (EPFL)
Grant: EuroTechPostdoc program (<http://postdoc.eurotech-universities.eu/>)

Research assistant **Turin (IT)**
RENIR, Collegio Carlo Alberto *May 2019 – Sep 2019*

Project: On Diversity in Cities and How It Affects Their Economic Performance
PI: Prof. Aldo Geuna

Research assistant **Turin (IT)**
ISMEL *Sep 2016 – Mar 2017*

Integration and revision of the Italian automotive industry historical database (AUTOITA).
PI: Profs. Aldo Geuna and Aldo Enrietti

Teaching Experience

Innovation and intellectual property rights **TU/e, Eindhoven (NL)**
Teaching assistant, Master, English *Nov 2021*

Lectures on the Economics and Management of IPRs, with a specific focus on patents

IPR for New Ventures **TU/e, Eindhoven (NL)**
Teaching assistant, Bachelor, English *Sep 2020; Sep 2021*

Lectures about the use of IPR to defend and make profitable the business model of an innovative start-up

Communications and computing **TU/e, Eindhoven (NL)**
Teaching assistant, Bachelor, English *Sep 2020; Sep 2021*

Lectures on industrial organization and business models for ICT corporations

Information technologies of the future **TU/e, Eindhoven (NL)**
Teaching assistant, Bachelor, English *Jun 2020*

Supervision of students' reports about ICT technologies' commercialization

Introduction to \LaTeX **Collegio Einaudi, Turin (IT)**
Teacher, Italian *May 2017*

\LaTeX introductory course of 12 hours for the students of the Collegio Universitario R. Einaudi of Turin.

Master thesis supervision
- Alice Re, University of Turin, 2019 (co-supervisor)

Conferences and Summer/Winter Schools

Speaker.....

A Great Transformation? Workshop on the Impact of Autom. and AI on Reg. Econ. **Turin (IT)**
RENIR and Despina *May 2019*

“On Scaling of Technological Knowledge Production: How Population Size Affects the Knowledge Recombination Capacity of EU Metropolitan Regions”

1st YSI Workshop in “Innovation, Econ. Complexity and Econ. Geography” **Cambridge (MA)**
YSI, MIT Media Lab & Utrecht University *Aug 2018*

“What Do We Measure When We Measure Regional Relatedness?”

WICI conference on “Modelling Complex Urban Environments” **Waterloo (CA)**
University of Waterloo *Jun 2018*

“Urban Scaling: A Bayesian Panel Data Approach” (with C. Nava)

International Workshop on “Rethinking Clusters” **Florence (IT)**
University of Florence *May 2018*

“What Do We Measure When We Measure Regional Relatedness?”

- 1st RENIR Meeting** **Turin (IT)**
Brick-CCA, EST-UniTo, PoliTo and Munk School of Global Affairs *Feb 2018*
 "What Do We Measure When We Measure Regional Relatedness?" and "Urban Scaling: A Bayesian Panel Data Approach" (with C. Nava)
- 4th Geography of Innovation Conference (GeolInno2018)** **Barcelona (ES)**
University of Barcelona *Jan 2018*
 "What Do We Measure When We Measure Regional Relatedness?"
- 5th PhD Workshop in Econ. of Innovation, Complexity and Knowledge** **Turin (IT)**
UniTo and Brick-CCA *Dec 2017*
 "What Do We Measure When We Measure Regional Relatedness?"
- LabNET Research Seminar** **Turin (IT)**
EST-UniTo and LabNET *Dec 2016*
 "Network imprenditoriali e cambiamento strutturale: La *business community* di Torino, 1883-1907" (with I. Balbo)

Organiser.....

- A Great Transformation? Workshop on the Impact of Autom. and AI on Reg. Econ.** **Turin (IT)**
RENIR and Despina *May 2019*
- 6th PhD Workshop in Econ. of Innovation, Complexity and Knowledge** **Turin (IT)**
UniTo, Brick-CCA and INET-YSI. Keynote speakers: M. Riccaboni, G. Marin, E. Miguelez *Jan 2019*
- 5th PhD Workshop in Econ. of Innovation, Complexity and Knowledge** **Turin (IT)**
UniTo and Brick-CCA. Keynote speakers: F. Neffke, T. Heirich *Dec 2017*

Attendee.....

- HackSTIR – Data Science Workshop for Science, Tech. & Innovation Research** **London (UK)**
NESTA *Oct 2019*
- 2nd YSI Workshop in "Innovation, Econ. Complexity and Econ. Geography"** **Utrecht (NL)**
YSI, MIT Media Lab & Utrecht University *Sep 2019*
- SIENA Winter School on Longitudinal Social Network Analysis** **Zürich (CH)**
ETH Zürich. Courses taught by Snijders, Steglich, Block and Stadtfeld *Feb 2016*
- 1st Ancona-Milano Summer School on Agent-Based Economics** **Ancona (IT)**
Università Politecnica delle Marche and Università Cattolica del Sacro Cuore *Sep 2015*
- KID Summer School on Knowledge Dynamics, Industrial Evol., Econ. Development** **Nice (FR)**
Eurkind - European Network on Knowledge, Innovation, Development *Jul 2015*
 Presentation title: "Knowledge Clusters and Multidimensional Proximity: an Agent-Based Simulation" (with M. Iori)
- Luigi Einaudi Advanced School in Anthropology of Freedom** **Dogliani, Cuneo (IT)**
Associazione Polis, Invited speaker V. Vanberg *Jun 2015*
- Conference on Economic Change and Evolution** **Rome (IT)**
Accademia Nazionale dei Lincei *Nov 2014*

Awards and scholarships

- Research funds**
EPO Academic Research Programme *Jan 2021*
 Together with E. Raiteri (P.I.) and R. Bekkers. 7% acceptance rate
- Postdoctoral scholarship**
EuroTech alliance *Sep 2019*
 Co-funded by the European Commission under the Horizon 2020 programme
- PhD scholarship (first graded XXXI cycle)**
University of Turin · Vilfredo Pareto Doctorate in Economics *Oct 2015*
- Master's thesis worthy of mention**
Fondazione Manlio Resta graduation award 2014 *May 2015*

Reviewer

Economics of Innovation and New Technology; Journal of Evolutionary Economics

Other Economics courses and certificates

Fractals and Scaling

Santa Fe Institute, MOOC on Complexity Explorer, 9 weeks, grade 91% 2018

Social and Economic Networks: Models and Analysis

Stanford, MOOC on Coursera, 9 weeks, grade 82% 2015

Introduction to Complexity

Santa Fe Institute, MOOC on Complexity Explorer, 11 weeks, grade 98% 2015

Calculus One

Ohio State University, MOOC on Coursera, 14 weeks, grade 94% with distinction 2014

Social Report

CNGEI jointly with University of Rome · La Sapienza 2012

Languages

Italian: Mother tongue

English: Advanced (C1)






Computer and data science skills

Operating Systems and cloud-computing.....

I developed an advanced self-educated knowledge of the GNU/Linux operating system, with basic sysadmin skills.

I am used to developing data science projects on a GNU/Linux Debian distribution, virtualized on a Windows 10 machine (using WSL2), or an Arch Linux physical machine.

Whenever needed or convenient, I also used cloud-computing solutions (SBCs), like Amazon AWS EC2 or Microsoft Azure VM. As well, I am able to set up single-board computer solutions, like Raspberry Pi 3 and Zero.

GNU/Linux	
MS Windows	
Mac OSX	
Cloud VMs	
SBCs	

Document preparation systems and markup languages.....

I am proficient with many office suits, like MS Office, LibreOffice, Google Drive, in creating written documents, spreadsheets, and slides.





As well, I own a strong knowledge about \LaTeX , including basic skills in \TeX programming.

Lastly, I have advanced skills in web development. In the last years, I developed several websites for scientific meetings and projects using the Bootstrap toolkit and WordPress, among others.

○ <https://gist.github.com/n3ssuno/cfd2ef18e23df087f069cf9007395eb8>

○ <https://wick.carloalberto.org/>

○ <https://renir.carloalberto.org/>

Office suits	
\LaTeX	
HTML/CSS	
InDesign	

Coding for data science.....

In the research projects I have been working on in the last years, I used Python or R to clean and reconcile many data sources in a ready-for-use database.

As part of my PhD, I built an R package that computes measures of regional technological diversity and complexity.

Instead, I find JavaScript very useful to deal with web-related data projects.

- o <https://github.com/n3ssuno/ReKS/>
- o <https://github.com/n3ssuno/MSA-patents>

Python	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
R	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
JavaScript	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SQL	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Julia	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Web scraping.....

I developed good knowledge of web scraping techniques. For example, I wrote a script able to extract information from many sources (Google, Bing, SBIR, Bloomberg) about the websites of US Federal award recipients and patent assignees.

Puppeteer	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Playwright	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>

Natural Language Processing.....

I know the basics of Named-Entity Recognition techniques. For example, I developed a software to automatically extract the ID numbers of R&D grants and procurement contracts from patent texts using regular expressions and other tools.

Prodigy	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
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Reproducible data science and workflow automation.....

I combine tools like Git, Conda, and Docker to make more easily maintainable, collaborative, and reproducible the development of data science projects.

Git	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Conda	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Docker	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
GNU Make	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Personal skills

Team spirit and ability to adapt to multicultural environments thanks to the experience at a Scout association (CNGEI) from 1994, also as a group leader.

Leadership skills obtained as Scout Leader (in charge of a small group of adults and of 25 boys and girls from 12 to 16 years old) at the Scout Association CNGEI of Florence from 2007 to 2009.

Organizational skills shown being in charge of the logistics of a meeting of CNGEI for about 450 young people and 100 adults from all over Italy, which was held in the summer of 2012 for 5 days in Tuscany. In 2016-2017, I was the head of two similar Scout Camps of about 150-200 people.

Publications

2015 "Open Innovation in a Model à la Hotelling", Working Papers of the Dep. of Economics and Statistics *Cognetti de Martiis* · University of Turin, 26

"Knowledge Clusters and Multidimensional Proximity: An Agent-Based Simulation", Working Papers of the Dep. of Economics and Statistics *Cognetti de Martiis* · University of Turin, 28, with M. Iori

2019 "Measures of Regional Technological Diversity: A Critical Review with an Application to Regional Resilience", RENIR Working Paper, 11

Work in progress.....

“Cluster Heterogeneity and Cluster Evolution: The Business Community of Turin, 1883–1907 as a Case of Cluster Transformation” — Review and resubmit to Italian Economic Journal

“Unraveling cities’ complexity: The Economic Complexity Index as a policy tool”, with M. Iori — Submitted to P. Chen, W. Elsner, and A. Pyka (Eds.) *Handbook of Complexity Economics*, Routledge (forthcoming)

“Does the DoD SBIR Program Lead to Commercial Success? Evidence from a Web-based Approach”, with G. de Rassenfosse and E. Raiteri

“The Concept of Diversity in Economic Geography: Related Variety, Economic Complexity and the Product Space”, with F. Neffke, A. van Dam, M. Iglesias, S. Orazbayev, K. Frenken, and R. Hausmann

“On Scaling of Technological Knowledge Production: How Population Size Affects the Knowledge Recombination Capacity of EU Metropolitan Regions”

Code for scientific applications.....

2018 “ReKS: Regional Knowledge Space” (R Package): <https://github.com/n3ssuno/ReKS/>

Scientific databases.....

2021 “IRIS DOD-SBIR database”: <https://doi.org/10.5281/zenodo.5341454>

“Patenting in the US Metropolitan Areas”: <https://github.com/n3ssuno/MSA-patents>

References

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and Growth Lab at Harvard University
Josefstaedter Strasse 39
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