Luca **Verginer**

ECONOMIST · DATA SCIENTIST

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Data-driven Ph.D. economist proficient at handling complex datasets and applying rigorous causal inference techniques.

Experience

ETH Zürich *Zürich, CH*

POSTDOC RESEARCHER *April 2019 – Present*

- **Research:** Lead on multiple projects in network analytics, economics, and data science, focusing on socio-economic systems.
- **Software Development:** Co-developer of widely-used data analytics packages.
- **Database Management:** Independently set up and manage databases for various research projects.
- **International Collaboration:** Engage in academic partnerships with multiple international universities.
- **Supervision:** Mentor PhD, MSc, and BSc students across departments, guiding them from research planning to execution.

Education

Ph.D in Economics and Data Science *Lucca, Italy*

IMT SCHOOL FOR ADVANCED STUDIES LUCCA *Nov. 2015 — Feb. 2019*

- Specialized in econometrics and data science applied to economics.
- Gained proficiency in Python for data analysis and econometric causal inference methods.
- Published research papers focusing on the Economic Complexity and the Economics of Innovation.

MSc in Economics *Trento, Italy*

UNIVERSITY OF TRENTO *Oct. 2012 — Feb. 2015*

- Coursework included advanced statistics, international economics, and economic policy.
- Completed a Master's thesis on Keynesian Economics, which involved extensive simulations and data analysis using.

BSc in Accounting and Finance *Bradford, UK*

UNIVERSITY OF BRADFORD *Nov. 2009 — Feb. 2012*

- Developed a strong foundation in financial accounting and reporting.
- Studied courses such as Auditing, Financial Accounting, International Accounting Standards.

Teaching

Complex Networks *ETH Zürich*

MSC AND PHD COURSE *2021 – Present*

- Led tutorials for 20 students, focusing on hands-on guidance.
- Employed Python for advanced network analysis in various contexts.
- Handled grading and project assessments.

Economic Dynamics and Complexity *ETH Zürich*

MSC AND PHD COURSE *2023 – Present*

- Managed tutorials for a class of 100 students.
- Taught Python techniques for solving ODEs in economic models.
- Oversaw grading and student assessments.

Skills

Programming
Python, R, Go, Mathematica, Bash

Database Management
SQL, Neo4j, PostGis, Postgres

Front-end & Design
Hugo, HTML, JavaScript, CSS

Statistical & Econometric Methods
Wide Methodological Range, Causal Inference

Machine Learning Frameworks
Tensorflow, PyTorch, Scikit-learn

Operations
Docker, AWS, Git

Languages
German (Fluent), English (Fluent), Italian (Fluent), Rhaeto-Romance (Fluent), French (A2)

Selected Research Projects

Quantifying Resilience in Pharmaceutical Distribution Networks: A Methodological and Policy-Focused Approach
Pharmaceutical Sector

KEYWORDS: PHARMACEUTICAL INDUSTRY, STRESS TESTS, SUPPLY CHAIN RESILIENCE, ECONOMETRIC METHODS, POLICY IMPLICATIONS

- Assessed the resilience of pharmaceutical supply chains, focusing on the potential for drug shortages.
- Developed novel stress-test simulations to evaluate the vulnerabilities.
- Authored multiple scientific papers to disseminate key findings and methodologies.

Quantifying Intellectual Property Competition and Litigation from Patent Data
Intellectual Property

KEYWORDS: INTELLECTUAL PROPERTY, INTERNATIONAL FIRMS, ECONOMETRIC METHODS, LITIGATION RISK ASSESSMENT

- Employed econometric techniques to develop a competition index among international firms in the intellectual property domain.
- Created a litigation risk assessment model based on patent data.

Increasing Cooperation in Prisoner's Dilemma Games Through Human-Bot Interactions
Behavioral Economics

KEYWORDS: BEHAVIORAL ECONOMICS, GAME THEORY, HUMAN-BOT INTERACTIONS, LARGE-SCALE EXPERIMENTS

- Conducted a large-scale behavioral experiment involving over 2,000 participants to examine cooperative strategies in Prisoner's Dilemma games.
- Investigated how awareness of interacting with bots influences human behavior in strategic games.
- Employed statistical and econometric methods to analyze the data and validate theoretical models.

Pathpy: A Python Package for Temporal Network Analysis
Software Development

KEYWORDS: TEMPORAL NETWORKS, PYTHON, MACHINE LEARNING, EDUCATION, COLLABORATION

- Core contributor in a multi-university project.
- Developed Python package to fill gaps in network analysis tools.
- Software used in my "Complex Networks" course.
- Forms the basis for specialized machine learning packages.

Publications

PEER-REVIEWED

Understanding Online Migration Decisions Following the Banning of Radical Communities
Giuseppe Russo, Manoel Horta Ribeiro, Giona Casiraghi, Luca Verginer
Proceedings of the 15th ACM Web Science Conference 2023, 2023, Austin TX USA

Spillover of Antisocial Behavior from Fringe Platforms: The Unintended Consequences of Community Banning
Giuseppe Russo, Luca Verginer, Manoel Horta Ribeiro, Giona Casiraghi
Proceedings of the International AAAI Conference on Web and Social Media 17 (June 2023) pp. 742–753. 2023

The Impact of the COVID-19 Pandemic on Scientific Research in the Life Sciences
Massimo Riccaboni, Luca Verginer
PLOS ONE 17.2 (Feb. 2022) e0263001. 2022

Spillover of Antisocial Behavior from Fringe Platforms: The Unintended Consequences of Community Banning
Giuseppe Russo, Luca Verginer, Manoel Horta Ribeiro, Giona Casiraghi
2022

Analysis and Visualisation of Time Series Data on Networks with Pathpy
Jürgen Hackl, Ingo Scholtes, Luka V. Petrović, Vincenzo Perri, Luca Verginer, Christoph Gote
Companion Proceedings of the Web Conference 2021, 2021, Ljubljana Slovenia

A Network Approach to Expertise Retrieval Based on Path Similarity and Credit Allocation
Xiancheng Li, Luca Verginer, Massimo Riccaboni, P. Panzarasa
Journal of Economic Interaction and Coordination (July 2021). 2021

Reproducing Scientists' Mobility: A Data-Driven Model
Giacomo Vaccario, Luca Verginer, Frank Schweitzer
Scientific Reports 11.1 (Dec. 2021) p. 10733. 2021

Stem Cell Legislation and Its Impact on the Geographic Preferences of Stem Cell Researchers
Luca Verginer, Massimo Riccaboni
Eurasian Business Review 11.1 (Mar. 2021) pp. 163–189. 2021

Talent Goes to Global Cities: The World Network of Scientists' Mobility
Luca Verginer, Massimo Riccaboni
Research Policy 50.1 (Jan. 2021) p. 104127. 2021

Foreword to the Special Issue on Success in Science
Luca Verginer, Giacomo Vaccario, Alexander M Petersen
Advances in Complex Systems (2021) p. 2. 2021

Should the Government Reward Cooperation? Insights from an Agent-Based Model of Wealth Redistribution
Frank Schweitzer, Luca Verginer, Giacomo Vaccario

Advances in Complex Systems 23.07 (Nov. 2020) p. 2050018. 2020

The Mobility Network of Scientists: Analyzing Temporal Correlations in Scientific Careers
    Giacomo Vaccario, Luca Verginer, Frank Schweitzer
    Applied Network Science 5.1 (Dec. 2020) p. 36. 2020

Cities and Countries in the Global Scientist Mobility Network
    Luca Verginer, Massimo Riccaboni
    Applied Network Science 5.1 (Dec. 2020) p. 38. 2020

Working Papers

Adapting to Disruptions: Flexibility as a Pillar of Supply Chain Resilience
    Ambra Amico, Luca Verginer, Giona Casiraghi, Giacomo Vaccario, Frank Schweitzer
    2023

The Robotic Herd: Using Human-Bot Interactions to Explore Irrational Herding
    Luca Verginer, Giacomo Vaccario, Piero Ronzani
    Preprint, 2023

The Role of Network Embeddedness on the Selection of Collaboration Partners: An Agent-Based Model with Empirical Validation
    Frank Schweitzer, Antonios Garas, Mario V. Tomasello, Giacomo Vaccario, Luca Verginer
    arXiv:1403.3298 [physics] (Jan. 2022). 2022

The Impact of Acquisitions on Inventors' Turnover in the Biotechnology Industry
    Luca Verginer, Federica Parisi, Jeroen van Lidth de Jeude, Massimo Riccaboni
    arXiv:2203.12968 [econ, q-fin] (Mar. 2022). 2022

When Standard Network Measures Fail to Rank Journals: A Theoretical and Empirical Analysis
    Giacomo Vaccario, Luca Verginer
    arXiv:2106.15541 [physics] (June 2021). 2021