Gianluca Vagliano

Economics | Data Science | Software Development | AI

Frankfurt am Main, Germany · gianlu.cc · gl.vagliano@gmail.com

Profile

Economist and analytical generalist whose work has ranged from financial stability and development economics to computer vision, software development, and agentic AI. Quantitative modelling is the common thread; I adore it enough to pursue it in my free time. Point me to a research question and I will collect the data, design the models, and build the software needed to answer it with statistical rigour. In recent years, I have built systems that let users ask such questions of complex data themselves and receive actionable answers on demand, first through deterministic tools and now through agentic AI. I have carried these systems through to web and phone applications. I am curious and driven, enter unfamiliar technical domains quickly, and work equally well on my own and alongside others.

Professional Experience

Feb. 2023–Aug. 2026

Technical Founder and Python/ML Developer

ATMAN, independent product venture, Frankfurt am Main

- Before agentic AI, designed and built ATMAN v1 entirely from scratch: an end-to-end pipeline that turns broadcast footage of tennis matches into structured, shot-by-shot data. Convolutional neural networks of my own design and training classify player strokes and detect the ball; particle filters deal with tracking; ball detections are then fitted to a physical simulation of feasible ball flights subject to drag, gravity, and the Magnus effect to estimate trajectory initial conditions. A purpose-built tennis dataclass system allows data to be queried, transformed, and aggregated; a 3D visualisation engine allows results to be presented.
- Pivoted to a two-camera, on-court system, which was prototyped and tested at tennis academies. Defined the product and directed coding agents in building ATMAN web and phone prototypes around its data. The analytical prototype used specialised agents to interpret and clarify questions, route them to focused analyses or deeper investigations, and call deterministic Python tools to query the data and produce tables and visualisations, with structured requests validated before execution. Discontinued the venture after validation interviews with coaches and academy stakeholders showed that the product did not solve a sufficiently urgent problem.

Aug. 2022–Feb. 2023
Mar. 2019–Feb. 2022

Research Analyst; subsequently Consultant

European Central Bank, Macroprudential Policy and Financial Stability, Frankfurt am Main

- Helped develop the Banking Euro Area Stress Test Model (BEAST), which models the balance sheets of around 90 euro-area banks, their interdependencies, and feedback loops with the real economy to identify drivers of systemic risk under stress. Its results informed work for the ECB Board, European Banking Authority, and European Commission.
- Proposed and implemented the model's extension beyond its original solvency focus to liquidity management. Modelled how banks meet LCR, NSFR, and internal targets through asset encumbrance and secured and unsecured issuance across maturities; also modelled wholesale-debt prices and volumes, internal capital targets, dividend distributions, and earnings retention.
- Using Python and SQL, rebuilt the input-data infrastructure, reconciling disparate sources in a reliable and scalable pipeline and reducing an overnight process across several high-performance machines to roughly fifteen minutes on a laptop.
- Built a pandas-based analysis layer for five-dimensional model outputs exceeding 100 GB, supporting fast querying, filtering, transformation, aggregation, and visualisation; implemented a reverse-mode sensitivity tool to trace outcomes to their drivers.

Aug. 2022–Mar. 2023
Oct. 2018–Jan. 2019

Economic Consultant, Agricultural Impact Evaluation

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Kenya / Germany

- Commissioned twice to evaluate the net economic impact of GIZ's Farmer Field and Business Schools. For the larger study, designed a 291-item questionnaire and a stratified, power-optimised sample of 752 farmers; modelled yields and prices for propensity-score-matched treatment and control groups; estimated the programme's return on investment.
- Solely responsible for the work from empirical design through analysis to a 54-page final report and technical presentations for audiences ranging from data specialists to Kenyan agricultural partners.

Jan.–Feb. 2019

Quantitative Consultant

Akkumulatorenfabrik MOLL GmbH, Germany

- Developed and estimated a model of car-battery failure rates to forecast the number and timing of warranty cases and assess the marginal effects of battery characteristics, temperature, and humidity.

Earlier Experience

Apr.–Oct. 2018 **Intern, Agriculture and Rural Development** · *GIZ, Nairobi, Kenya*
Helped integrate 13 disparate agricultural projects into a single cluster with shared systems and streamlined processes; designed the administrative structure and programmed its workflow applications in VBA.

Mar.–Aug. 2015 **Intern, Behavioural Market Research** · *GPS Dataservice GmbH, Germany*
Solely responsible for executing in Stata a statistical study of shopper behaviour under different supermarket aisle layouts, and for interpreting and presenting its results.

Jun.–Sep. 2014 **Intern, Market Risk Management, Global Reporting** · *Commerzbank Group, Frankfurt am Main*
Took the initiative to streamline and automate in VBA a joint market-risk report aggregating risk measures across equity, commodity, and foreign-exchange exposures. Worked with Value-at-Risk and daily model back-testing; drafted the macroeconomic analysis for a monthly market-risk report submitted to the board.

Selected Independent Project

Mar. 2020–Jan. 2021 **Testing the Efficiency of Parimutuel Betting Markets for Trot Races in France**
Collected complete race histories from France, Sweden, and Italy; built a Python library to estimate win probabilities by maximum likelihood, and tested them against the probabilities implicit in market odds.

Education

2015–2017 **M.Sc. Economics** · *University of Bonn*
Final grade 1.3; completed in five semesters.

2012–2015 **B.Sc. Economics** · *University of Mannheim*
Final grade 1.6; completed in six semesters.

2003–2012 **Abitur** · *Lessing-Gymnasium, Frankfurt am Main*
Final grade 1.1; advanced courses Mathematics and English.

Technical Skills

Programming: Python *(expert)*; SQL and relational databases *(working knowledge)*; VBA and Stata *(intermediate)*; R, Matlab/Dynare, and Mathematica *(basic)*.

Python ecosystem: pandas and NumPy *(expert)*; OpenCV, matplotlib, PyTorch, scikit-learn, and multiprocessing/threading *(advanced)*; SciPy, BeautifulSoup, and requests *(intermediate)*.

Other software: Git *(intermediate, independent and collaborative use)*; LaTeX and MS Office *(intermediate)*.

AI and agentic systems: Agentic programming with Codex, harness design, multi-agent orchestration, OpenAI Responses API, structured tool-execution loops.

Selected Publications and Reports

- Co-author, “BEAST: A model for the assessment of system-wide risks and macroprudential policies,” *ECB Working Paper Series*, No. 2855, 2023.
- Co-author, “The economic impact of the NPL coverage expectations in the euro area,” *ECB Occasional Paper Series*, No. 297, 2022.
- Co-author, “The growth-at-risk perspective on the system-wide impact of Basel III finalisation in the euro area,” *ECB Occasional Paper Series*, No. 258, 2021.
- Author, “Assessing the Net Economic Impact of the Farmer Field and Business Schools,” commissioned by GIZ, 54 pages, 2023.
- Author, “The Economic Impact of the FFBS Program in Bungoma and Nyandarua, Kenya,” published internally by GIZ, 2019.

Additional Information

Languages: German and Italian (native); English (C2); French (B1).

Extracurricular: Course tutor for *Mathematics for Economists*, University of Bonn (Oct. 2016–Feb. 2017); one-to-one reading mentor for children aged six to nine, Mentor e.V. (Sept. 2013–June 2015); volunteer in theatre-production roles with Shakespeare Frankfurt and the ECB Theatre Section (since June 2021).

Interests: Tennis; baseball; literature; film; classical guitar.