# PATRICK ALTMEYER

**Researching Trustworthy Artificial Intelligence (AI) for Finance and Economics**

I am an economist by background with an interest in cross-disciplinary research on the intersection of Trustworthy AI and Financial Economics. For my PhD in Trustworthy AI, I currently focus on Counterfactual Explanations and Probabilisitic Machine Learning under supervision of Cynthia Liem and Arie van Deursen at Delft University of Technology.

## EDUCATION

2025 | 2021
**PhD in Computer Science**
Delft University of Technology — Delft, Netherlands

Thesis topic: Counterfactual Reasoning and Probabilistic Methods for Trustworthy AI with Applications in Finance

2021
**Master in Data Science**
Barcelona School of Economics — Barcelona, Spain

Thesis: Deep Vector Autoregression for Macroeconomic Data

2018
**Master in Economics and Finance**
Barcelona School of Economics — Barcelona, Spain

Thesis: Option Pricing in the Heston Stochastic Volatility Model

2017
**Master of Arts with Honours in Economics**
University of Edinburgh — Edinburgh, United Kingdom

Thesis: Can misguided monetary policy explain the European housing bubble?

## PROFESSIONAL EXPERIENCE

2021 | 2018
**Economist**
Bank of England — London, United Kingdom

- Co-author of two staff working papers.
- Econometric data analysis.
- Co-initiated and led app development.
- Briefing work for policy committees.

2017
**Postgraduate Intern**
Bank of England — London, United Kingdom

- Econometric analysis of transaction data set in R.
- Internal presentation of project results.


## CONTACT INFO

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For more information, please contact me via email.


## SKILLS

Experienced in Machine Learning, Finance, Economics and Monetary Policy.

Highly skilled in Julia, R, Python and Quarto.

Research expertise in the field of Explainable Artificial Intelligence.

*Last updated on 2024-09-26.*

## TEACHING AND SUPERVISION

2024 **Google Summer of Code**
Project Mentor of the Google Summer of Code program — Virtual

2024 **Julia Season of Contributions**
Project Mentor of Julia Season of Contributions program — Virtual

2024 – 2023 **Master's Thesis Supervision**
Research co-supervisor of various master's students — Delft, Netherlands

2024 – 2023 **Software Project Supervision**
Project supervisor for three groups of students — Delft, Netherlands
- Proposal of two software projects related to Trustworthy AI in Julia.
- Supervision of two groups of five undergraduate students working on the project.

2022 **Bachelor's Thesis Supervision**
Research supervisor for group of students — Delft, Netherlands
- Proposal of final-year research project on Endogenous Dynamics in Algorithmic Recourse.
- Supervision of group of three undergraduate students working on the project.

2021 **Foundations of Data Science Summer School**
Teaching Assistant at Barcelona School of Economics — Barcelona, Spain

2020 – 2019 **Introduction course to R and Git**
Lead Trainer at Analytics Enablement Hub, Bank of England. — London, United Kingdom

2017 – 2016 **Honours Modules in Econometrics**
Teaching assistant at School of Economics, University of Edinburgh — Edinburgh, United Kingdom

## SELECTED PUBLICATIONS

2024 **Position: Stop Making Unscientific AGI Performance Claims**
Proceedings of the 41st International Conference on Machine Learning: [PDF, code] — Vienna, Austria
**Altmeyer P.**, Demetriou A.M., Bartlett A., Liem C.C.S.

2024 **Faithful Model Explanations through Energy-Constrained Conformal Counterfactuals**
The 38th Annual AAAI Conference on Artificial Intelligence: [PDF, code] — Vancouver, Canada
**Altmeyer P.**, Farmanbar M., van Deursen A., Liem C.C.S.

2023 **Explaining Black-Box Model through Counterfactuals**
The Proceedings of the JuliaCon Conferences: [PDF] — Delft, Netherlands
**Altmeyer P.**, van Deursen A., Liem C.C.S.

2023 **Endogenous Macrodynamics in Algorithmic Recourse**
First IEEE Conference on Secure and Trustworthy Machine Learning: [PDF, code] — Raleigh, North Carolina, United States
**Altmeyer P.**, Angela G., Buszydlik A., Dobiczek K., van Deursen A., Liem C.C.S.

2023 **Yield Curve Sensitivity to Investor Positioning Around Economic Shocks**
Bank of England Staff Working Paper: [PDF] London, United Kingdom
**Altmeyer P.**, Boneva L., Kinston R., Saha S., Stoja E.

2021 **Deep Vector Autoregression for Macroeconomic Data**
Masters Thesis (selected for publication): [PDF], [GitHub] Barcelona, Spain
Agustí M., **Altmeyer P.**, Vidal-Quadras Costa I.

2018 **Option Pricing in the Heston Stochastic Volatility Model: an Empirical Evaluation**
Masters Thesis (selected for publication): [PDF] Barcelona, Spain
**Altmeyer P.**, Grapendal J., Pravosud M., Quintana G.

## SELECTED CONFERENCES, WORKSHOPS AND POSTERS

2024 **JuliaCon 2024**
Multiple talks about Taija, Quarto and more. Eindhoven, Netherlands

2024 **Trustworthy AI in Julia**
Invited talk at the Alan Turing Institute on Trustworthy AI in Julia. London, United Kingdom

2024 **XAI seminar @ Imperial College London**
Presented our AAAI 2024 paper at an XAI seminar at Imperial College London. London, United Kingdom

2024 **ECONDAT 2024**
Presented *Against Spurious Sparks – Dovelating Inflated AI Claims* at ECONDAT 2024 conference.
London, United Kingdom

2024 **Navigating the Interplay of Explainability and Privacy in AI**
Contributed talk at workshop: Faithful Model Explanations through Energy-Constrained Conformal Counterfactuals
Delft, Netherlands

2023 **Workshop at De Nederlandsche Bank**
Invited talk: Faithful Model Explanations-Central Bank Supervision in the Age of AI Amsterdam, Netherlands

2023 **Datamiddag 2023: van PET tot Haring**
Invited talk: Faithful Model Explanations The Hague, Netherlands

2023 **JuliaCon 2023**
Main talk: Predictive Uncertainty Quantification in Machine Learning MIT in Boston, USA

2023 **Delft FinTech Lab Launch**
Invited talk: Echos from the Black Box Delft, Netherlands

2023 **First IEEE Conference on Secure and Trustworthy Machine Learning**
Oral: Endogenous Macrodynamics in Algorithmic Recourse Raleigh, North Carolina

2022 **New Methods Seminar at the Bank of England**
Invited talk: Explaining Black-Box Models through Counterfactuals London, United Kingdom

2022 **ING Data Science Community Conference 2022**
Contributed talk: Explaining Black-Box Models through Counterfactuals Amsterdam, Netherlands

2022 **JuliaCon 2022**
Presented Julia packages I developed — Virtual
- [Explaining Black-Box Models through Counterfactuals] (main talk)
- [Effortless Bayesian Deep Learning through Laplace Redux] (lightening talk)
- [Julia and Quarto: A Match Made in Heaven?] (experience talk)

2022 **ProbAI 2022 Summer School**
Poster presentation "Explainable AI: Probabilistic Methods for Counterfactual Explanations": [poster] — Helsinki, Finland

2022 **TU Delft EEMCS PhD event**
Poster presentation "Counterfactual Explanations and Algorithmic Recourse": [poster] — Delft, Netherlands

2022 **De Nederlandse Bank Conference "Central Bankers Go Data Driven: Applications of AI and ML for Policy and Prudential Supervision"**
Poster presentation of Altmeyer, Agusti, and Vidal-Quadras Costa (2021). — Amsterdam, Netherlands

2022 **IFC and Bank of Italy workshop on "Data science in central banking"**
Presentation of Altmeyer, Agusti, and Vidal-Quadras Costa (2021): [event link], [YouTube] — Virtual

2021 **NeurIPS 2021 MLECON Workshop**
Poster presentation of Altmeyer, Agusti, and Vidal-Quadras Costa (2021): [event link] — Virtual

2021 **IFABS 2021 Oxford**
Presented our upcoming BoE Staff Working Paper on yield curve pricing [event link] — Virtual

2019 **Money markets and Central Bank Balance Sheets**
Presented research on demand for central bank reserves at ECB: [event link] — Frankfurt, Germany

## </> SELECTED OPEN-SOURCE SOFTWARE

2022-2024 **`ConformalPrediction.jl`**
Julia package for Conformal Prediction: [docs], [GitHub]

2021-2024 **`CounterfactualExplanations.jl`**
Julia package for Counterfactual Explanations: [docs], [GitHub]

2021-2024 **`LaplaceRedux.jl`**
Julia package for effortless Bayesian Deep Learning: [docs], [GitHub]

2021-2022 **`deepvars`**
R package implementing Deep Vector Autoregression (Altmeyer, Agusti, and Vidal-Quadras Costa 2021): [GitHub]

## OUTREACH AND VOLUNTEERING

2022 | 2021 **Personal blog**
Communication AI in an accessible, visual manner: [url]

2020 **Class representative**
Masters in Data Science — Barcelona, Spain

2016 **TEDx talk**
Held a TEDx talk about European Integration: [YouTube] — Edinburgh, United Kingdom

## SCHOLARSHIPS AND AWARDS

2023 **Pluto Notebook Competition for JuliaCon2023**
2nd Price Winner — MIT in Boston, USA

2020 **Novartis Datathon**
3rd Price Winner of Datathon — Barcelona, Spain

2020 **Fee Waiver and Funding for Masters**
Full funding for Masters in Data Science through BSE and Bank of England — Barcelona, Spain

2017 **Fee waiver for Masters**
Total tuition fee waiver for Master in Finance through BSE — Barcelona, Spain

2017 **School of Economics Prize**
Edinburgh University School of Economics Joint Prize for the best performance in Economics — Edinburgh, United Kingdom

2015 **School of Economics Prize**
School of Economics Prize for academic excellence in Economics — Edinburgh, United Kingdom