Martin Lukac, PhD

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Experience

Flank AI   June 2025 – Present
AI Lead   Berlin, Germany & London, United Kingdom

- Designed and shipped an autonomous agentic orchestrator that executes end-to-end legal workflows (from user query, drafting, objection handling, signature, to archiving) with auditable logs and protocolled steps.
- Authored a company-wide AI roadmap to operationalise safety-first automation across products and internal tooling.
- Built an evaluation & guardrailing suite (policy checks, adversarial probes, regression tests) to continuously observe agents and ensure high-quality, compliant outputs.
- Reduced objection-handling pipeline failures on tracked `.docx` diffs from $> 30\%$ to $< 2\%$ via robust parsing, normalisation, and recovery heuristics, increasing throughput and reliability.

Sentra   March 2025 – Present
Co-Founder and CTO   London, United Kingdom

- Operate an AI companion platform serving $100+$ military personnel, veterans, and first responders with trauma-related conditions; incorporate human-in-the-loop escalation and consentful handoff to appropriate resources.
- Developed the *PsySafe* crisis-risk detection and policy engine (threshold tuning, audit logs, data-retention windows) and implemented crisis flows aligned to safety criteria for *imminent risk*.

Koios AI   April 2023 – June 2025
Co-Founder and Chief Scientist   London, United Kingdom

- Published research in Scientific Reports (Nature portfolio) on personality prediction from voice; led interdisciplinary research initiatives bridging AI, psychology, and social science, driving novel data collection efforts to build unique voice-to-psychology dataset.
- Developed and deployed deep learning models for personality prediction from voice — demonstrating predictive validity to infer Big Five traits from 90 seconds of speech. Used LLMs for interpretation of results, and built a personalised AI mindset coach.

Gradient Labs   September 2024 – February 2025
AI Engineer   London, United Kingdom

- Developed an automatic evaluation module to flag conversations for human review with a recall of 97%, reducing manual workload by 85%.
- Led the research on evaluation and guardrails from ideation to implementation, ensuring alignment with high-stakes operational needs.
- Designed and implemented improvements for an AI agent for customer support capable of following complex procedures in high-stakes environments.

QuantCo   August 2021 – August 2024
Research Data Scientist   London, United Kingdom & Berlin, Germany

- Designed, monitored, and evaluated a large-scale experiment involving approximately 10 million individuals in the health insurance sector in Germany. Utilized heterogeneous treatment estimation and policy learning techniques to efficiently channel treatments to individuals who would benefit the most.
- Led a team of 5 data scientists and conducted seminars on causal inference and machine learning to upskill junior colleagues. Achieved a 6% improvement in recall for a fraud detection model (gradient boosted tree) through innovative feature engineering and Bayesian hyperparameter optimization.

Projects

PsySafe AI: Psychological Safety Guardrails | *Python, LLMs, Prompt Engineering*

- Created an open-source framework for enhancing psychological safety in AI language model applications, featuring detectors like vulnerability, suicidal ideation, and harmful advice, and ethical guardrails.
- Implemented a flexible sensitivity system allowing calibration of guardrail prompts for different use cases, ensuring safe AI deployment across platforms.

Education

University of Oxford   2019 – 2021
Associate, Institute of New Economic Thinking   *Oxford, United Kingdom*
- Led a research project on the effects of AI automation on labour market outcomes, using a combination of network science, graph neural networks (GNNs), and embeddings to construct an occupational proximity network.
- Provided strategic consulting services to corporations and governments, offering insights derived from my research and technical experience.

The London School of Economics and Political Science   August 2020 – August 2021
Fellow in Computational Social Science   *London, United Kingdom*
- Tutored over 100 students through technical courses in the MSc in Applied Social Data Science program at LSE (Data for Data Scientists, Network Analysis, Introduction to Regression Analysis) resulting in a nomination for University-wide Teacher's Award.
- Authored a conjoint experiment power analysis paper and developed a Shiny dashboard to simplify access to power calculations for conjoint analysis. Spearheaded a research project utilizing generative AI for conjoint experimental design to infer causal effects of demographics on the probability of selection in online labour markets.

KU Leuven   2016 – 2021
PhD in Computational Social Science   *Leuven, Belgium*
- **Dissertation:** Computational Approaches to Measuring Labor Market Segmentation
- Developed new research methodologies for measuring labour market segmentation in Europe using large-scale survey data, programmed an agent-based model of recruitment under reputation systems at online labour market platforms, and used large web-scraped data to investigate segmentation in online labour markets.
- Finished all courses in **MSc in Statistics** at the Leuven Statistics Research Centre (L-STAT).

KU Leuven   2014 – 2015
MSc in Social Policy Analysis   *Leuven, Belgium*
- **Dissertation:** The Effects of Democratic Institutionalization and Satisfaction with Democracy on Subjective Well-Being in Europe: Comparing Random and Fixed Effect Multilevel Approaches
- Joint degree offered by Luxembourg Institute for Socio-Economic Research (Grand Duchy of Luxembourg) and KU Leuven (Belgium) in Social Policy Analysis.

Technical Skills

Languages: Python, R, SQL
Large Language Models: Evaluation, AI Agents, Fine-tuning, Prompt engineering, Distillation
Skills: AI Strategy, Multimodal Learning, Responsible AI, AI Governance, Model Evaluation, Trustworthiness
Concepts: Research Design, Experimental Design, Machine Learning, Neural Networks, Causal Inference, Survey Methodology, Cloud Computing, Webscraping, Agent-based Simulation Modelling

Research Training

University of Oxford
- *Mathematical Institute* | Summer School in Economic Networks, 2018
- *Department of Politics and International Relations* | Spring School in Advanced Research Methods (Causal Inference, Forecasting), 2018

KU Leuven
- *Centre for Sociological Research* | Agent-Based Modeling and Simulation in R and NetLogo, 2018

Luxembourg Institute for Socio-Economic Research
- International Workshop on Causal Inference, Program Evaluation, and External Validity, 2017
- Programme Evaluation: Evidence from Regression Discontinuity Design Based Methods, 2016

Teaching

Executive Education: Data Science for Executives (LSE Executive Education, 2023, Spring 2024, Autumn 2024)
Mentorship: Oxford Artificial Intelligence Society (Oxford, 2024)
Data Science: Data for Data Scientists (LSE, 2020), Social Network Analysis (LSE, 2021), Introduction to Agent-Based Modeling (Max Planck Institute for Computational Demography, 2019)
Quantitative Research Methods: Applied Regression Analysis (LSE, 2020), Quantitative Research Seminar (KU Leuven, 2019), Introduction to Statistics and R (IBM, 2016)