

JAKUB MIKOŁAJCZAK

Warsaw, Poland ◇ jakubmikolajczak.pl ◇ github.com/jmDarcy ◇ [LinkedIn](#)

Actuarial Analyst ◇ Econometrician ◇ Quantitative Risk Modelling

PROFILE

Actuarial analyst and econometrician combining professional actuarial modelling with quantitative work in insurance analytics, financial risk and applied statistical modelling. Professional experience includes Prophet model testing and validation in Life & Health insurance, pension and employee-benefit valuation under HGB/IFRS, and financial-services audit. Academic and portfolio work focuses on investment-fund portfolio risk, model backtesting, telematics insurance, optimisation, survival analysis, credit scoring and reproducible analytical workflows in R, Python, MATLAB, SQL and LaTeX/Typst.

PROFESSIONAL EXPERIENCE

ERGO Technology & Services

Jan 2026–present

Junior Actuarial Consultant (Life & Health Insurance)

Warsaw, hybrid

- Test and validate Prophet actuarial models used for cash-flow projections in a Life & Health insurance context.
- Analyse model outputs, identify inconsistencies and document validation tests and results.
- Support quality checks of actuarial and financial processes in an international environment.
- Use German as the main working language in daily professional communication.

Mercer

May 2025–Dec 2025

Junior Actuarial Analyst with German (Pensions)

Warsaw

- Supported actuarial valuations of employee benefits and pension obligations under HGB and IFRS.
- Prepared calculations for retirement, disability and death benefits based on plan documentation and adjustment rules.
- Integrated, reconciled and checked data from external sources for actuarial valuation workflows.
- Worked with Retirement Studio, Excel/VBA and German-language systems, documentation and client-related materials.

EY

Sep 2024–May 2025

Global Financial Services Audit Intern

Warsaw

- Participated in audits of financial institutions, including banks, insurers and investment funds.
- Supported standard and non-standard audit procedures requiring methodological adaptation and international coordination.
- Worked with financial reporting data, risk and control documentation, and audit findings.
- Automated trial-balance transformations and data consolidation workflows using Excel and Alteryx.

EDUCATION & QUALIFICATIONS

SGH Warsaw School of Economics

Oct 2025–Jul 2027

MSc, Advanced Analytics - Big Data and Machine Learning

in progress

- Quantitative profile covering stochastic processes, mathematical modelling, Bayesian methods, credit scoring, survival analysis, data mining, Python, R, SAS, SQL, big data analytics and cloud computing.

SGH Warsaw School of Economics

Oct 2022–Jun 2025

BSc, Quantitative Methods in Economics and Information Systems

quantitative methods in finance

- Thesis: investment-fund portfolio risk forecasting and backtesting with Markov-switching models; defended with grade 5.0 / highest grade.
- Coursework included econometrics in R, financial econometrics in MATLAB, financial and actuarial mathematics, probability theory, risk models, actuarial statistics and SQL databases.

KNF actuarial exams: passed the actuarial examination in Economics - 1 of 9 actuarial exams completed.

SELECTED QUANTITATIVE PROJECTS

Investment-fund portfolio risk modelling. Bachelor thesis: construction of conservative and aggressive investment-fund portfolios, analysis of daily returns, estimation of conditional-volatility models, and portfolio risk forecasting and backtesting in R. The empirical part compared classical volatility approaches with Markov-switching specifications and evaluated risk forecasts using VaR / Expected Shortfall backtesting. [GitHub](#)

Portfolio optimisation. Non-classical optimisation project: analysis of the Markowitz portfolio problem with a cardinality constraint. Implemented and compared simulated annealing, genetic algorithm and particle swarm optimisation; assessed portfolio risk in Monte Carlo scenarios generated from a stochastic volatility process. [GitHub](#)

Telematics insurance. Demonstrational usage-based insurance project using synthetic telematics data. Built Kafka/Spark-style event processing, driver risk features, an interpretable Poisson GLM with exposure offset for claim-frequency modelling, and a real-time operational decision layer separating safety interventions from premium updates. [GitHub](#)

Airline passenger satisfaction classification. Data-mining project on binary passenger-satisfaction classification. Built preprocessing pipelines in scikit-learn, compared logistic regression, Random Forest, HistGradientBoosting and MLP, and evaluated models using classification metrics, ROC/PR curves, calibration and feature-importance analysis. [GitHub](#)

Survival analysis and actuarial time-to-event modelling. Analysed survival data with Kaplan-Meier and Nelson-Aalen estimators, parametric AFT models, Cox proportional hazards modelling and diagnostics using Schoenfeld residuals and influence analysis. [GitHub](#)

ACADEMIC & STUDENT RESEARCH ACTIVITY

SKN Data Science: student research and interdisciplinary applications of data science; article on forest-fire prediction and cellular automata; logit model in Gretl for Amazon bestseller-status analysis.

SKN BNK: co-authored a quantitative monograph on democracy, economic freedom and long-term economic growth; contributed to an R-based cross-country panel-data model.

Investor's Club: participated in finance and technology events and prepared a fundamental valuation of Cognor S.A. using multiplier analysis and macro-sector assessment.

TECHNICAL SKILLS

Actuarial / finance: Prophet, actuarial model testing and validation, cash-flow projections, Life & Health insurance context, employee-benefit and pension-obligation valuation, HGB/IFRS, Retirement Studio

Programming / data: R, Python, MATLAB, SQL, VBA, SAS, Gretl, Stata, Excel, Alteryx, Git/GitHub, JupyterLab, VS Code, LaTeX, Typst

Quantitative analytics: econometrics, time-series modelling, machine learning, portfolio risk forecasting, model validation and backtesting, survival analysis, credit scoring, GLM, optimisation, Monte Carlo simulation

Python / analytics libraries: pandas, numpy, scikit-learn, statsmodels, lifelines, PySpark, Kafka-style streaming workflows

Languages: Polish – native; English – fluent; German – professional working proficiency