Ben-Nicholas Borowski

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Research Profile

Validation methodology for detection and scoring systems: building systems that make empirical claims, then testing them the way they should be tested: pre-registered hypotheses, negative controls, out-of-domain replication, and reported null results. Current work applies this to emerging-topic detection in scientometrics (sole-authored preprint under review at *Quantitative Science Studies*) and to risk and distress models in a regulated banking setting. Seeking doctoral research in research assessment and validation methodology.

Education

- **SRH University** — **Riedlingen, Germany**
  M.Sc. Data Science & Analytics, Dept. of Digitalization and Technology, Grade 1.3, 120/120 ECTS — *Mar 2025 – Aug 2026*
  - **Thesis**: Membership-based weak-signal detection in the foresight literature (SBERT, UMAP, HDBSCAN); Business Analytics track
- **University of Vienna** — **Vienna, Austria**
  B.Sc. Statistics & Data Analytics, Dept. of Statistics and Operations Research, Grade 1.0, 30/180 ECTS — *Oct 2025 – Present*
  - Second concurrent degree, undertaken alongside full-time employment; focus on computational statistics
- **University of Vienna**
  B.A. Political Science, Dept. of Political Science, Grade 2.4, 180/180 ECTS — *Oct 2020 – Feb 2025*

Grades on the German/Austrian 1–5 scale (1.0 = best, 4.0 = lowest pass); credits shown as completed/total ECTS.

Publications and Preprints

[P1] **Ben-Nicholas Borowski**, "A Certification Gate for Emerging-Topic Detection: Pre-Registration, Negative Controls, and a Second-Domain Transfer Test on arXiv". *SocArXiv*, 2026. DOI: 10.31235/osf.io/5pv4f_v1. Under review at *Quantitative Science Studies*.

[D1] **Ben-Nicholas Borowski**, "Certification-gate artefact bundle for emerging-topic detection: data, pre-registration protocols, and analysis archive". *Zenodo*, 2026. DOI: 10.5281/zenodo.21377438 (CC BY 4.0).

[D2] **Ben-Nicholas Borowski**, "Weak-signals membership pipeline: reproduction code for the M.Sc. thesis (software archive, all versions)". *Zenodo*, 2026. DOI: 10.5281/zenodo.20283613 (MIT).

Research Systems and Software

- **HORIZON** — **Python, DuckDB, React**
  Emerging-topic detection with a pre-registered certification gate — *2026*
  - Negative controls and a second-domain transfer test (76 stat.ML + 129 cs.CR topics, 441k citations); basis of [P1]. Public read-only deployment; archived artefacts: [D1].
- **PARALLAX** — **Python, DuckDB**
  Cross-project pre-registration registry — *2026*
  - Union trial registry treating the researcher, not the study, as the unit of multiple testing: every pre-registered hypothesis across all projects enters one correction family (16 trials, 1 certified).
- **FACET** — **FastAPI, DuckDB, React**
  Equity signal-profile framework — *2025 – 2026*
  - Six-dimension company profiles over a 2,471-name universe with versioned expansion.
  - **Pre-registered null**: the composite score does not predict returns (reported, not withdrawn).
- **Weak-Signals Membership Pipeline** — **Python**
  Reproduction code for the M.Sc. thesis — *2026*
  - Fuzzy membership scoring for weak-signal detection: SBERT + UMAP + HDBSCAN with 16 indicators across 5 dimensions; archived as [D2].
- **FATHOM** — **Python**
  Corporate distress detection from SEC EDGAR filings — *2026*
  - Two-stage alert pipeline as a production daily scan; operating point validated out-of-sample (19.3 % precision at 9.3 % cohort recall) with pre-registered decision rules.

Professional Experience

- **Raiffeisen Bank International AG** — **Vienna, Austria**
  Business Compliance & Institutional Clients Division
  - **Junior Business Compliance Officer**: Group Business Compliance — *Sep 2025 – Present*
  - Built an interpretable client risk-scoring model for the group business-compliance framework: rule-based indicators with scorecard logic (SQL, Power BI, QlikSense).
  - Capital-markets compliance training: MiFID II, MiFIR; QlikSense for Professionals.
  - **Student Support**: Institutional Clients Local Banks — *Nov 2023 – Aug 2025*
  - **Intern**: Institutional Clients West & Overseas — *Nov 2022 – Oct 2023*

Academic Contributions

- **Insolvenzprognose mit Machine Learning** — **ResearchGate**, *Sep 2025*
  Modellgüte, Datenungleichgewicht und Erklärbarkeit
- **Human-Centered Transfer Learning zur ESG-Risikobewertung** — *Jun 2025*
  Modellkonzeption, Explainability & Maturity Assessment
- **Hybrides Controlling für agile Datenanalyseprojekte** — *Jun 2025*
  KPI- & Governance-Framework für klassische und agile Steuerung
- **Echtzeit-Fraud-Detection im Zahlungsverkehr** — *Apr 2025*
  Big-Data-Streaming-Workflow bei Zahlungsdienstleistern
- **Data-Driven Business Model Innovation** — *Apr 2025*
  Churn Prevention & Kundenbindung mit BI, k-Means und CART
- **Explainable AI in der Kreditrisikobewertung** — *Mar 2025*
  Potenziale, Herausforderungen & Regulierung
- **Die RMB-Internationalisierung** — *Jan 2025*
  B.A. thesis: Chinas Streben nach Hegemonie & die Dollar-Dominanz

Methods and Tools

- **Methods**: Pre-registration & negative-control study design; out-of-sample and out-of-domain validation; case-cohort sampling with cluster-robust inference; NLP embeddings and topic modelling (SBERT, UMAP, HDBSCAN); interpretable scoring and scorecard models
- **Tools**: Python (pandas, scikit-learn), SQL, DuckDB, FastAPI, React, Power BI, QlikSense, LaTeX, Git

Honors and Awards

- **Deutschlandstipendium** — **BMFTR, Germany**, *Sep 2025 – Aug 2026*
  Academic excellence award (M.Sc. Data Science & Analytics)
- **win^2-Zukunftskonferenz 2023** — **UNIMC, Austria**, *May 2023*
  1st Place with Porsche Holding SE