Marcus Gawronsky

Applied AI · Quantitative Research · Research Engineering

Cape Town, South Africa

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Researcher, technical founder and data scientist with over seven years of experience turning quantitative ideas into working systems and measurable outcomes. Co-founded Solenya, building a nine-person technical team and production multimodal AI infrastructure. Finance PhD candidate at the University of Cape Town, researching economic measurement, financial risk and portfolio decisions through language models and optimal transport. Experience spans experimental design, research software, postgraduate teaching and institutional leadership.

Professional Experience

Solenya

Co-Founder & Chief Technology Officer — *June 2024 – present*

- Built and led a nine-person team of engineers, researchers and data scientists across AI research, product development and infrastructure.
- Designed a randomised experiment spanning nearly one million sessions, estimating a 27.14% revenue-per-user uplift (90% CI: 14.0%–41.9%) for multimodal product discovery.
- Built production GPU infrastructure supporting over 250 inference requests per second at peak, with automated deployment, monitoring and disaster recovery.
- Led technical strategy, architecture, recruitment and supplier relationships; participated in fundraising and commercial engagements.

MyRunway

Senior Data Scientist — *c. 2023 – April 2024*

- Developed experimentation and causal-measurement practices to evaluate commercial and operational decisions.
- Deployed vision-language and statistical pricing models, alongside optimisation and multi-agent simulation systems for retail operations.

MyRunway

Data Scientist — *January 2021 – c. 2023*

- Built a cloud data warehouse and analytical infrastructure supporting pricing, purchasing and stock management for more than 45 business users.

DataProphet

Junior Data Scientist — *August 2019 – January 2021*

- Delivered industrial machine-learning and digital-twin engagements for international manufacturers and equipment providers, combining model development, validation and client-facing technical work.

WorldQuant University, via Hubble Studios

Financial Engineering Subject Matter Expert — *September 2018 – February 2019*

- Developed postgraduate learning materials in financial risk modelling, simulation, machine learning and macroeconomic modelling for the MSc in Financial Engineering.

NMRQL Research

Research Intern — *May – July 2018*

- Applied natural-language models to financial risk-management problems.

Research Software & Open Source

Pricing Perspective — Financial research platform integrating empirical pipelines, simulation, manuscripts and Lean 4 verification with Python, Nix and DVC.

insitu — Source-driven tooling synchronising computational outputs with Markdown and technical documentation.

Precarious Papers — Event-study and network-econometrics research software investigating offshore disclosures.

Hugging Face transformers — Proposed Optuna multi-objective hyperparameter optimisation support.

Hugging Face peft — Contributed a sparse-matrix token fine-tuning implementation for selectively training token embeddings.

Research & Publications

Systematic Covariance Envelopes from Wasserstein Geometry

Preprint; presented at World Finance Conference, Malta (2025)

Wasserstein-Barycentric Interaction Fields for Spatial Factor Models

Preprint; submitted / under review

Portfolio Risk Bounds without Cross-Asset Return Covariances

Preprint; submitted / under review

Information Games: Strategic Crowding and Firm Repositioning in Language-Model Space

Preprint; accepted for World Finance & Banking Symposium, Riga (2026)

Education

University of Cape Town

PhD Candidate, Finance — 2022–expected 2027. Information geometry, representation learning and financial econometrics.

MSc, Statistics with Data Science (*olim* Advanced Analytics & Decision Science) — 2019–2021. Thesis: *Pricing Offshore Services: Evidence from the Paradise Papers*.

BBusSc, Finance, Banking and Investments (*olim* Finance) — 2014–2018. Economics minor. Class Medal in Natural Resource Economics.

Leadership, Teaching & Community

University of Cape Town

SRC Treasurer-General, Student Parliament Speaker & University Governance — *2015 – 2017*

- Served on university finance and student-funding committees, contributed to the 2016 UCT Fee Proposal, and helped raise over R2.5 million to support students facing financial exclusion.

Vice-chair Debating Union — *2014*

- Vice-chair of UCT's oldest society, with over 150 years of history. Convenor of the 150th Year Open; competed at the Oxford and Cambridge IVs.

World Universities Debating Championship

Director/Co-convenor — *2014 – 2015; 2019*

- Helped secure and deliver a championship involving approximately 950 participants. Managed more than 60 volunteers and staff, coordinating planning and fundraising. Helped secure R0.6 million in funding.

Awards

2019 **Winner** Uber Movement/SANRAL Cape Town Data Science Challenge — *Cape Town*

2018 **Third place** Capitec BBLB Kaggle Data Science Competition — *South Africa*

Technical Expertise

Quantitative methods — Experimental design, causal inference, financial and spatial econometrics, time series, optimal transport, optimisation and simulation.

AI & machine learning — Language models, representation learning, multimodal AI, computer vision, recommendations and model evaluation.

Software & infrastructure — Python, SQL, R, TypeScript, GCP, Kubernetes, Terraform, Nix, DVC, Lean 4 and reproducible research systems.