Curriculum Vitae

PDF version: **Download here**
Languages: **English (C2)** · **French (C2)** · **German (C1)**

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**Research Interests** Machine Learning · Bayesian Inference · Computational Statistics
Computer Vision · Statistical Learning Theory · Uncertainty Quantification
Applied ML in Finance, Engineering, and Scientific Computing

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### 0.0.1 Education

**M.Sc. in Data Science** **Université libre de Bruxelles (ULB) — Faculty of Science**
*2024 – Present*

Relevant Coursework: Machine Learning, Time Series, Computational Statistics, Big Data Algorithms.

**Selected Projects - Bayesian Inference with Fisher Information Divergence** — Master's dissertation on discretised Fisher-divergence–based posteriors for intractable discrete likelihoods.
- **Spotify Playlist Challenge** — Feature-based playlist similarity and evaluation pipeline; implemented and benchmarked multiple metrics.
- **Neural Random Forest Replication** — TensorFlow re-implementation and interpretability assessment vs. tree ensembles.
- **EMG-Based Joint Angle Prediction** — Ensembling models and Domain Adversarial Neural Network implementation on sEMG; **2nd/41** in MSc project competition.

**M.Sc. & B.Sc. in Economics (M.Sc. Cum Laude)** **Solvay Brussels School of Economics & Management**
*2014 – 2021*
Minor: **Statistics/Econometrics**
Focus: **Econometrics, statistics, financial modelling**

**Baccalauréat** Französisches Gymnasium zu Berlin
*2013*

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### 0.0.2 Experience

**Machine Learning Research Assistant** **KU Leuven – Faculty of Engineering Science (Chem & Tech)**
*2024 – Present*

- Designed and trained a **YOLO-based object detection model** to locate plastic items in heterogeneous imaging conditions, including dataset construction, annotation workflows, and evaluation.
- Developed a **plastic-type classification model** using cropped ROIs from the detector, focusing on robustness across domains and practical constraints of real-world sorting environments.
- Built an **end-to-end prototype system** integrating detection → cropping → classification, packaged into modular Docker services for reproducible deployment and internal faculty testing.
- Established reusable **ML data infrastructure**, enabling scalable experiments and clean dataset growth for the research group.

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**Senior Associate — Risk & Treasury Consulting  KPMG GmbH (Frankfurt)**
*03.2024 – 10.2024*

- Supported interest rate risk ECB on-site inspection of State Street Bank Germany.

- Implemented ALM-risk frameworks (fund-term pricing, interest rate risk) at significant German banks.

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**Supervisory Analyst — Banking Supervision  European Central Bank (DG-OMI)**
*09.2021 – 09.2023*

- Built Python/SQL/Tableau/GitLab pipelines automating inspection-support processes; reduced reporting delays by **80%+**.

- Developed an internal **inspection-findings dashboard** and analytics workflows reused across missions.

- Implemented a **NLP prototype** (Regex, TF-IDF, tokenisation) to extract findings from supervisory documents.

- Joined to ECB interest rate risk on-site inspection.

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### 0.0.3 Technical Skills

**ML & Data Science:** PyTorch, Yolo (Ultralytics), TensorFlow, scikit-learn, Jax, NumPy **Tools & Infra:** Git, Docker, Label-Studio, Polars, DuckDB, Apache Spark, Tableau
**Cloud:** AWS S3 & IAM, CLI workflows

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### 0.0.4 Links

- GitHub: **https://github.com/SMT395**

- Email: **thomas.khan@outlook.com**

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