Ísak Pétursson — PhD Researcher

Japan – Tokyo
isak.petursson@protonmail.com • isak-petursson • izzak98

Education

The University of Tokyo — **Tokyo, Japan**
PhD in Advanced Interdisciplinary Sciences — *Oct. 2025 – Sep. 2028 (Expected)*

Reykjavik University — **Reykjavik, Iceland**
M.Sc. in Data Science — *Aug. 2023 – Jun. 2025*
GPA: 9.23/10; Alan Turing Award for academic excellence.

Mercy University — **New York, USA**
B.Sc. in Business Administration (Finance) — *Sep. 2021 – May. 2023*
GPA: 4.0/4.0

Research & Publications

EidolonZero (EZ): **Dynamic-Action Model-Based RL** — *Ongoing PhD research*
Extends MuZero-style planning to large, state-dependent action spaces via learned action representations; preliminary results match AlphaZero performance on Morpha with dynamically generated legal actions.

Morpha: **Dynamic-Action RL Benchmark** — *Experiments ongoing*
Card-game benchmark isolating state-dependent action spaces; compares static-masked and dynamic-action PPO, DQN, and AlphaZero.

qStorm: **Quantile Stochastic Regression for Option Pricing** — *Under review*
Prices options from predicted conditional return distributions, improving out-of-sample pricing over classical baselines and producing an exploitable trading signal.

Chaos into Order: **Neural Expected-Value Estimation for SPDEs** — *arXiv:2502.03670*
Physics-informed estimation of expected stochastic PDE solutions, evaluated across increasing state dimensions.

Generalized Distribution Prediction for Asset Returns: **Quantile Distribution Forecasting** — *arXiv:2410.23296*
Forecasts full conditional return distributions across asset classes, evaluating distributional generalization and calibration.

Work Experience

Origo — **Reykjavik, Iceland**
Data Scientist — *Nov. 2023 – Jan. 2026*
- Developed production ML/NLP systems, including a resource-efficient Retrieval-Augmented Generation system for document interaction on limited GPU resources.
- Built automated data pipelines and decision systems integrating heterogeneous enterprise data sources.

Data Science Services — **Vienna, Austria**
Data Scientist — *Jun. 2020 – Aug. 2022*
Built Python ML models for document classification and automated data-acquisition workflows.

Technical Skills

Programming & ML: Python, SQL, PyTorch, NumPy, Pandas, Scikit-learn, XGBoost, Optuna

Research: Reinforcement Learning, Deep Learning, Time-Series & Distributional Modeling, Numerical Methods, Derivatives & Option Pricing

Selected Achievements

Competition: Bloomberg Global Trading Challenge: 7th of 488 teams globally, 3rd in the United States (2022); Icelandic Yu-Gi-Oh! National Champion (2024).