

Tomasz Kuśmierczyk

Bayesian Machine Learning · Uncertainty Quantification · Probabilistic Modelling

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📁 [tkusmierczyk.github.io](https://github.com/tkusmierczyk)



Research interests

- Bayesian deep learning
- Uncertainty quantification, calibration
- Priors and their specification
- Decision-aware inference

Programming

- Python, SQL, C++, STAN
- PyTorch, numpy, pandas, SciPy, GPy
- Google Cloud Platform, PySpark, Git

Also

- Reviewer: AAAI, UAI, ICML, NeurIPS, AISTATS, ECML-PKDD, KAIS
- Code: github.com/gmum, github.com/tkusmierczyk
- English (fluent), Polish (native)

Machine learning researcher working on Bayesian methods for deep neural networks and large language models: uncertainty quantification, calibration, priors, and decision-aware inference. Principal investigator of an NCN POLONEZ BIS / MSCA project at the Jagiellonian University, 2024 to 2026. Earlier four years as a senior individual contributor at Unity Technologies. PhD, NTNU, 2018. Krakow, relocating to Warsaw.

Experience

Apr 2024 - Mar 2026: Principal Investigator, Jagiellonian University, GMUM. NCN POLONEZ BIS / MSCA. bayes.ii.uj.edu.pl

- Parameter-efficient Bayesian inference for large pre-trained models: posteriors in projected adapter subspaces (EMNLP 2025; one manuscript under review)
- Uncertainty in large language models: evidential distillation of multi-pass teachers into single-pass students (ECML-PKDD 2026)
- Specification and transfer of priors: Gaussian-process priors into Bayesian networks by learning activations (UAI 2025); pre-training on designed priors (NeurIPS 2025)
- Calibration, reliability, out-of-distribution detection
- Budget above 1 million PLN; one doctoral researcher supervised; five peer-reviewed papers, two manuscripts under review, six open-source releases; collaboration with IIT Hyderabad

Apr 2026 - Aug 2026: Senior Machine Learning Engineer (IC7), Unity Technologies

- Deep learning models for conversion prediction

Sep 2020 - Mar 2024: Senior Data Scientist (IC7), Unity Technologies

- Deep generative models of user preference: autoencoder, variational autoencoder, hierarchical VAE with a modified VampPrior-like prior and tuned likelihood; deployed in production
- Predictive models for the advertisement to click to install funnel, conversion, and user lifetime value; uncertainty-driven exploration
- Offline evaluation and controlled online experiments. Python, PyTorch, SQL, PySpark, GCP

Mar 2018 - Jun 2020: Postdoctoral Researcher, University of Helsinki, Multi-source Probabilistic Inference

- Decision-aware variational inference (NeurIPS 2019, AAAI 2020); elicitation of priors and hyperparameters; latent categorical variables in variational inference

Sep 2016 - Feb 2017: Visiting Researcher, Max Planck Institute for Software Systems, Networks Learning. Causal inference from natural experiments (WWW 2018, AAAI 2018)

Nov 2013 - Feb 2018: Research Fellow, Norwegian University of Science and Technology, Data and Artificial Intelligence. Large-scale time series; models of user behaviour

2008 - 2013: Software Engineer, University of Warsaw · Diebold Poland

Education

2018: Norwegian University of Science and Technology: PhD in Information Technology

2012 / 2013: University of Warsaw: MSc in Computer Science · BSc in Physics

2010: Warsaw University of Technology: BEng in Computer Science

Selected Publications

Uncertainty and calibration in deep networks and language models

- L. S. H. Nemani, PK Srijith, **T. Kuśmierczyk**: *Efficient Uncertainty in LLMs through Evidential Knowledge Distillation*. **ECML-PKDD 2026**
- P. Marszałek, K. Bałazy, J. Tabor, **T. Kuśmierczyk**: *Minimal Ranks, Maximum Confidence: Parameter-efficient Uncertainty Quantification for LoRA*. **EMNLP 2025**
- V. Dubovik, P. Marszałek, J. Tabor, **T. Kuśmierczyk**: *Bayesian Fine-tuning in Projected Subspaces*. *Under review*.

Priors and probabilistic modelling

- P. Marszałek, **T. Kuśmierczyk**, W. Wydmański, J. Tabor, M. Śmieja: *ZEUS: Zero-shot Embeddings for Unsupervised Separation of Tabular Data*. **NeurIPS 2025**
- M. Sendera, A. Sorkhei, **T. Kuśmierczyk**: *Revisiting the Equivalence of Bayesian Neural Networks and Gaussian Processes: On the Importance of Learning Activations*. **UAI 2025**
- E. de Souza da Silva, **T. Kuśmierczyk**, M. Hartmann, A. Klami: *Prior specification via prior predictive matching: Poisson matrix factorization and beyond*. **JMLR 2023**

Decision-aware inference and models of user response

- O. Nyberg, **T. Kuśmierczyk**, A. Klami: *Uplift Modeling with High Class Imbalance*. **ACML 2021**
- **T. Kuśmierczyk**, J. Sakaya, A. Klami: *Correcting Predictions for Approximate Bayesian Inference*. **AAAI 2020**
- **T. Kuśmierczyk**, J. Sakaya, A. Klami: *Variational Bayesian Decision-making for Continuous Utilities*. **NeurIPS 2019**
- **T. Kuśmierczyk**, M. Gomez-Rodriguez: *On the Causal Effect of Badges*. **WWW 2018**

Complete list: [Google Scholar](#) · [DBLP](#)

Academic Activity

- Supervision: one doctoral researcher (Jagiellonian University); co-supervision of one doctoral and one master's student (University of Helsinki).
- Invited seminars: University of Helsinki (2026) · CCAI, Warsaw University of Technology (2026) · IPI PAN, Warsaw (2024) · GMUM, Jagiellonian University (2024, 2025).
- Teaching: Nordic Probabilistic AI School, co-organiser (2019, 2022), head teaching assistant (2022), teaching assistant (2024, 2026).
- Public lectures: Małopolska Night of Scientists (2025); Faculty Open Days, Jagiellonian University (2026).