

XINYU ZHANG

xinyu.2.zhang@aalto.fi —  xinyuzc.github.io —  —  — 

SUMMARY

My research sits at the intersection of **meta-learning**, **in-context learning**, and **sequential decision-making** — I train transformers via reinforcement learning to act as adaptive policies that replace the surrogate-and-acquisition stack of Bayesian optimization with a single forward pass. I am interested in making these solutions robust to prior misspecification and scalable to high-dimensional and combinatorial spaces.

EDUCATION

Jan. 2025 - **Aalto University & ELLIS Institute Finland**
Now *PhD, Computer Science.*

- Supervised by Prof. Samuel Kaski (Aalto University and The University of Manchester).
- *Research area:* Sequential Decision-Making, Meta-Learning, In-Context Learning.

Aug. 2022 - **Aalto University**
Dec. 2024 *MSc, Computer Science.*

- Thesis: From Preferential Bayesian Optimization to Preferential Amortized Black-Box Optimization (grade: 5/5)
- GPA: 4.64/5
- Thesis Worker, Probabilistic Machine Learning Group (Feb.–Jul. 2024); topic: Preferential Black-Box Optimization.
- Summer Research Intern, Probabilistic Machine Learning Group (Jun.–Aug. 2023); topic: Probabilistic Generalized Additive Models.

Sep. 2018 - **Harbin Institute of Technology, Shenzhen**
Jun. 2022 *BEng, Computer Science and Technology.*

PUBLICATIONS

Proceedings

1. **Xinyu Zhang***, Conor Hassan, Julien Martinelli, Daolang Huang and Samuel Kaski. “In-Context Multi-Objective Optimization”. In the Proceedings of The 14th International Conference on Learning Representations (**ICLR**), 2026.
 - Pre-trained a Transformer via reinforcement learning on synthetic tasks; generalizes zero-shot to unseen multi-objective optimization problems at inference time.
 - 50–1000× faster proposal time than GP-based baselines at matched Pareto front quality.
 - Previously presented at ELLIS UnConference 2025 Amortized ProbML Workshop.
2. Yujia Guo*, Daolang Huang, **Xinyu Zhang**, Sammie Katt, Samuel Kaski, Ayush Bharti. “Constrained Bayesian Experimental Design via Online Planning”. In the Proceedings of The 43rd International Conference on Machine Learning (**ICML**), 2026.
3. **Xinyu Zhang***, Daolang Huang*, Samuel Kaski and Julien Martinelli. “PABBO: Preferential Amortized Black-Box Optimization”. In the Proceedings of The 13th International Conference on Learning Representations (**ICLR**), 2025. **Spotlight (Top 5.1%)**

* Equal contribution.

Workshops

1. **Xinyu Zhang***, Julien Martinelli and ST John. “Challenges in Interpretability of Additive Models”. IJCAI Workshop on Explainable Artificial Intelligence (XAI), 2024.

TECHNICAL SKILL

- **Languages:** Python, Bash, C++
- **ML & Deep Learning Software:** PyTorch, NumPy, Scikit-learn, BoTorch
- **Infrastructure:** Git, HPC/cluster workflows, Weights & Biases

ACADEMIC SERVICES & AWARDS

Reviewer: NeurIPS 2026; ICML 2026 (Silver Reviewer Award); ICLR 2026.

Awards: Aalto Incentive-based Scholarship 2023; Finland Scholarship 2022; Aalto University Scholarship 2022; Merit Student, Harbin Institute of Technology, 2021.