Sahel Iqbal

sahel.iqbal@aalto.fi | GitHub° | LinkedIn° | sahel13.github.io°

Education

PhD Student in Electrical Engineering   Dec 2022 - Dec 2026 (Expected)
Aalto University   Espoo, Finland

I am a second-year PhD student at Aalto University, working with Prof. Simo Särkkä. My primary research interests lie in probabilistic machine learning, with a focus on Bayesian inference methods, and specific areas that I currently work on as part of my PhD include:

- Bayesian experimental design.
- Reinforcement learning as probabilistic inference.
- Probabilistic numerical solvers for differential equations.

Integrated Master's in Physics   Aug 2017 - Jun 2022
National Institute of Science Education and Research   Bhubaneswar, India

- Cumulative GPA: 9.07/10.

Selected Publications and Preprints

2024   **Sahel Iqbal**, Hany Abdulsamad, Sara Pérez-Vieites, Simo Särkkä, Adrien Corenflos (2024). Recursive Nested Filtering for Efficient Amortized Bayesian Experimental Design. NeurIPS Workshop on Bayesian Decision-making and Uncertainty.

        Sahel Iqbal, Adrien Corenflos, Simo Särkkä, Hany Abdulsamad (2024). Nesting Particle Filters for Experimental Design in Dynamical Systems. ICML.

        Sahel Iqbal, Hany Abdulsamad, Tripp Cator, Ulisses Braga-Neto, Simo Särkkä (2024). Parallel-in-Time Probabilistic Solutions for Time-Dependent Nonlinear Partial Differential Equations. IEEE MLSP.

2023   Hany Abdulsamad, **Sahel Iqbal**, Adrien Corenflos, Simo Särkkä (2023). Risk-Sensitive Stochastic Optimal Control as Rao-Blackwellized Markovian Score Climbing. arXiv°.

Skills

Programming Languages – Python, Julia, Haskell.

Machine Learning Libraries – Proficient in JAX and the Julia ML stack (Flux, Zygote). Have used PyTorch and TensorFlow in the past.

Miscellaneous – LaTeX, Bash, React.

Invited Talks

- Sep 25, 2024. "Nesting Particle Filters for Experimental Design in Dynamical Systems" at the RainML Research Lab, University of Oxford, UK.
- Jun 28, 2024. "Nesting Particle Filters for Experimental Design in Dynamical Systems" at the ELLIS Workshop on Probabilistic Numerics and Physics-Informed Learning in Helsinki, Finland.
- Feb 16, 2024. "Policy Optimization with Markovian Score Climbing" at the Intelligent and Autonomous Systems (IAS) research group at TU Darmstadt, Germany (online talk).

Teaching

- Spring 2024. Teaching assistant for *ELEC-E8106, Bayesian Filtering and Smoothing* at Aalto University, spring semester 2024.