

# Behram ULUKIR

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## EDUCATION

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**Aalto University** Espoo, Finland  
**Master of Science in Machine Learning and Artificial Intelligence** 2024 - *Expected* 2026

- Thesis: Control Variates in MCMC Sampling and Their Effects on R-hat.
- Relevant Coursework: Supervised Machine Learning, Bayesian Data Analysis, Deep Learning.

**Aalto University** Espoo, Finland  
**Bachelor of Science in Data Science** 2021 - 2024

- Graduated with honours.
- Minor: Minor in Mathematics.
- Thesis: Robustness to Model Misspecification in Bayesian Experimental Design.

## WORK EXPERIENCE

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**Aalto University** Espoo, Finland  
**Research Assistant, Bayesian Workflow** 01/2026 – *Ongoing*

- Conducting research in the Bayesian Workflow Group, focusing on variance reduction techniques for Bayesian inference using control variates.
- Developing and evaluating novel control variate methods to reduce variance and improve convergence diagnostics in Stan-based MCMC models.
- Writing a master's thesis titled "Control Variates in MCMC Sampling and Their Effects on R-hat"

**Google Summer of Code** Espoo, Finland  
**Open-Source Developer, Stan** 05/2025 – 09/2025

- Contributed to Stan's bayesplot package, developing new visualizations for Bayesian model diagnostics.
- Implemented new plotting functions using ggplot2 and ggdist to enhance exploratory Bayesian analysis.
- Improved documentation and usability for the Stan open-source ecosystem.

**Aalto University** Espoo, Finland  
**Research Assistant, Probabilistic Machine Learning** 06/2024 – 09/2024

- Studied model misspecification in Bayesian experimental design, with application to Mössbauer spectroscopy.
- Built simulation models and implemented likelihood-free inference (LFIRE) to optimize experimental design.
- Conducted structured literature review on Bayesian models and experimental robustness.

**Aalto University** Espoo, Finland  
**Teaching Assistant** 08/2022 – 01/2026

- Courses: Machine Learning D, Programming 2, Bayesian Data Analysis.
- Organized exercise sessions and instructed students in Python, R, and Scala development.
- Helped students to develop their ML projects using Stan, scikit-learn, NumPy, and Pandas.
- Awarded "Teaching Assistant Group of the Year 2023" for Machine Learning D 2023 edition.

## SKILLS & PROJECTS

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**Technical Skills:** Python, PyTorch, Scikit-Learn, R, Stan, PostgreSQL, Git, Machine Learning, Bayesian Analysis, Deep Learning, LLMs, RAG, AI Agents, Google Cloud Platform, Microsoft Azure

### Projects:

- LEX: Legal and Exposure Expert – Junction 2025 Project (2<sup>nd</sup> place in BoF challenge - [repository](#))
- Unified Agentic CRM interface – AaltoAI Agentic AI Hackathon 2025 Project ([repository](#))
- S&P 500 Volatility Analysis: Bayesian Inference with ARCH, GARCH, and Stochastic Volatility Models ([repository](#))
- Interactive Biodiversity Dashboard for Reaktor ([repository](#))
- Sustainable and reliable LLM based on LangChain - Junction 2023 Hackathon Project ([repository](#))
- Sector-Based Stock Market Predictions with FedRelax ([repository](#))
- Match Excitement Rating with Machine Learning ([repository](#))
- Helsinki Vaccine Distribution Database in PostgreSQL ([repository](#))
- Scala Kanban Board ([repository](#))

**Languages:** Native in Turkish; Full Professional Proficiency in English, Intermediate Proficiency in Finnish, Elementary Proficiency in Arabic

## STUDENT ACTIVITIES

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### AaltoAI

Espoo, Finland

#### Board Member, Finance & Partnerships

08/2023 – 01/2025

- Orchestrated AaltoAI's efforts to reach and collaborate with new partners.
- Managed to get AaltoAI from a state of no partnerships to extensive, annually renewing partnerships with companies such as Microsoft, Smartbi (now Norrin), and DataCrunch (now Verda).
- Administered single-time partnerships with companies IBM and HiQ.
- Oversaw all financial operations of AaltoAI.

### Data Guild

Espoo, Finland

#### Tutor

08/2022 – 11/2023

- Organised orientation week events with the Tutor committee.
- Helped students to have a smooth start at university.