

Bálint Mucsányi

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Machine Learning PhD student at the University of Tübingen.

Excited about Uncertainty Quantification, Bayesian Deep Learning, and Parameter Spaces of Neural Networks.

Education

Ph.D. in Machine Learning

UNIVERSITY OF TÜBINGEN

07/2024 - Present

- **Topic:** Parametrization-invariant Bayesian deep learning
- **Advisors:** Philipp Hennig, Bernhard Schölkopf, Yee Whye Teh

M.Sc. in Machine Learning

UNIVERSITY OF TÜBINGEN

10/2021 - 03/2024

- **Grade:** 1.0/1.0, top 1% of class, distinction
- **Thesis:** Benchmarking Uncertainty Disentanglement: Specialized Uncertainties for Specialized Tasks

B.Sc. in Computer Science

EÖTVÖS LORÁND UNIVERSITY (ELTE)

09/2018 - 07/2021

- **Grade:** Outstanding (1.0/1.0, top 1% of class)
- **Thesis:** Efficient Example-Based Program Synthesis on a Tree-Structured Grammar
- Graduated with the **Best Thesis** and **Outstanding Student of the Faculty** (top 0.3% of class) awards

Honors & Awards

11/2024	Top Reviewer , The 38th Annual Conference on Neural Information Processing Systems	NeurIPS 2024
08/2023	2nd Place , Reinforcement Learning Tournament, Autonomous Learning Group	University of Tübingen
01/2023	1st Place , Self-Driving Cars Challenge, <i>Modular Pipeline</i> , Autonomous Vision Group	University of Tübingen
12/2022	1st Place , Self-Driving Cars Challenge, <i>Reinforcement Learning</i> , Autonomous Vision Group	University of Tübingen
10/2022	1st Place , Self-Driving Cars Challenge, <i>Imitation Learning</i> , Autonomous Vision Group	University of Tübingen
04/2022	DAAD Scholarship , German Academic Exchange Service	University of Tübingen
04/2022	Deutschlandstipendium , Federal Ministry of Education	University of Tübingen
01/2022	1st Place , Deep Learning Competition, Denoising Autoencoders, Cognitive Systems Group	University of Tübingen
07/2021	Outstanding Student of the Faculty Award , Faculty of Informatics	Eötvös Loránd University
07/2021	Best Thesis Award , Faculty of Informatics	Eötvös Loránd University
03/2021	2nd Place , National Conference of Scientific Students' Associations	Eötvös Loránd University
12/2020	1st Place , Conference of Scientific Students' Associations	Eötvös Loránd University
08/2020	National Higher Education Scholarship , Ministry of Innovation and Technology	Eötvös Loránd University
2019	7th Place , Ericsson Programming Championship, National Finals (open to seniors as well)	Ericsson Hungary

Projects & Internships

Guest Researcher in the Robust Machine Learning Group

MAX PLANCK INSTITUTE, INTELLIGENT SYSTEMS

Tübingen

04/2024 - Present

- **Topic:** Identifiable Representation Learning, Rule Extrapolation in LLMs

Student Researcher in the STAI Group

UNIVERSITY OF TÜBINGEN

Tübingen

03/2023 - 07/2024

- **Topic:** Uncertainty Disentanglement in Deep Neural Networks, Benchmarks for Uncertainty-aware Representation Learning
- My master's thesis was supervised by Michael Kirchhof and Seong Joon Oh

Research Intern at the Mackelab

UNIVERSITY OF TÜBINGEN

Tübingen

10/2022 - 01/2023

- **Topic:** Active Learning for Amortized Bayesian Inference
- I worked on methods for active learning using simulation-based inference
- I proposed a novel sequential neural posterior estimation (SNPE) method

Mentee in the Amazon Mentorship Program

MENTOR: FABIO MADGE

- I took part in bi-weekly discussions with my mentor about career opportunities and projects

Online/Munich

04/2022 - 03/2024

Member of the John von Neumann Talent Development Student Group

EÖTVÖS LORÁND UNIVERSITY (ELTE)

- The group discussed advanced materials and provided additional research opportunities
- Applications to the group were judged on the basis of academic and scientific results

Budapest

02/2020 - 07/2021

Student Researcher in the Machine Learning for Software Engineering Group

EÖTVÖS LORÁND UNIVERSITY (ELTE)

- **Topic:** Example-based neural program synthesis
- During my membership, I was also fortunate to receive a Research Scholarship

Budapest

03/2019 - 04/2022

Selected Publications

Rethinking Approximate Gaussian Inference in Classification

Bálint Mucsányi, Nathaël Da Costa, Philipp Hennig

NeurIPS 2025

Debiasing Mini-Batch Quadratics for Applications in Deep Learning

Lukas Tatzel, Bálint Mucsányi, Osane Hackel, Philipp Hennig

ICLR 2025

Benchmarking Uncertainty Disentanglement: Specialized Uncertainties for Specialized Tasks

Bálint Mucsányi, Michael Kirchhof, Seong Joon Oh

- **Spotlight** paper

NeurIPS 2024

Trustworthy Machine Learning

Bálint Mucsányi, Michael Kirchhof, Elisa Nguyen, Alexander Rubinstein, Seong Joon Oh

- **Book website:** Trustworthy Machine Learning Book

arXiv 2023

URL: A Representation Learning Benchmark for Transferable Uncertainty Estimates

Michael Kirchhof, Bálint Mucsányi, Seong Joon Oh, Enkelejda Kasneci

- Also presented orally at the UAI Epistemic AI Workshop 2023, where we received the **Best Student Paper Award**
- I presented the work as a poster at the inaugural event of the Tübingen AI Center

NeurIPS 2023

Flexible Example-Based Program Synthesis on Tree-Structured Function Compositions

Bálint Mucsányi, Bálint Gyarmathy, Ádám Czapp, Balázs Pintér

SNCS 2022

Flexcoder: Practical Program Synthesis with Flexible Input Lengths and Expressive Lambda Functions

Bálint Gyarmathy, Bálint Mucsányi, Ádám Czapp, Dávid Szilágyi, Balázs Pintér

- **Best Student Paper Award Finalist**
- I presented the work orally at the conference (slides)

ICPRAM 2021

Flexcoder: Practical Program Synthesis with Flexible Input Lengths and Expressive Lambda Functions

Bálint Mucsányi, Bálint Gyarmathy, Ádám Czapp

- **2nd Place** at the National Conference of Scientific Students' Associations
- **1st Place** at the (Regional) Conference of Scientific Students' Associations
- I presented the work orally at both conferences (slides in Hungarian, poster in Hungarian)

TDK/OTDK 2021;
in Hungarian

Work Experience

Developer Intern

ANDCODE

- I worked on automatic news extraction and collection with advanced web crawling methods using Scrapy

Budapest

04/2021 - 10/2021