Csongor Horváth

PhD Student in Theoretical Machine Learning

I am a dedicated first-year PhD student specializing in large-scale optimization and inference. My research delves into the generalization aspects of learning processes, aiming to enhance the robustness and adaptability of AI models. I am particularly passionate about Bayesian inference, focusing on extracting meaningful insights from simulation-based methods, with a primary emphasis on stochastic chemical kinetics. My work is driven by a commitment to advancing the field and contributing to innovative solutions in complex systems.

csongor.horvath@it.uu.se

+46729999553

Uppsala, Sweden

linkedin.com/in/csongor-h-ab59341a1

github.com/horvathcso

EDUCATION

MSC Computational Science (08/2022-08/2024)

Uppsala University *(Uppsala, Sweden)* **GPA~ 3.83**

courses:

- Optimization
- Computer Assisted Image Analysis
- Data Engineering
- 20 ECTS of numerical methods for PDEs
- 27.5 ECTS of low-level programming
- Internet of Things

BSC Mathematics (09/2019-07/2022) with distinction

Eötvös Loránd Tudományegyetem *(Budapest, Hungary)* **GPA~ 3.94**

courses:

- programing (python, JAVA)
- Algebra I-IV, Analysis I-VI
- Probability I-II, Measure Theory
- Discrete math I-II, Computation Theory
- Operation research I-II, LP modelling
- Geometry I-III

Extracurricular university studies (09/2022-07/2022)

Eötvös József College for Advanced Studies *(Budapest, Hungary)*

Next to my university studies I visited math lectures and language courses in the College. I also took part in the social life and helped organizing some event.

High School Diploma (09/2013-06/2019)

Szent István Gimnázium *(Budapest, Hungary)*

I studied in a special math class and graduated with straight A-s at the final exam.
Top placement in many national level math and physics competition.
Representing my school at the ISF Cross-Country World Championships in 2016.

WORK EXPERIENCE

PhD candidate – Uppsala University (09/2024-)

PhD in scientific machine learning *(Uppsala, Sweden)*

The aim of my project is to further efforts on scalable Bayesian inference focusing on applications in stochastics chemical kinetics. Additionally I investigate the optimization process and learning theory in deep learning.

Summer Intern – Mastercard (Jun-Sep 2023)

Associate Consultant Intern *(Budapest, Hungary)*

During my internship I worked mostly on modelling for financial consulting as well as on the delivery of the found results.
My team ***won the internal Global Intern Innovation Challenge of Mastercard.***

IT Intern – Yettel (Jun-Sep 2024)

IT Intern – full stack developer *(Törökbálint, Hungary)*

I worked as part of the inner agile web development team.

PERSONAL PROJECTS

- **Course Projects at Uppsala University (08/2022-present)**
  https://github.com/horvathcso/Course-Projects-UU
- **Chordal Graph Algorithms (04/2022-10/2022)**
  Algorithms connected to my BSC thesis (python – based on networkx)
  https://github.com/horvathcso/Chordal-garph
- **Online two players five in a row (06/2020-09/2020)**
  During the lock down I developed a python console application to be able to play five in a row with my friends

SKILLS

Problem Solving | Mathematics | Team Work | Machine Learnin | AI | Numerical Modelling | Optimization | Process Automation | Research Skills

PROGRAMING LANGUAGES

deeper knowledge: **python, MATLAB, latex, C, C++**
basic knowledge: JAVA, JavaScript, C#
ML tools: **pytorch**, keras**, scikit-learn,** transformers

RESEARCH EXPERIENCE

- **PhD research** Ongoing *https://www.prashantsingh.se/people/*
- **Master Thesis (45 ECTS)** Studying Solution Quality for Ill-Posed Optimization Problems (supervisior: Prashant Singh)
  uu.diva-portal.org/smash/record.jsf?pid=diva2:1878299
- **BsC Thesis** Chordal and leaf power graphs (in Hungarian)
  + Research on graph reconstruction (supervisior: Zoltán Blázsik)

CERTIFICATES

freeCodeCamp - Scientific Computing with python (08/2022)
https://www.freecodecamp.org/certification/horvathcso/scientific-computing-with-python-v7

VOLUNTEERING

A Gondolkodás Öröme Alapítvány (07/2020 - Present)

Organizer

I help organizing the Dürer natural science team contest from 2019.
Which includes organizing the event, marking and prior creating the problem sheets, one of which I oversaw for 2 years.
Additionally I was a volunteer at EGMO (European Girls' Mathematical Olympiad) in 2022.

Tipo TKE (01/2022 - 04/2022)

Competition President

Helped organizing the three days long orienteering competition (TIPO cup) for 500 participant as the president of the organizing committee.

LANGUAGES

Hungarian *(mother tongue)*
English *(Full Professional Proficiency – IELTS 7.0)*

HOBBIES

Orienteering | Mathematics | Sports | Board Games