Csanád Budai

Budapest, Hungary, October 16, 2004

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EXPERIENCE

Systems and Control Lab — HUN-REN Institute for Computer Science and Control (SZTAKI)
Software Developer (Part-time) — *Jan 2024 - Present*
Developed reinforcement learning algorithms for the autonomous car platform F1TENTH. Worked on bridging the sim-to-real gap using domain randomization, and created a simulator learning environment. Part of the Autonomous Systems National Laboratory. Conference article "End-to-end Reinforcement Learning for Autonomous Racing: Bridging the sim-to-real gap" accepted to American Control Conference 2025.

University Research Fellowship Programme - Adaptive RL — EKÖP, BME
Student researcher — *Sep 2024 - Present*
Working on adaptive RL methods that enable online learning. Advisor: Budai Csaba, Assistant professor at MOGI

IPhO (International Physics Olympiad) Hungarian preparation camps — Hungary
Chief organiser — *Dec 2023 - Present*
Organised the first three IPhO preparation camps: "Fagypont" Physics camps [link], and the "Forráspont" Physics camp [link] for the most talented hungarian high-school students interested in competitive physics.

New National Excellence Programme — UNKP, BME
Student researcher — *Sep 2023 - June 2024*
Researched self-balancing robotics, model-based and data-based control methods. Advisor: Budai Csaba, Assistant professor at MOGI

EDUCATION

Budapest University of Technology and Economics (BME) — Budapest, Hungary
Mechatronical engineering BSc; GPA 5.0/5.0 — *Sep 2023 - Present*

Deák Square Lutheran High School — Budapest, Hungary
Advanced mathematics class — *2015 - 2023*

Fiúság Academy — Budaörs, Hungary
Calvinist theology studies — *2022 - Present*

Milestone Institute — Budapest, Hungary
Student, President of the Natural Sciences Society — *2020 - 2024*

Glenwood Elementary School — Millburn, New Jersey, USA
Student — *2013 - 2014*

Association of British Royal Schools of Music — Budapest, Hungary
Advanced degree on guitar, Grade 7 — *2010 - 2019*

British International School of Budapest — Budapest, Hungary
Student — *2008 - 2013*

TEACHING EXPERIENCE

Lecturer at the Special College of Mechanical Enginering — GSZK, BME
Holding lectures for first-year students before midterms in math and programming — *2024 - Present*

Private tutor teaching Mathematics and Physics — Remote and in person
Teaching high-school students calculus, physics, and entrance exam preparation — *2021 - Present*

Programming teacher at Alphacademy — Remote
Teaching C++ and Logo programming languages to students — *May 2023 - Jan 2024*

Chess teacher at Budapest British International Academy — Budapest, Hungary
Organising the chess club at BBIA for primary school students, teaching the basics of chess — *2021 - 2023*

COMPETITION RESULTS

- 22nd F1TENTH International Autonomous Racing Competition 5th place, Milan, Italy, 2024
- 2024 BME Students' Scientific Conference 2nd place: "Deep reinforcement learning methods for the motion control design of the F1TENTH electric vehicle: bridging the sim-to-real gap" [link]
- 15th F1TENTH International Autonomous Racing Competition 12th place, Yokohama, Japan, 2024
- PLANCKS 2024 - Physics League Across Numerous Countries for Kick-ass Students, 13th place with the Hungarian team, Dublin, Ireland
- IPhO - International Physics Olympiad 2023 Bronze medalist, Tokyo, Japan

- EuPhO - European Physics Olympiad 2023 Bronze medalist, Hannover, Germany
- Physics National Olympiad (OKTV) - National 6th in 2022, 11th in 2023
- Mathematics National Olympiad (OKTV) - National 15th in 2023
- Philosophy National Olympiad (OKTV) - National 8th in 2022
- Programming National Olympiad (OKTV) - National 23th in 2023
- Budapest University of Technology Physics competition - 1st in 2023, 1st in 2024
- Leó Szilárd Modern Physics competition - National 1st place in 2023
- International Competition for Young Debaters - National 1st place in 2020

Scholarships and awards

- National Higher Education Scholarship 2024 - awarded to the top 0.8% of students studying at the Faculty of Mechanical Engineering BME
- Atlas Fellowship 2023 - Atlas Finalist, a highly selective scholarship for students interested in science, philosophy, and the future
- BME Departement of Mechanical Engineering Excellence Scholarship 2023
- MOL Talent Support Program Scholarship 2023 - awarded to the highest achieving high-school students in Hungary
- Lutheran Church Merit Scholarship – 2021, 2022, 2023
- Deák Square Lutheran High School award 2023 - Physicist of the year, Programmer of the year, most successful university entrance exam of the year
- Deák Square Lutheran High School award 2022 - Physicist and Philosopher of the year

Skills

- **Programming**: python, pytorch, C/C++, bash, ROS2, deep learning, reinforcement learning, R, arduino
- **Modelling**: Fusion 360, Autodesk Inventor, Prusaslicer
- **Languages**: English (native, Toefl 112/120), German (proficient, B2), Hungarian (native)