

# Patrik Reizinger

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🌐 [patrik-reizinger](https://patrik-reizinger.github.io)

🌐 [rpatrik96.github.io](https://github.com/rpatrik96)

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## EDUCATION

- 2021–ongoing **Machine Learning Ph.D.**, *International Max Planck Research School for Intelligent Systems/University of Tübingen/ELLIS*, Tübingen, Germany  
**Thesis:** Causal Representation Learning  
**Supervisors:** Wieland Brendel, Ferenc Huszár, Matthias Bethge, Bernhard Schölkopf  
**ELLIS exchange at the University of Cambridge:** 2022.10–2023.03.
- 2019–2021 **Electrical Engineering M.Sc.**, *Budapest University of Technology and Economics*, Budapest, Hungary, GPA 5.0/5.0 (valedictorian)  
**Thesis:** Development of an Attitude Determination and Control System for CubeSats on LEO orbits  
**Supervisors:** Ferenc Vajda, Márton Szemenyei  
**Extracurricular:** iMSc program for talented students
- 2015–2019 **Electrical Engineering B.Sc.**, *Budapest University of Technology and Economics*, Budapest, Hungary, GPA 5.0/5.0 (valedictorian)  
**Thesis:** Development of a 3D input device for virtual working environments  
**Supervisors:** Ferenc Vajda, Márton Szemenyei  
**Extracurricular:** German language program in cooperation with the Karlsruhe Institute of Technology  
**Exchange semester at the Karlsruhe Institute of Technology:** 2018.10–2019.02.

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## EXPERIENCE

- 2020.02–2021.01 **Deep Learning Student Researcher**, *Budapest University of Technology and Economics*, Budapest, Hungary  
Analyzed time series data with deep learning
- 2019.02–2021.02 **Control Engineering Intern**, *C3S Electronics Development LLC*, Budapest, Hungary  
Developed and designed a CubeSat attitude determination and control system
- 2019.01–02. **FPGA Developer Intern**, *Karlsruhe Institute of Technology*, Karlsruhe, Germany  
FPGA time synchronisation
- 2018.06–08. **Image Processing Intern**, *Fraunhofer Institute for Factory Operation and Automation IFF*, Magdeburg, Germany  
Developed an automated visual inspection tool in C++
- 2017.06–08. **Data Scientist Intern**, *Gravity R&D*, Budapest, Hungary, Analyzed customer data analysis in Python
- 2016.09–2019.01 **Virtual Reality Peripheral Device Developer**, *Budapest University of Technology and Economics*, Budapest, Hungary  
Developed a 3D input device for virtual working environments

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## HONORS AND AWARDS

- 2022 **NeurIPS Scholar Award**
- 2021 **Pro Scientia Gold Medal**, *National Scientific Students' Association Hungary*, top 0.03%
- 2021 **Hope Badge Special Award to The Most Promising Young Scientist**, *Pro Scientia Gold Medalists' Association*, top 0.003%
- 2019,2021 **1<sup>st</sup> Prize at National Scientific Students' Association Conference**, *National Scientific Students' Association Hungary*, top 0.3%
- Attention-based curiosity in multi-agent reinforcement learning environments (2021)
  - Stochastic weight matrix-based regularization methods for deep neural networks (2019)
  - Development of a 3D input device for virtual working environments (2019)
- 2017-2019 **1<sup>st</sup> Prize at Scientific Students' Association Conference**, *Budapest University of Technology and Economics*, top 0.3%
- Attention-based curiosity in multi-agent reinforcement learning environments (2019)
  - Development of an Attitude Determination and Control System for CubeSats on LEO orbits (2019)
  - Stochastic weight matrix-based regularization methods for deep neural networks (2018)
  - Development of a 3D input device for virtual working environments (2017)
- 2018 **Nokia Bell Labs Scholarship for Deep Learning Research**, *Nokia Bell Labs Hungary*
- 2016,2018 **New National Excellence Program Research Grant**, *Ministry of Innovation and Technology Hungary*, top 0.3%
- 2016–2018,2020 **National Higher Education Scholarship**, *Republic of Hungary*, top 0.8%

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## PUBLICATIONS

Evgenia Rusak\*, [Patrik Reizinger](#)\*, Roland S. Zimmermann\*, Oliver Bringmann, and Wieland and Brendel. Content suppresses style in dimensionality collapse in contrastive learning. In *NeurIPS 2022 Workshop on Self-Supervised Learning–Theory and Practice*, 2022.

[Patrik Reizinger](#)\*, Luigi Gresele\*, Jack Brady\*, Julius von Kügelgen, Dominik Zietlow, Bernhard Schölkopf, Georg Martius, Wieland Brendel, and Michel Besserve. Embrace the Gap: VAEs Perform Independent Mechanism Analysis. In *NeurIPS2022*, 2022.

[Patrik Reizinger](#)\*, Yash Sharma, Matthias Bethge, Bernhard Schölkopf, Ferenc Huszár, and Wieland Brendel. Multivariable Causal Discovery with General Nonlinear Relationships. In *UAI 2022 Workshop on Causal Representation Learning*, 2022.

Márton Szemenyei and [Patrik Reizinger](#). Handling Realistic Noise in Multi-Agent Systems with Self-Supervised Learning and Curiosity. *Journal of Artificial Intelligence and Soft Computing Research*, 12(2):135–148, 2021.

[Patrik Reizinger](#), Péter Huszár, Dorottya Milánkovich, and Alexandra Széll. Kisműholdak fejlesztése a sokoldalúság és a könnyű reprodukálhatóság tükrében. *Repülés-tudományi Közlemények*, 32(2):81–95, 2020.

Márton Szemenyei and [Patrik Reizinger](#). Learning to Play Robot Soccer from Partial

Observations. In *2020 23rd International Symposium on Measurement and Control in Robotics (ISMCR)*, pages 1–6. IEEE, 2020.

**Patrik Reizinger** and Márton Szemenyei. Attention-based curiosity-driven exploration in deep reinforcement learning. In *ICASSP 2020-2020 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 3542–3546. IEEE, 2020.

Marton Szemenyei and **Patrik Reizinger**. Attention-based curiosity in multi-agent reinforcement learning environments. In *2019 International Conference on Control, Artificial Intelligence, Robotics & Optimization (ICCAIRO)*, pages 176–181. IEEE, 2019.

**Patrik Reizinger** and Bálint Gyires-Tóth. Stochastic weight matrix-based regularization methods for deep neural networks. In *International Conference on Machine Learning, Optimization, and Data Science*, pages 45–57. Springer, Cham, 2019.

**Patrik Reizinger** and Ferenc Vajda. Concept of a mobile, cameraless VR-controller framework for working environments. 2018.

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## TALKS

- 2022.12. **Multivariable Causal Discovery for General Nonlinear Functions**, *Learning on Graphs Cambridge Meetup*, Cambridge, UK
- 2022.10. **Embrace the Gap: VAEs Perform Independent Mechanism Analysis**, *Univeristy of Warsaw Machine Learning Seminar*, online
- 2022.08. **Multivariable Causal Discovery for General Nonlinear Functions**, *UAI 2022 Workshop on Causal Representation Learning*, Eindhoven, Netherlands

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## TEACHING

- Fall 2020/21 **Teaching Assistant**, *Budapest University of Technology and Economics*, Budapest, Hungary  
Image Processing Laboratory I., Computer Vision Systems, Deep Learning in Visual Computing
- Fall 2017/18 **Teaching Assistant**, *Budapest University of Technology and Economics*, Budapest, Hungary  
Digital Design I. laboratory

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## EXTRACURRICULARS & COURSEWORK

- 2022.07. **ELLIS Cambridge Unit Machine Learning Summer School**, *ELLIS Cambridge Unit*, Cambridge, UK
- 2022.07. **Machine Learning Summer School**, *ML in PL*, Krakow, Poland
- 2021.04. **A Young Leader’s Guide to Risk**, *McChrystal Group*, Budapest, Hungary
- 2020.09. **Ladybird Guide to Spacecraft Operations Workshop**, *European Space Agency*, online
- 2020.07. **Eastern European Machine Learning Summer School**, *ML in PL*, online
- 2019.07. **International Summer School on Deep Learning**, *IRDTA*, Warsaw, Poland
- 2019.01. **Concurrent Design Workshop**, *European Space Agency*, ESEC-Galaxia, Redu, Belgium

- 2018–2020 **Leadership Academy**, *Mathias Corvinus Collegium*, Budapest, Hungary
- 2018.11. **Traction Europe Case Studies for Outstanding Engineering Students**, *Boston Consulting Group*, Paris, France
- 2016–2018 **Business and Economics Specialization**, *Mathias Corvinus Collegium*, Budapest, Hungary
- 2015–2016 **University Junior Program**, *Mathias Corvinus Collegium*, Budapest, Hungary

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## COMPETENCIES

Programming Languages	■■■■■ Python
	■■■ ■■■ C++
	■■■ ■■■ C
Machine Learning	■■■■■ PyTorch
	■■■■■ Weights and Biases
	■■■■ ■ PyTorch Lightning
Research	■■■■■ Zotero
	■■■■ ■ L <sup>A</sup> T <sub>E</sub> X
Software	■■■■■ Git
	■■■■ ■ CI
	■■■ ■■ Singularity

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## OUTREACH

- 2020–ongoing **Coordinator**, *Machine Learning Journal Club for Hungarian Students*
- 2020 **Program Committee Member**, *6th International Conference on Machine Learning, Optimization, and Data Science*
- 2020 **Reviewer**, *Infocommunications journal*
- 2016 **E-learning Developer**, *EduBase*  
Video series for Digital Design I. university course

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## LANGUAGES

English	Proficient
German	Proficient
Hungarian	Native

Tübingen, 12<sup>th</sup> December, 2022