Paweł Czyż

+48 516 991 880 | pawelpiotr.czyz@ai.ethz.ch | github.com/pawel-czyz | Google Scholar

Research Interests

Mathematical foundations of machine learning and its applications to health and life sciences.

Education

ETH Zurich Oct. 2021 – Present
ETH AI Center Doctoral Fellow *Zurich, Switzerland*

- I work on applications of deep learning to cancer research in Computational Biology Group and Computational Epigenetics of Cancer Group under the supervision of Professor Niko Beerenwinkel and Professor Valentina Boeva.

University of Oxford Oct. 2016 – June 2020
Master of Mathematical and Theoretical Physics *Oxford, UK*

- Final classification: First Class and Merit.
- Master's thesis: *The Atiyah–Singer index theorem* written under the supervision of Professor Alexander Ritter.
- Selected coursework: Networks (submitted project *Modularity-based clustering of hypergraphs*), Quantum Information, Symbolic Programming, Category Theory, Algebraic Topology, Quantum Physics, Representation theory of Lie groups, Special and General Relativity.

Experience

AI Resident Sept. 2020 – Sept. 2021
Microsoft Research *Cambridge, UK*

I worked on Gaussian processes and deep generative models with applications to health sciences.

Data Science Research Intern July 2019 – Sept. 2019
Semmle/GitHub *Oxford, UK*

Under the supervision of Dr Albert Ziegler and Dr Ian Wright I investigated applications of quantification and data shift to semi-supervised learning. I developed a framework allowing easy comparison of different semi-supervised learning algorithms in PyTorch and Visdom.

Data Science Research Intern July 2018 – Sept. 2018
Semmle *Oxford, UK*

Working closely with Dr Albert Ziegler we developed Unsupervised Recalibration, a novel quantification algorithm. I worked on its mathematical foundations and I implemented it in TensorFlow and PyTorch. This allowed us to evaluate algorithm's performance on artificial data sets.

External Collaborator/Research Intern June 2016 – Oct. 2018
Institute of Fundamental Technological Research, Polish Academy of Sciences *Warsaw, Poland*

I worked under the supervision of Professor Tomasz Lipniacki, developing tools for cell simulations and implementing an information-theoretic channel capacity estimation module.

Publications

F. Grabowski, P. Czyż, M. Kochańczyk and T. Lipniacki, *Limits to the rate of information transmission through the MAPK pathway*, J. R. Soc. Interface **16**:20180792.
A. Ziegler, P. Czyż, *Unsupervised recalibration*. Preprint arXiv:1908.09157 [stat.ML].

Technical Skills

Languages: Python (over 10,000 lines of code), C++ (over 10,000 LOC), Mathematica (over 5,000 LOC).
ML tools: TensorFlow, PyTorch, GPy, GPyTorch, EmuKit, NumPy, Pandas, SciPy, SciKit-Learn, SciKit-Opt, PyMC3.
Developer tools: Git, Docker, AzureML, Jupyter Notebook, GNU/Linux.

Achievements and awards

5th place in team theoretical physics competition PLANCKS, 2018.
Scholar title awarded by St Hugh's College in Oxford, 2017.
Laureate (11th place) of Polish Physics Olympiad, 2016.
Finalist of Polish Mathematical Olympiad, 2016.
1st prize in the European Union Contest for Young Scientists for joint work with Michał Bączyk on fluid dynamics, 2015.
3rd place in International Young Physicists' Tournament, 2014.