Iwona Hawryluk, PhD

Contact

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Personal Profile

Highly skilled data scientist with a PhD specialising in the development of mathematical and statistical models. With extensive experience in applying machine learning and deep learning techniques to diverse data types, including medical data, satellite images, and audio files, I excel in utilising modern statistical methods to solve real-life problems. My career spans roles as a data scientist and cybersecurity researcher in the industry, where I have demonstrated a strong ability to drive data-driven decision-making and innovative solutions. Passionate about leveraging my expertise to contribute to impactful projects, I thrive in multidisciplinary and collaborative environments.

Core Skills

Programming:	Python, C++, R, Matlab, Mathematica, Bash, Git, SQL, Spark
Libraries:	PyTorch, Tensorflow, Pandas, scikit-learn, NumPy, Matplotlib, Stan, NumPyro
Interests:	Machine Learning, Deep Learning, Data Science, Probabilistic Programming, Bayesian Statistics, Mathematical Modelling, Computer Vision

Work Experience

May 2024 - present
ongoing, UK

Postdoctoral Research Associate at Imperial College London

- Research involves working on a Deep Learning modelling for speech
- Finetuning and running language classification models on audio files

June 2022 - Sept 2022
3 months, remote

Data Science Research Intern at Securonix,

- Research internship in which I developed statistical methods for anomaly detection in cybersecurity.
- Gained experience using AWS and working with Big Data using Spark
- Developed a hierarchical Bayesian model for behaviours analytics and anomaly flagging

Jan 2021 - May 2021
5 months, UK

Researcher in the Imperial College London COVID-19 response team

- I undertook a studies break to support the research on COVID-19 pandemic in Brazil and in the UK.
- Development of a Bayesian model for inference of hospitalisation distributions from large Brazilian database
- New method of nowcasting COVID-19 deaths using Gaussian Processes
- Statistical analysis of bed occupancy and mortality risks in patients with COVID-19 in UK

Apr 2018 - June 2019
14 months, Ireland

Data Scientist at Creme Global

- Developing new and existing statistical methods, performing data analyses
- Working closely with the clients to deliver reports and software customisation
- Analyses of exposures to harmful compounds in foods and cosmetics using consumption surveys and Monte Carlo simulations
- Working closely with the Software Engineering team, new software design

Dec 2017 - Apr 2018
4 months, Ireland

Data Scientist at LetsGetChecked

- Analysis of clinical numeric and text data
- Market research, marketing data analyses

June - Sept 2017
4 months, Finland

Research Scientist at VTT Technical Research Centre of Finland

- Clinical data analysis, machine learning models, medical image processing.
- Development of a machine learning model for heart attack survival prediction
- Processing and development of a segmentation pipeline for brain MRI scans

Education

2020-2024	PhD in Epidemiology of Infectious Diseases **Imperial College London**, UK Thesis: "Statistical methods for characterising the severity of an emerging pathogen: case studies of the COVID-19 pandemic"
2019-2020	MRes in Epidemiology of Infectious Diseases **Imperial College London**, UK
2015-2017	MSc in Applied Mathematics **University of Helsinki**, Finland
2012-2015	BSc in Mathematics **University of Wroclaw**, Poland

Scholarships and Awards

London, 2019-2024	Medical Research Council Fund, Imperial College London Funding for the 1+3 PhD training programme in Epidemiology and Control of Infectious Disease
London, 2020	Prize for Excellence in Research Award for outstanding achievements in the MRes course.
Helsinki, 2017	The Mathematics and Science Fund Award for students of Mathematics or Science with outstanding achievements in studies
Wroclaw, 2012-2015	University's Principal Scholarship for most talented students
Wroclaw, 2012-2015	"Mathematics without borders" scholarship for most talented students

Talks and posters

May 2024	Machine Learning and Global Health network meetup (talk)
May 2023	ICLR ML for Global Health workshop (poster)
Feb 2023	AAAI Artificial Intelligence for Cybersecurity workshop (talk)
Nov 2022	American Society of Tropical Medicine and Hygiene conference (poster)
Nov 2022	Science: Polish Perspectives 2022 conference (poster)
Nov 2022	European Space Agency: ML for Earth Observation workshop (poster)
July 2021	Uncertainty in Artificial Intelligence conference (talk)
May 2021	Science: Polish Perspectives 2021 conference (talk)

Selected publications

1. I. Hawryluk et al. Inference of COVID-19 epidemiological distributions from Brazilian hospital data. *Journal of The Royal Society Interface*, 17(172):20200596, 2020. URL https://doi.org/10.1098/rsif.2020.0596
2. I. Hawryluk et al. Gaussian Process Nowcasting: Application to COVID-19 Mortality Reporting. *UAI 2021. PLMR*, 2021. URL https://proceedings.mlr.press/v161/hawryluk21a.html
3. I. Hawryluk et al. Application of referenced thermodynamic integration to Bayesian model selection. *PLOS ONE*, 18(8):1–16, 08 2023. URL https://doi.org/10.1371/journal.pone.0289889
4. I. Hawryluk et al. Peer-group Behaviour Analytics of Windows Authentications Events Using Hierarchical Bayesian Modelling. *arXiv preprint*, 2022. URL https://arxiv.org/abs/2209.09769
5. A. Brizzi, C. Whittaker, L. M. Servo, I. Hawryluk, et al. Spatial and temporal fluctuations in COVID-19 fatality rates in Brazilian hospitals. *Nature Medicine*, 28, 2022. URL https://doi.org/10.1038/s41591-022-01807-1
6. H. Wilde, T. Mellan, I. Hawryluk, et al. The association between mechanical ventilator compatible bed occupancy and mortality risk in intensive care patients with COVID-19: a national retrospective cohort study. *BMC Medicine*, 2021. URL https://doi.org/10.1186/s12916-021-02096-0