

HUBERT BANIECKI

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I am interested in explainable machine learning in the context of adversarial attacks & explanation evaluation. My personal goal is to develop methods and tools that advance us toward trustworthy AI.

EDUCATION

PhD in Computer Science

Expected graduation: 2026

University of Warsaw, Poland

Topic: “Attack-resistant explanations toward secure and trustworthy AI”

Supervisor: prof. Przemysław Biecek

MSc(Eng) in Data Science

2022

BSc(Eng) in Data Science

2021

Warsaw University of Technology, Poland

RESEARCH EXPERIENCE

Research Assistant (intern)

2021 – 2022

Faculty of Mathematics and Information Science, Warsaw University of Technology, Poland

Two-semester research position stipend for exceptional MSc students funded by the university (pl. asystent-stażysta).

It was preceded by acquiring and delivering a research micro-grant for MSc students (PI, fully funded summer).

Project title: “Manipulating SHAP via adversarial data perturbations”; published and presented at **AAAI 2022**.

Research Scientist

2021 – now

Research Software Engineer

2019 – 2021

MI².AI research lab, www.mi2.ai

- Investigator in 7 research grants spanning the domains of machine learning and bioinformatics:
 - * National Science Centre: 2016/21/B/ST6/02176, 2017/27/B/ST6/01307, 2019/34/E/ST6/00052, 2021/43/0/ST6/00347.
 - * National Centre for Research and Development: POIR.01.01.01-00-0328/1, POIR.01.01.01-00-1232/20, INFOSTRATEG-I/0022/2021-00.
- Research in explainable machine learning in the following directions:
 - * attacking explanations (**ECML PKDD 2022**),
 - * responsible machine learning (**AAAI 2021**, **JMLR 2021**),
 - * human-model interaction (**JOSS 2019**, **arXiv:2005.00497v4**),
 - * survival analysis (**arXiv:2208.11080v2**),
 - * applications in biomedicine (**Cancers 2022**, **Scientific Reports 2022**).
- Development and maintenance of open-source Python & R packages for explainable machine learning, e.g. `dalex` (Python & R, **JMLR**), `modelStudio` (R, **JOSS**), `DrWhy.AI`; details: <https://hbaniecki.com/software>.

PUBLICATIONS

- [8] B. Pfeifer, [H. Baniecki](#), A. Saranti, P. Biecek, A. Holzinger. [Multi-omics disease module detection with an explainable Greedy Decision Forest](#). **Scientific Reports**, 12:16857, 2022.

- [7] R. Gierczynski, A. Czerw, G. Juszczak, R. Charkiewicz, J. Niklinski, P. Majewski, J. Reszec, P. Piatyszek, [H. Baniecki](#), P. Biecek, B. M. Henry. [Quantitative analysis of RT-PCR test results for SARS-CoV-2 diagnostics across Poland during COVID-19 pandemic: comparison between early stage and major pandemic waves in 2020 and 2021 with reference to SARS-CoV-2 variants](#). *Advances in Medical Sciences*, 67(2):386–392, 2022.
- ! [6] [H. Baniecki](#), W. Kretowicz, P. Biecek. [Fooling Partial Dependence via Data Poisoning](#). In: European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (**ECML PKDD 2022**), accepted – to appear in conference proceedings, 2022.
- [5] [H. Baniecki](#), P. Biecek. [Manipulating SHAP via Adversarial Data Perturbations \(Student Abstract\)](#). In: AAAI Conference on Artificial Intelligence (**AAAI 2022**), 36(11):12907–12908, 2022.
- [4] A. Sulewska, J. Niklinski, R. Charkiewicz, P. Karabowicz, P. Biecek, [H. Baniecki](#), O. Kowalczyk, M. Kozlowski, P. Modzelewska, P. Majewski, E. Trynieszewska, J. Reszec, Z. Dzieciol-Anikiej, C. Piwkowski, R. Gryczka, R. Ramlau. [A Signature of 14 Long Non-Coding RNAs \(lncRNAs\) as a Step towards Precision Diagnosis for NSCLC](#). *Cancers*, 14(2):439, 2022.
- ! [3] [H. Baniecki](#), W. Kretowicz, P. Piatyszek, J. Wisniewski, P. Biecek. [dalex: Responsible Machine Learning with Interactive Explainability and Fairness in Python](#). *Journal of Machine Learning Research*, 22(214):1–7, 2021.
- [2] [H. Baniecki](#), P. Biecek. [Responsible Prediction Making of COVID-19 Mortality \(Student Abstract\)](#). In: AAAI Conference on Artificial Intelligence (**AAAI 2021**), 35(18):15755–15756, 2021.
- [1] [H. Baniecki](#), P. Biecek. [modelStudio: Interactive Studio with Explanations for ML Predictive Models](#). *Journal of Open Source Software*, 4(43):1798, 2019.

PREPRINTS (IN REVIEW)

- M. Krzyżiński, M. Spytek, [H. Baniecki](#), P. Biecek. [SurvSHAP\(t\): Time-dependent explanations of machine learning survival models](#). [arXiv:2208.11080v2](#), 2022.
- [H. Baniecki](#), D. Parzych, P. Biecek. [The Grammar of Interactive Explanatory Model Analysis](#). [arXiv:2005.00497v4](#), 2022.

AWARDS, SCHOLARSHIPS & GRANTS

- [6] **National Science Centre, Poland, 2022 – 2026**. PRELUDIUM BIS research grant for four-year PhD scholarships. Role: PhD student, project title: “ARES: Attack-Resistant Explanations toward Secure and trustworthy AI”, PI/supervisor: Przemysław Biecek, grant no. 2021/43/0/ST6/00347 for 426K PLN \approx 100K EUR/USD.
- ! [5] **American Statistical Association, USA, 2022**. John M. Chambers Statistical Software Award for the `dalex` Python package; details: <https://community.amstat.org/jointscsg-section/awards/john-m-chambers>.
- [4] **Ministry of Education and Science, Poland, 2022**. Minister’s scholarship granted to 432 students (BSc & MSc) in Poland for significant scientific achievements in academic year 2021/22 (top-16 nationwide in Comp. Sci.).
- [3] **Warsaw University of Technology, Poland, 2021**. CyberSummer@WUT micro-grant for MSc student researchers awarded by the Research Center POB Cybersecurity and Data Analysis (PI, fully funded summer).
- [2] **ING Bank’s Risk Modelling Challenge, EU, 2021**. With two of my study colleagues, we took 1st place in a 2-day hackathon comprising 16 teams: 55 data scientists and students from the best Polish and European universities. The task was to develop a well-performant *explainable* time-series model for predicting loan prepayments; details: <https://ingtechpoland.com/en/news/we-know-the-winners-of-lions-den-ing-risk-modelling-challenge-2021>.
- [1] **Warsaw University of Technology, Poland, 2019 – 2022**. Rector’s scholarship for the best students (BSc & MSc) in academic years: 2019/20 (top-3 in course), 2020/21 (top-1 in course), 2021/22 (top-1 in course).

CONFERENCE PRESENTATIONS, POSTERS & TUTORIALS

- [11] **ML in PL 2022, Warsaw, Poland.** Oral presentation: Interactive sequential analysis of a model improves the performance of human decision-making.
- [10] **ECML PKDD 2022, Grenoble, France.** Oral presentation: Fooling Partial Dependence via Data Poisoning.
- [9] **Joint Statistical Meetings 2022, Washington DC, USA.** Oral presentation: dalex: Responsible Machine Learning with Interactive Explainability and Fairness in Python.
- [8] **AAAI 2022, online.** Poster: Manipulating SHAP via Adversarial Data Perturbations (Student Abstract).
- [7] **ML in PL 2021, online.** Oral presentation: Manipulating explainability and fairness in machine learning.
- ! [6] **useR! The R conference 2021, online.** Tutorial: Introduction to Responsible Machine Learning;
Oral presentation: Open the Machine Learning Black-Box with modelStudio & Arena.
- [5] **AAAI 2021, online.** Poster: Responsible Prediction Making of COVID-19 Mortality (Student Abstract).
- [4] **Data Science Summit 2020, online.** Oral presentation: XAI to support prediction making in COVID-19 pandemic.
- [3] **Why R? 2020, online.** Oral presentation: What's new in DrWhy.AI?
- [2] **ML in PL 2019, Warsaw, Poland.** Poster: modelStudio: Interactive Studio with Explanations for ML Predictive Models.
- [1] **Why R? 2019, Warsaw, Poland.** Oral presentation: DALEX + D3 = ?

ML in PL is the largest annual machine learning conference in Poland. Why R? is the largest annual R conference in central-eastern Europe. Data Science Summit is the largest annual data science conference in Poland/eastern Europe.

TEACHING EXPERIENCE

Teaching Assistant (PhD)

2022 – now

Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw, Poland

Teaching assistance in courses for Machine Learning (MSc) studies.

- Explainable Machine Learning, 15 students, labs & projects. fall 2022

Teaching Assistant (BSc & MSc)

2020 – 2022

Faculty of Mathematics and Information Science, Warsaw University of Technology, Poland

Teaching assistance in courses for Data Science (BSc) studies; details: <https://hbaniecki.com/teaching>.

- Case Studies (in deep learning), 15 students, labs & projects. spring 2022
- Data Visualization Techniques, 30 students, labs & projects. fall 2021
- Case Studies (in machine learning), 15 students, labs & projects. spring 2021
- Data Visualization Techniques, 60 students, projects. fall 2020

OTHER

Reviewing service. I reviewed manuscripts for the following scientific venues: IEEE Transactions on Cybernetics, Data Mining and Knowledge Discovery, Journal of Open Source Software, ECML PKDD 2022, ICML WHI 2020.