Name	Damian Machlanski

Contact Details	Phone: +44 7563 942201 E-mail: d.machlanski@essex.ac.uk	Google Scholar, ResearchGate, LinkedIn GitHub

Interests

Research
- Causal Machine Learning, Causal Effect Estimation, Causal Structure Learning, Hyperparameter Optimisation, Performance Evaluation, OOD Generalisation

Software
- Backend, Scientific Software Engineering, Reproducible Experiments, Performance Engineering, Benchmarking

Qualifications

PhD in Computer Science, University of Essex, UK
- June 2024 (viva date)
- Thesis: "*Understanding Hyperparameters in Machine Learning for Causal Estimation from Observational Data*" (submitted)
- causal inference, causal discovery, tabular data, python, tensorflow, pytorch

MSc in Artificial Intelligence, University of Essex, UK
- September 2020
- Dissertation: "*A study of spike-triggered EEG waveforms based on automated surface EMG decomposition of muscle activity comprising primal and fine hand movements*"
- EEG, sEMG, blind source separation, k-means, ICA, python, MATLAB

BEng in Computer Science, West Pomeranian University of Technology, Poland
- June 2014
- Project: "*Modular simulator of complex systems*"
- road traffic simulator, cellular automata, C#, Unity

Research Experience

Senior Research Officer, Institute for Social and Economic Research, University of Essex
- October 2023 –
- Research in causal machine learning; dissemination through publications, conferences and seminars; publishing existing PhD research material; contributing to, and maintaining, code repositories; teaching short summer school courses; contributing to the preparation of external funding applications; engaging with colleagues across institutes and departments (e.g. social scientists, economists, econometricians, linguists, etc.).

Software Experience

Software Developer, Oxford Computer Consultants (now System C)
- September 2014 – August 2020
- Learnt how to deal with long-term enterprise projects, including legacy code. Experienced how professional practice of engineering looks like, including planning, design, specification, development, testing, code review stage, deployment and finally maintenance. Also had a chance to use a wide variety of tools and frameworks commonly used across industry. The number and depth of responsibilities grew over time, from simple development, through more complex tasks over different projects to writing specifications and contributing to projects as a technical leader.

Junior Software Developer, Autocomp Management
- October 2013 – August 2014
- First real job in the software industry. Had a chance to work with graphic designers and other fellow programmers. Most of the projects were related to various simulators designed for military. Experienced how to use theory gathered so far to build practical solutions. It was useful to participate in the full product lifecycle to see how different parts of engineering projects should be handled.

Teaching Experience	Graduate Laboratory Assistant, School of Computer Science and Electronic Engineering, University of Essex - February 2021 – May 2023 - CE888: Data Science and Decision Making (MSc level) IADS Summer School, University of Essex - July 2021, 2022, 2023 "Machine learning for causal inference from observational data" ESRC National Centre for Research Methods - June 2021, October 2022 "Introduction to machine learning for causal analysis using observational data"
Published Papers	**Machlanski, D.**, Samothrakis, S., & Clarke, P. (2024). Robustness of Algorithms for Causal Structure Learning to Hyperparameter Choice. *Proceedings of the Third Conference on Causal Learning and Reasoning*, in *Proceedings of Machine Learning Research* 236:703-739. (link) **Machlanski, D.**, Samothrakis, S., & Clarke, P. (2024). Undersmoothing Causal Estimators With Generative Trees. *IEEE Access*, vol. 12, pp. 38562-38574. (link)
Working Papers	**Machlanski, D.**, Samothrakis, S., & Clarke, P. (2023). Hyperparameter Tuning and Model Evaluation in Causal Effect Estimation. *arXiv preprint arXiv:2303.01412*. (link) Submitted to Springer Machine Learning (under review; major revision)
Software	Repositories - PhD: CATE Benchmark, papers (link1, link2, link3) - MSc: Expert Iteration, Text Analytics, Neural Networks (C++), Fuzzy Logic (C++), Dissertation Skills **Python**, C#, C/C++, MATLAB, SQL, Bash - numpy, pandas, pytorch, tensorflow, keras, scikit-learn, scipy, matplotlib, conda - git, SVN, Jira, HPC (CPU, GPU), continuous integration, unit tests, code review
Talks	"*Understanding Hyperparameters in Machine Learning for Causal Estimation from Observational Data*", IADS seminar, University of Essex, February 2024 "*Introduction to Causality: new opportunities, applications and limitations*" and "*Causal Machine Learning: tools, challenges and best practices*", Inawisdom, London, January 2023 "*The importance of hyperparameter tuning in causal effect estimation*", Causal Data Science Meeting, online, November 2022 (slides) "*Causal discovery for treatment effect estimation from observational data*", MiSoC Annual Research Workshop, online, March 2021
Other Activities	- Reviewing for PLOS ONE - Co-organiser of "*IADS Data Connect*" (networking event for ECRs) - Postgraduate Student Representative (PhD) - Microsoft Student Partner - chairman of a local student society (BEng)
Awards	- ESRC MiScC University of Essex Scholarship, Fees + Standard Maintenance with Advanced Quantitative Methods Enhanced Stipend (PhD funding) - The MSc Project Prize in the area of Computer Science (for MSc dissertation) - Rector's scholarship for the best students in the academic year 2011/2012 and 2012/2013 (during BEng)