Jacobus M. M. Smit

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EDUCATION

University of Amsterdam | *PhD Artificial Intelligence*	*September 2022 – Ongoing*
University of Oxford | *MSc Mathematical Sciences*	*October 2021 – June 2022*
University of Warwick | *BSc Mathematics and Statistics*	*October 2017 – June 2021*

EXPERIENCE

(Freelance) Data Analyst — *January 2021 – April 2021*
Client: West Midlands Police, Warwick Manufacturing Group — *Coventry, UK*

- Worked in a team of three undergraduate students to analyse telematics data with R (and Rcpp) from the West Midlands Police's vehicle fleet to provide various insights into improving areas such as fleet efficiency, response times, and environmental impact.
- Provided novel findings into areas WMP was already focused on such as the activity of the fleet over time and identification of potentially inefficient driving.

Junior Data Scientist — *February 2020 – August 2020*
QuantCube Technology — *Paris, France*

- Collaborated with a team of data scientists creating production-ready macroeconomic indicators in Python.
- Identified and optimised key data pipeline functions that were causing a bottleneck, providing a 3000% speedup.
- Independently researched and constructed an indicators to predict agricultural exports of various countries in South America.
- Presented key findings and progress reports in meetings using Jupyter and Powerpoint.
- Created documents explaining the practices and methodologies of my team intended for new hires in order to facilitate their arrival.

OPEN SOURCE CONTRIBUTIONS

ModernJuliaWorkflows \| *Author*

- This blog introduces Julia users of all levels to tools and techniques for writing, sharing, and optimising code. My contribution is writing and editing the pages on Writing and Optimization (WIP).

Agents.jl \| *Maintainer*

- Spearheaded the design and implementation of an interface for users to store agents in arbitrary data structures instead of dictionaries, allowing for more efficient vector models ($2\times$ faster) that take better advantage of cache locality.
- This contribution also refactored the internals and public API of adding and removing agents.
- Consistently provided code review on commits made to the repository to ensure that the code was sound, idiomatic, and well documented. Also introduced formatting regulations through JuliaFormatter to help automatically make new code consistent with existing code.

MultiMixer \| *Author*

- This package is a feature contribution to the JAX/Equinox ecosystem as it implements a highly optimised and tested, general form of the MLP-Mixer architecture.
- The package abstracts and builds upon the core ideas of the MLP-Mixer into a "backbone" while providing convenience functions for common use cases such as working with images.

PUBLICATIONS AT A^*-RANKED VENUES

Learning Fair Cooperation in Mixed-Motive Games with Indirect Reciprocity | *Full paper*	*IJCAI 2024*
Fairness and Cooperation between Independent Reinforcement Learners... | *Abstract*	*AAMAS 2024*

TECHNICAL SKILLS AND TECHNOLOGIES

Languages: Julia, Python (JAX), R (Tidyverse, Rcpp), SQL, BQN.
Skills: Git, mechanical sympathy, listening intently and learning quickly, digging into how tools work.
Competitions: Winning team in WDSS Helping Hack prediction competition. The objective was to understand and predict how local authority spending will impact indices of deprivation over time.

Other Skills

Languages: English (Native), French (B2), Spanish (B2), Dutch (A2).

Public Speaking: Creator of DataBasic podcast interviewing academics and industry leaders working with data. The goal of the podcast was to make data science simple and accessible through explaining the core concepts of the domain through engaging conversations covering related topics. Guests include best-selling author of "Predictive Analytics" Eric Siegel, Head of Analytics at Walgreens Boots Alliance, Simon Prinn, and Professor of Economics at the University of Warwick, Jonathan Cave.

Music: Served as a musical director of Warwick Acappella Society for two years.

Teaching

Fairness, Accountability, Confidentiality and Transparency in AI | *Teaching Assistant*	*2023-2024*
Fundamentals of Data Science | *Teaching Assistant*	*2023*
ST221: Linear Statistical Modelling | *Teaching Assistant*	*2022*
ST116: Mathematical Techniques | *Teaching Assistant*	*2021*
WDSS: Into the Tidyverse | *Teaching Assistant*	*2020-2021*