Dr Michael A. Dewar

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I build products based on algorithms, powered by data. I bring advanced techniques from data science together with mission-driven experts in order to build next generation products in novel domains.

For a full portfolio, please see mikedewar.github.io.

Education

The University of Sheffield, UK: PhD Thesis: **'A Framework for Modelling Dynamic Spatiotemporal Systems'**. Awarded June 2007.

The University of Sheffield, UK: **1st Class MEng** in Control Systems Engineering. Awarded August 2002.

Employment

January 2018 onwards: **Mastercard, Cyber & Intelligence**, Vice President of Data Science.

- Lead a team
- Did some M&A
- Lots of coffee

May 2016 to January 2018: **Vocalink**, Director of Data Science.

January 2014 to March 2016 : **New York Times R&D**, Data Scientist.

May 2011 to December 2013 : **bitly Inc.**, Senior Data Scientist.

January 2010 to April 2011: **Columbia University**, Postdoctoral Researcher, Department of Applied Physics and Applied Mathematics.

July 2008 to December 2009 : **University of Edinburgh**, Postdoctoral Researcher, Adaptive and Neural Computation, School of Informatics.

May 2007 to June 2008 : **University of Sheffield**, Postdoctoral Researcher, Department of Automatic Control & Systems Engineering and the Department of Computer Science.

Selected Projects - Mastercard

Consumer Fraud Risk Financial Crime Solutions, **Mastercard** - provides a pre-payment API to detect scams on bank to bank payments. My team and I developed, built, deployed and operated the application layer of this service. It is used by major UK banks, with TSB estimating the service will save the UK economy £100M per year.

- Consumer Anti-Fraud Solution of the Year - Payments Awards 2023
- Best Security or Anti-Fraud Development - The Card and Payments Awards 2024

Trace Financial Crime Financial Crime Solutions, **Mastercard** - detects money laundering over instant payments networks. This service is used by the 13 largest banks in the UK, covering well over 90% of the UK faster payments participants. My team and I executed the techincal design, build, deployment, and subsequent operation of this service.

- Rising Star Award - Deloitte Market Gravity Awards 2018

Corporate Fraud Insights Vocalink Analytics, **Mastercard** - detects fraud in the Bacs payment network in the UK. Working with RBS, this service prevented over £7MM of losses to RBS's customers in less than

two years. My team and I built the behavioural modelling, scoring mechanism and application layer to deliver this service.

- Banking Security Innovation of the Year - Retail Banker International Awards 2018
- Analytics Project of the Year - National Technology Awards 2018
- Best Security or Anti-Fraud Development - The UK Card & Payments Award 2019

Selected Projects - New York Times

- **streamtools** R&D, **New York Times**. A graphical toolkit for working with live streams of data.
- **editor** R&D, **New York Times**. A prototype text editor that uses a recurrent neural network and word level embeddings to perform semi-automated tagging of sub-sentence blocks of text
- **lazarus** R&D, **New York Times**. An application of machine vision techniques to associate a photo from the physical archive with its digital counterpart in the NYT's digital archive.

Community Engagement

- **AI Public Private Forum** 2020-2021. I attended the AI Public Private Forum, run by the Financial Conduct Authority and the Bank of England.
- **NYT R&D Data Meeting** 2013-2016. I ran a weekly, internal cross-departmental meeting at the NYT designed to explore the use of data, in all its forms, inside the NYT.
- **Data Gotham** 2012-2013. I was a co-organizer of Data Gotham - a two day event celebrating Data Science in New York.
- **talk: Streamtools** 2015. A talk I gave at code Neuro, about streamtools.
- **talk: Seeing From Above** 2013. A talk I gave in Malmo, Sweden, about data science.
- **talk: The Data Perspective** 2015. A talk I gave at the NYC R Conference, about values
- Author of **Getting Started with D3**, Dewar M.A., O'Reilly, 2012.

Selected Academic Papers

- **Point process modelling of the Afghan War Diary**, Andrew Zammit-Mangion, Michael Dewar, Visakan Kadirkamanathan, and Guido Sanguinetti. PNAS 2012.

  - PNAS 2012 Cozzarelli Prize Winner (Engineering and Applied Sciences)

- **Inference in Hidden Markov Models with Explicit State Duration Distributions**, M. Dewar and C. Wiggins and F. Wood. IEEE Signal Processing Letters, 2012.
- **Parameter Estimation and Inference for Stochastic Reaction-Diffusion Systems: application to morphogenesis in D. melanogaster**, Dewar M.A., Kadirkamanathan, V., Opper, M. and Sanguinetti, G. BMC Systems Biology 2010, 4:21.
- **Classifying *Drosophila* Courtship**, Dewar M.A. Invited talk at Virtual Fly Brain - Behaviour Workshop. September 21-23, 2009 at Magdalen College, Oxford.
- **Estimation and Model Selection of an IDE based Spatiotemporal Model**, Scerri K, Dewar M.A. and Kadirkamanathan V. IEEE Transactions on Signal Processing. 2009. 57(2) pp.482-492.
- **Data Driven Spatiotemporal Modelling Using the Integro-Difference Equation**, Dewar M.A., Scerri K. and Kadirkamanathan V. IEEE Transactions on Signal Processing. 2009. 57(1) pp.83-91.
- **Classification of Animal Behaviour Using Dynamic Models of Movement**, M.A. Dewar, J.A. Heward, T.C. Lukins and J.D. Armstrong. NIPS Workshop: "Stochastic Models of Behaviour", 2008, Whistler.
- **A Canonical Space-Time State Space Model: State and Parameter Estimation**, Dewar M.A. and Kadirkamanathan V. IEEE Transactions on Signal Processing. 2007. 55(10) pp.4862-4870.