Timothy **Hyndman**

Data Scientist

Melbourne, Australia

timothy.hyndman@gmail.com | timothyhyndman.com | timothyhyndman

Education

University of Melbourne

Melbourne, Australia

Ph.D. *2015 – 2019*

- Thesis: 'The coupling time for the Ising heat-bath dynamics & efficient optimization for statistical inference'.
- Completed under the supervision of Prof. Peter Taylor, Prof. Aurore Delaigle, and Assoc. Prof. Tim Garoni.

Monash University

Clayton, Australia

B.Sc.(Hons) *2011 – 2014*

- Honours thesis: proved that a Markov chain with close ties to the Ising model (the 'worm chain') was rapidly mixing.
- GPA of 3.957, H1 honours result with an average mark of 93.

Australian Music Examinations Board

Melbourne, Australia

A.Mus.A (Piano) *2011*

Employment History

Predictive Analytics Group

WFH

Senior Statistician *Jan. 2021 - Present*

- Lead developer, mathematician, and architect for a generalised sports schedule optimiser. Starting with a legacy codebase created for a specific client problem, I generalised the optimizer to work for a large variety of sports scheduling problems, while improving the speed by a factor of over 500. I worked with backend, frontend, and design teams to build a webapp around the application. I independently designed and implemented creative solutions to allow for non-technical users to specify hugely varied constraints for highly diverse sports schedules. I implemented novel generalisations of methods from the academic literature and provided overall direction for new feature developement to senior management.
- Supervised, trained, and mentored junior staff on a project implementing new data structures in our sports scheduler which resuted in a cleaner and more efficient codebase. My teaching resulted in the junior staff producing a higher code quality and acting with greater independence.
- Researched and orchestrated a collection of AWS services to automatically process registration data for a large sports organisation and use it to update a live dashboard. I used AWS SAM to define the infrastructure as code, and migrated old manually managed services to use this new structure.

Biarri

Windsor, Australia

Data scientist *May. 2019 - Dec. 2020*

- Technical lead on a project with one of Australia's major fuel retailers to recommend real-time fuel prices at over 500 stores. Starting with over 100GB of raw transaction data, I developed predictive models for short term fuel volume forecasts at candidate prices, as well as predictive models for in-store purchases and long term effects of difference pricing strategies. I was one of two developers for the final software, and helped deploy the solution to the client's Azure infrastructure. The solution is being used Australia wide.
- Developed tool to suggest 'optimal' markdown prices for a group of sports and outdoor retailers. The challenge was to recommend a price that would allow them to sell stock within an allocated time while maximising profit. After two trial implementations, the net increase in margin was measured at approximately $200k or 20%.
- Received feedback that we were 'the best value client we have ever had' by a large government organisation for my analytics work on one of their processing pipelines.
- I have also developed ranking algorithms for a competitive form of Poker, produced a performance analysis on a 3rd party's electricity forecasting algorithms, and determined factors that correlated with poor sales growth for an outdoor activities retailer.

Monash University

Clayton, Australia

Research assistant *2019*

- Worked with Assoc. Prof. Tim Garoni on improving the results proved in my thesis. The outcome of this work, combined with the relevant parts from my thesis, is a working paper (detailed below).

Monash University/University of Melbourne

Melbourne, Australia

Tutor *2013 – 2018*

- Tutored linear algebra (MAST10007), analysis of change (MTH1020) and differential geometry (MTH3110). Mentioned in student evaluations as one of the best parts of the differential geometry unit.

Relevant Skills

Programming

Python, R, MATLAB, SQL, Bash, JavaScript, HTML, CSS, C++

Libraries

Pandas, Numpy, Scipy, Numba, Tensorflow, OpenCV, Scikit-learn

Tools

Git, Docker, LaTeX

AWS

S3, Athena, Lambda, Quicksight, SAM, Secrets, SageMaker

Software (R Packages)

2022 **fable**: Contributor
Tidy time series forecasting

2022 **cricketdata**: Author
International cricket data for men and women, Tests, ODIs, and T20s.

2021 **icons**: Contributor
Embed SVG icons in R documents such as slides, reports and apps.

2018 **deconvolve**: Lead developer
Provides tools for performing non-parametric deconvolution of measurement error problems

Awards & Achievements

Awards

2020	Winner of the annual 'Power of Mathematics' award	*Biarri Optimisation*
2012 – 2014	Science Dean's list Fellowship	*Monash University*
2011	Premier's VCE award for mathematics	*VCAA*
2010	Australian Student Prize	*VCAA*
2010	Australian Defence Force Long Tan Leadership and Teamwork award	*ADF*

Scholarships

2015	ACEMS top-up scholarship	*ACEMS*
2015	Australian Postgraduate Award	*Australian Government*
2014	Monash jubilee honours scholarship	*Monash University*
2011	Science merit scholarship	*Monash University*

Competitions

2017	Winner 'Advanced sampling & exploration competition'	*ACEMS*
2016	Special mention 'Advanced sampling & exploration competition'	*ACEMS*
2015	Winner 'Advanced sampling & exploration competition'	*ACEMS*

Publications

Research papers

1. Delaigle, A., Hyndman, T., & Wang, T. (2019). *Deconvolve-package: Deconvolution tools for measurement error problems* [Working Paper].
2. Collevecchio, A., Garoni, T. M., Hyndman, T., & Zhou, E. (2018). *The coupling time for the ising heat-bath dynamics* [Working Paper].
3. Collevecchio, A., Garoni, T. M., Hyndman, T., & Tokarev, D. (2016). The worm process for the ising model is rapidly mixing. *J. Stat. Phys.*, *164*(5), 1082–1102.