



# Timothy Hyndman

DATA SCIENTIST

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## 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

### Biarri

Windsor, Australia

DATA SCIENTIST

May, 2019 - Present

- 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 currently in a trial phase and being used at approximately 80 stores 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).

### University of Melbourne

Melbourne, Australia

TUTOR

2016 – 2018

- Tutored Linear Algebra (MAST10007)

### Monash University

Clayton, Australia

TEACHING ASSOCIATE

2013 – 2014

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

### Monash University

Clayton, Australia

AMSI SUMMER RESEARCH SCHOLARSHIP

2012 – 2013

- Supervised by Prof. Kate Smith-Miles and Dr Davaatseren Baatar. Worked on optimising an instrument scheduler for Leica Microsystems.

## Relevant Skills

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### Programming

PYTHON, R, MATLAB, SQL, BASH

### Tools

GIT, DOCKER, AWS (S3 AND ATHENA), L<sup>A</sup>T<sub>E</sub>X

## Software

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- 2018 **deconvolve**: Lead developer  
Provides tools for performing non-parametric deconvolution of measurement error problems
- 2017 **icon**: Author  
Embed SVG icons in R documents such as slides, reports and apps.
- 2017 **cricketdata**: Author  
International cricket data for men and women, Tests, ODIs, and T20s.

## Awards & Achievements

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### AWARDS

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

### SCHOLARSHIPS

- |      |                                    |                              |
|------|------------------------------------|------------------------------|
| 2015 | ACEMS top-up scholarship           | <i>ACEMS</i>                 |
| 2015 | Australian Postgraduate Award      | <i>Australian Government</i> |
| 2014 | Monash jubilee honours scholarship | <i>Monash University</i>     |
| 2011 | Science merit scholarship          | <i>Monash University</i>     |

### COMPETITIONS

- |      |   |              |
|------|---|--------------|
| 2017 | Winner 'Advanced sampling & exploration competition'          | <i>ACEMS</i> |
| 2016 | Special mention 'Advanced sampling & exploration competition' | <i>ACEMS</i> |
| 2015 | Winner 'Advanced sampling & exploration competition'          | <i>ACEMS</i> |

## Publications

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### RESEARCH PAPERS

1. Collevocchio, A, TM Garoni, T Hyndman, and D Tokarev (2016). The Worm process for the Ising model is rapidly mixing. *J. Stat. Phys.* **164**(5), 1082–1102.
2. Collevocchio, A, TM Garoni, T Hyndman, and E Zhou (2018). *The coupling time for the Ising heat-bath dynamics*. Working Paper.
3. Delaigle, A, T Hyndman, and T Wang (2019). *deconvolve-package: Deconvolution tools for measurement error problems*. Working Paper.