# Timothy Hyndman

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## About Me

I am a passionate data and machine learning expert with a PhD in probability and statistics. I thrive when rapidly learning new technologies and coming up with creative solutions for making complex technology easy to use.

## Experience

**Principal Data Scientist** *September 2023 to present*
**Senior Data Scientist** *January 2021 to August 2023*
Predictive Analytics Group

- Lead developer, mathematician, and architect for an optimisation sports scheduling web-app.
  - Provided technical and project leadership, liaising with engineers, designers, internal end-users, and senior management to shape the overarching design direction and guide the development efforts.
  - Researched and developed solutions that made previously unsolvable problems easily solved. These solutions included original and novel generalisations of algorithms from the academic literature.
  - Played a pivotal role in setting architecture, data structures, and optimisation algorithms.
  - Worked within an agile methodology to continuously iterate and test new feature ideas, providing direction for future development to senior management.
  - Wrote CI/CD pipelines for automated testing and publishing of python libraries and documentation.
- Demonstrated strong coding proficiency in python by refactoring critical sections of code, resulting in a 500% improvement in performance. Introduced new coding standards, leading to praise from senior staff members for elevating the code quality company-wide.
- Used a large language model (LLM) to build a prototype AI chatbot for a sports scheduling web-app.
  - Empowered the chatbot to translate complex scheduling rules into user-friendly steps, streamlining the customer experience by enabling them to express their desired outcomes in natural language.
  - Used natural language processing (text embeddings) to fetch documents from the knowledge base that are most relevant to user messages.

**Data Scientist** *May 2019 to December 2020*
Biarri

- Researched, developed, and deployed machine learning (ML) models in both Python and R for clients across multiple industry verticals.
- Technical lead on a project for a major Australian fuel retailer to recommend real-time fuel prices at over 500 stores.
  - Deeply involved at all stages of the machine learning model life cycle - from data transformation pipelines and model development to deployment and ongoing model refinement.
  - Recommended and created practical predictive ML models for multiple sources of revenue, explaining their benefits and limitations to the project team.
  - Presented key findings and results, clearly explaining technical concepts to non-technical stakeholders.
  - Used Argo workflow to orchestrate both Python and R applications, and assisted in deploying the solution to the client's Azure infrastructure where it is now used Australia wide.
- Researched and developed an ML model to recommend optimal markdown prices for sports and outdoor retailers, resulting in a net increase in margin of approximately $200k or 20%.
- Developed ranking algorithms for a competitive form of Poker, performed performance analysis on a 3rd party's electricity forecasting algorithms, identified factors correlating with poor sales growth for an outdoor activities retailer, identified bottlenecks in a processing pipeline for a large government organisation.

## Experience (cont.)

**Research Assistant** *2019*
Monash University
- Proved original and novel results about a model that is foundational to various phenomena in physics.
- Integrated cutting-edge developments from the academic literature into our research.

## Technical Skills

**Programming**: Python, R, SQL, HTML, CSS, Rust, JavaScript, Bash, MATLAB
**Libraries:** OR-Tools, Pandas, Numpy, SciPy, Numba, TensorFlow, Keras, PuLP, OpenCV, Scikit-learn, PySpark, NLTK, Langchain, React, TanStack Query, GraphQL, Flask
**Tools and Technologies:** Airflow, MLflow, Jupyter notebook, CI/CD pipelines, Linux, Git, Docker, LaTeX
**Cloud:** AWS (SageMaker, S3, Athena, Lambda, SAM, Quicksight), Confluence, Bitbucket, Gitlab, Github

## Education History

**Doctor of Philosophy in Probability and Statistics** *2015 to 2019*
Institution: The University of Melbourne

**Bachelor of Science (Honours) in Mathematics** *2011 to 2014*
Institution: Monash University
- Awarded with First Class Honours

**A. Mus. A (Piano)** *2011*
Institution: Australian Music Examinations Board

## Open Source R Packages

**fable** (Contributor) -Tidy time series forecasting
**cricketdata** (Author) - International cricket data for men and women, Tests, ODIs, and T20s
**icons** (Contributor) - Embed SVG icons in R documents such as slides, reports and apps
**deconvolve** (Lead developer) - Provides tools for performing non-parametric deconvolution of measurement error problems

## Publications


- 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.


## References

Available upon request.