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

Senior Data Scientist *January 2021 to present*
Predictive Analytics Group

- 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.
  - Set data requirements for the chatbot's knowledge base.
  - Used text embeddings to fetch documents from the knowledge base that are most relevant to user messages.
- Lead developer, mathematician, and architect for the optimiser for a sports scheduling web-app.
  - Researched and developed solutions that made previously unsolvable problems easily solved. These solutions included original and novel generalisations of methods from the academic literature.
  - Played a pivotal role in setting system design, data structures, architecture, and design patterns in collaboration with backend, frontend, and design teams.
  - Continuously prototyped and tested 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. I also introduced new coding standards, leading to praise from senior staff members for elevating the code quality company-wide.

Data Scientist *May 2019 to December 2020*
Biarri

- Researched, developed, and deployed machine learning (ML) models 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 preprocessing and model development to deployment and ongoing optimization.
  - Used SQL in AWS Athena to process over 100GB of raw data.
  - Created custom predictive ML models for multiple sources of revenue.
  - 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.
- The outcome of this work, combined with the relevant parts from my thesis, is a working paper (detailed below).

Technical Skills

Programming: Python, R, SQL, HTML, CSS, C++, JavaScript, Bash, MATLAB
Libraries: Pandas, Numpy, SciPy, Numba, TensorFlow, Keras, PuLP, OpenCV, Scikit-learn, PySpark, NLTK, Langchain
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., & Zhou, E. (2018). The coupling time for the Ising heat-bath dynamics [Working Paper].
- 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.