Yangzhuoran Fin Yang

PhD in Mathematics and Statistics

Maastricht University, Netherlands

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Education

Doctor of Philosophy in Mathematics and Statistics *Clayton, Australia*

Monash University *Apr. 2020 - Jan. 2025*

- Supervisors: Professor Rob J Hyndman, Professor George Athanasopoulos, Associate Professor Anastasios Panagiotelis
- Thesis: Component-Based Methods in Multivariate and Hierarchical Time Series Forecasting

Bachelor of Commerce (Hons) in Econometrics *Clayton, Australia*

Monash University *Mar. 2019 - Dec. 2019*

- Thesis: Optimal Portfolio Selection via Dimensional Reduction in a Stochastic Optimal Control Setting
- GPA: 3.875; GRADE H1

Bachelor of Actuarial Science *Clayton, Australia*

Monash University *Jul. 2016 - Oct. 2018*

- GPA: 4; WAM: 90.323

Experience

Postdoctoral Researcher *Maastricht, Netherlands*

Maastricht University *Mar. 2025 - Present*

- Department of Quantitative Economics, School of Business and Economics

Teaching Associate *Clayton, Australia*

Monash University *2017, 2019 - 2020, 2022 - 2024*

- Econometrics, Statistics and Business Analytics

Research Assistant *Clayton, Australia*

Monash University *2017 - 2020, 2022 - 2024*

- Developments of R packages and data wrangling

Data Mining Engineer (Applied Economist) *Beijing, China*

Huohua Siwei (Online Education) *Apr. 2021 - Jan. 2022*

- Experimental design and evaluation, data mining and R web app development

Adjunct Lecturer *Suzhou, China*

Monash University *Oct. 2020 - Jun. 2021*

- Suzhou Industrial Park Monash Research Institute of Science and Techology

Teaching

Applied Forecasting *Undergraduate and postgraduate*

Highest student satisfaction band; One of the top performing units in the Student Evaluation *Sem 1 2022, Sem 1 2023*

Advanced Statistical Modelling *Undergraduate and postgraduate*

Highest student satisfaction band *Sem 2 2022, Sem 1 2023*

Principles of Econometrics *Undergraduate and postgraduate*

Highest student satisfaction band *Sem 2 2023, Sem 2 2024*

Business and Economic Statistics *Undergraduate and postgraduate*

Highest student satisfaction band; One of the top performing units in the Student Evaluation *2019, NOV12 2020, Sem 1 2021, 2024*

Introductory Econometrics *Undergraduate and postgraduate*

Sem 2 2024

Job Market Paper

Forecast Linear Augmented Projection (FLAP): A free lunch to reduce forecast error variance

Abstract: We propose a novel forecast linear augmented projection (FLAP) method that can reduce the forecast error variance of any multivariate forecast. The method first constructs new component series which are linear combinations of the original series. Forecasts are then generated for both the original and component series. Finally, the full vector of forecasts is projected onto a linear subspace where the constraints implied by the combination weights hold. We show that the projection using the original forecast error covariance matrix will result in improved forecasts. Notably, the new forecast error variance of each series is non-increasing with the number of components, and mild conditions are established for which it is strictly decreasing. It is also shown that the proposed method achieves maximum forecast error variance reduction among linear projection methods. We demonstrate our proposed method with an estimated covariance matrix using simulations and two empirical applications based on Australian tourism and FRED-MD data. In all cases, forecasts are improved. Notably, using FLAP with Principal Component Analysis (PCA) to construct the new series leads to substantial forecast error variance reduction.

Publications

1. Seo, M. H., Koo, B., & Yang, Y. F. (2024). Nonlinear dynamics of Kimchi premium. Economic Modelling, 135, 106726.
2. Yang, Y. F., and Zhao, Z. (2020), "Online Robust Reduced-Rank Regression" in 2020 IEEE 11th Sensor Array and Multichannel Signal Processing Workshop (SAM), pp. 1–5.

Working Papers

1. "Forecast Linear Augmented Projection (FLAP): A free lunch to reduce forecast error variance" by Yangzhuoran Fin Yang, George Athanasopoulos, Rob J. Hyndman and Anastasios Panagiotelis
2. "ycevo: An R Package for Nonparametric Yield Curve Estimation, Analyses and Prediction" by Yangzhuoran Fin Yang, Bonsoo Koo, Wenying Yao and Nico Purnomo
3. "Forecast Multivariate Time Series using Lower Dimensional Components" by Yangzhuoran Fin Yang, Rob J. Hyndman, George Athanasopoulos and Anastasios Panagiotelis
4. "Forecast Linear Augmented Reconciliation (FLARe): Reducing hierarchical forecast error variance"

Conferences and Talks

Jul. 2024	**Annual useR! conference**	*Salzburg, Austria*
Jul. 2024	**44th International Symposium on Forecasting**	*Dijon, France*
Jun. 2024	**Annual Conference of the International Association for Applied Econometrics**	*Thessaloniki, Greece & Xiamen, China*
Apr. 2024	**Monash NUMBATs Seminar**	*Melbourne, Australia*
Jun. 2023	**43rd International Symposium on Forecasting**	*Charlottesville, USA*
Jun. 2020	**11th IEEE Sensor Array and Multichannel Signal Processing Workshop**	*Virtual*

Awards, Grants and Scholarships

- 2024 Monash Business School Prestigious International Conference Award
- 2023 International Symposium on Forecasting Travel Grant
- 2023 Monash Graduate Research Travel Grant
- 2020 - 2024 Monash Business School Co-funded Graduate Research Scholarship
- 2020 - 2024 Monash Graduate Scholarship
- 2020 IEEE Sensor Array and Multichannel Signal Processing Workshop Best Student Paper Award Finalist
- 2019 Monash Business School Dean's Honour
- 2019 Monash University Econometrics Honours Memorial Scholarship
- 2018 Monash Business School Prize for the Top Achieving Student in Actuarial Science (Undergraduate)
- 2018 Monash University Medal for Undergraduate Academic Excellence
- 2018 Monash Business School Dean's Honour
- 2018 Monash Business School Student Excellence Award in recognition of exceptional academic excellence (Business analytics, Modelling in finance and insurance, Applied forecasting for business and economics)
- 2018 The International Institute of Forecasters Student Forecasting Award
- 2017 Monash Business School Student Excellence Award in recognition of exceptional academic excellence (Statistical Thinking, Principles of Econometrics, Contingencies in insurance and pensions)

Softwares

1. Hyndman, R. J., Akram, M., Bergmeir, C., & O'Hara-Wild, M. (2018). *Mcomp: Data from the m-competitions* (Version 2.8) [Computer software]. `https://CRAN.R-project.org/package=Mcomp`
2. Yang, Y. F., & Zhao, Z. (2020). *RRRR: Online robust reduced-rank regression estimation* (Version 1.1.0) [Computer software]. `https://CRAN.R-project.org/package=RRRR`
3. Hyndman, R. J., & Yang, Y. F. (2019). *compenginets: Time series from http://www.comp-engine.org/timeseries/* (Version 0.1) [Computer software]. `https://github.com/robjhyndman/compenginets`
4. Hyndman, R. J. (2019). *demography: Forecasting mortality, fertility, migration and population data* (Version 1.22) [Computer software]. `https://CRAN.R-project.org/package=demography`
5. Yang, Y. F. (2024). *flap: Forecast linear augmented projection* (Version 0.2.0) [Computer software]. `https://cran.r-project.org/package=flap`
6. Yang, Y. F. (2020). *lazybar: Progress bar with remaining time forecast method* (Version 0.1.0) [Computer software]. `https://CRAN.R-project.org/package=lazybar`
7. Yang, Y. F. (2024). *lazyparser: Command line r-flavored argument parser* (Version 0.1.0) [Computer software]. `https://github.com/FinYang/lazyparser`
8. Yang, Y. F. (2020). *lazytype: Functions and addins to save keystrokes and clicks* (Version 0.0.0.9000) [Computer software]. `https://pkg.yangzhuoranyang.com/lazytype/`
9. O'Hara-Wild, M., & Yang, Y. F. (2024). *roam: Remote objects with active-binding magic* (Version 0.0.0.9000) [Computer software].
10. Hyndman, R. J. (2018). *tscompdata: Time series data from various forecasting competitions* (Version 0.0.1) [Computer software]. `https://github.com/robjhyndman/tscompdata`
11. Hyndman, R. J., & Yang, Y. F. (2020). *tsdl: Time series data library* (Version 0.1.0) [Computer software]. `https://finyang.github.io/tsdl/`
12. Hyndman, R. J., Kang, Y., Montero-Manso, P., Talagala, T., Wang, E., Yang, Y. F., O'Hara-Wild, M., Taieb, S. B., Hanqing, C., Lake, D. K., Laptev, N., & Moorman, J. R. (2020). *tsfeatures: Time series feature extraction* (Version 1.0.2) [Computer software]. `https://CRAN.R-project.org/package=tsfeatures`
13. Koo, B., & Yang, Y. F. (2024). *ycevo: Nonparametric estimation of the yield curve evolution* (Version 0.2.1) [Computer software]. `https://CRAN.R-project.org/package=ycevo`

Referees

Professor Rob J Hyndman — *Monash University*
DEPARTMENT OF ECONOMETRICS & BUSINESS STATISTICS — *Clayton, Australia*
- Email: Rob.Hyndman@monash.edu

Professor George Athanasopoulos — *Monash University*
DEPARTMENT OF ECONOMETRICS & BUSINESS STATISTICS — *Clayton, Australia*
- Email: George.Athanasopoulos@monash.edu

Associate Professor Anastasios Panagiotelis — *University of Sydney Business School*
DISCIPLINE OF BUSINESS ANALYTICS — *Darlington, Australia*
- Email: Anastasios.Panagiotelis@sydney.edu.au