Gaetan Bakalli

Contact Information

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Academic Positions

Visiting Assistant Professor, Auburn University, Department of Mathematics and Statistics, Auburn, USA, 2021 - present

Education

PhD in Statistics, Geneva School of Economics and Management (GSEM), University of Geneva, Switzerland, 2016 - 2021

- Thesis: "*Domain-Tailored Approaches to Statistical Learning*", Advisors: Prof. Olivier Scaillet & Prof. Stéphane Guerrier, Committee: Prof. Maria-Pia Victoria-Feser & Prof. Dacheng Xiu (Booth School of Business, University of Chicago).
- Position funded by the Swiss National Science Foundation.

MSc in Statistics, Geneva School of Economics and Management (GSEM), University of Geneva, Switzerland, 2013 - 2016

- Thesis: "*Multivariate Latent Lazy Random Walk With Jump Processes for High Frequency Financial Data*". Grade: 6/6.

Articles Under Review

9. **Bakalli, G.**, Guerrier, S., & Scaillet, O., "*A Penalized Two-pass Regression to Predict Stock Returns with Time-varying Risk Premia*", Journal of Econometrics, major revision invited. Full text: `https://ssrn.com/abstract=3777215`.

8. **Bakalli, G.**, Cucci, D. A., Radi, A., El-Sheimy, N., Molinari, R., Scaillet, O., & Guerrier, S., "*Multi-signal Moment-based Approaches for Repeated Sampling Schemes*", IEEE Transaction on Signal Processing, major revision submitted.
Full text: `https://arxiv.org/abs/2105.06217`.

7. Miglioli, C., **Bakalli, G.**, Guerrier, S., Orso, S., Molinari, R., Karemera, M. & Mili, N., "*Chameleon Micro-RNAs in Breast Cancer: Their Elusive Role as Regulatory Networks in Cancer Progression*", Scientific Reports, major revision submitted.
Full text: `https://doi.org/10.1101/2020.12.15.422846`.

Publications

6. Parisi, N., Janier-Dubry, A., Ponzetto, E., Pavlopoulos, C., **Bakalli, G.**, Molinari, R, Guerrier, S., & Mili, N., "*Non Applicability of Validated Predictive Models for Intensive Care Admission and Death of COVID-19 Patients in a Secondary Care Hospital in Belgium*", Journal of Emergency and Critical Care Medicine, 5: 22, 2021.

5. Guerrier, S., Jurado, J., Khaghani, M., **Bakalli, G**., Karemera, M., Molinari, R., Orso, S., Raquet, J, Schubert Kabban, C., Skaloud, J. Xu, H. & Zhang, Y., "*Wavelet-Based Moment-Matching Techniques for Inertial Sensor Calibration*", IEEE Transactions on Instrumentation & Measurement, 69(10), p.7542-7551, 2020.

4. Radi, A., **Bakalli, G.**, Guerrier, S., El-Sheimy, N., Sesay, A. B., & Molinari, R., "*A Multisignal Wavelet Variance-based Framework for Inertial Sensor Stochastic Error Modeling*". IEEE Transactions on Instrumentation and Measurement, 68(12), p. 4924-4936, 2019.

Conference Proceedings

3. **Bakalli, G.**, Radi, A., Nassar, S., Guerrier, S., Zhang, Y., & Molinari, R., "*A Two-step Computationally Efficient Procedure for IMU Classification and Calibration*", in Proceedings of IEEE/ION PLANS 2018, Monterey, CA, USA, 2018.
2. Radi, A., **Bakalli, G.**, El-Sheimy, N., Guerrier, S., & Molinari, R., "*An Automatic Calibration Approach for the Stochastic Parameters of Inertial Sensors*", in Proceedings of the ION GNSS+ 2017, Portland, OR, USA, 2017.
1. **Bakalli, G.**, Radi, A., El-Sheimy, N., Molinari, R., & Guerrier, R., "*A Computational Multivariate-Based Technique for Inertial Sensor Calibration*", in Proceedings of the ION GNSS+ 2017, Portland, OR, USA, 2017.

Articles submitted

6. Molinari, R., **Bakalli, G.**, Guerrier, S., Miglioli, C., Orso, S., & Scaillet, O, "*SWAG: A Wrapper Method for Sparse Learning*".
   Full text: `https://arxiv.org/abs/2006.12837`.
5. Menkveld, A. J., Dreber, A., Holzmeister, F., Huber, J. and Johanneson, M., Kirchler, M., Razen, M., Weitzel, U., **Bakalli, G.**, et al., "*Non-Standard Errors*".
   Full text: `https://ssrn.com/abstract=3961574`.

Working Papers

4. **Bakalli, G.**, Scaillet, O., "*Non-linear APT in Large Economy*".
3. **Bakalli, G.**, Foley, S. A., Krekel, W., Scaillet, O., "*Evidence of Wash Trading in Decentralised Cryptocurrency Exchange*".
2. Parisi, N., Janier-Dubry, A., Ponzetto, E., Pavlopoulos, C., **Bakalli, G.**, Molinari, R, Guerrier, S., & Mili, N., "*Impact of Serum Levels of Pneumoproteins CC-16, SP-A, SP-D in Alveolar Involvement of SARS-COV2 Pneumopathy*".
1. **Bakalli, G**, Guerrier, S, Hadjiliadis, O & Zhang, X, " *Latent Lazy Random Walks with Jump Processes Model for High-Frequency Financial Data*".

Talks

"*A Penalized Two-pass Regression to Predict Stock Returns with Time-varying Risk Premia*":

- Financial Econometrics Seminar, CREST-ENSAE Paris, France, Dec. 2021 (Upcoming).
- 19th Paris December Finance Meeting, Online, Dec. 2021 (Upcoming).
- 20th Workshop in Econometrics for Finance, Online and Onsite in Paris, France, Nov. 2021.
- Statistics and Data Science Seminar, Auburn University, Online, Sep. 2021.
- EEA-ESEM 2021, Online, Aug. 2021.
- China International Conference in Finance, Online and Onsite in Shanghai, China, Jul. 2021. Discussant: Prof. Seth Pruitt.
- 7th IYFS Conference, Online, Jul. 2021.
- 4th International Conference on Econometrics and Statistics, Online, Jun. 2021.
- North American Summer Meeting of the Econometric Society, Online, Jun. 2021.
- International Association for Applied Econometrics Conference, Online, Jun. 2021.

- 13th Annual SoFiE Conference, Online, Jun. 2021.
- 14th Financial Risks International Forum, The Institut Louis Bachelier, Online, Mar. 2021.

"*A Two-step Computationally Efficient Procedure for IMU Classification and Calibration*", IEEE/ION PLANS 2018, Monterey, CA, USA, 2018.

"*A Computational Multivariate-based Technique for Inertial Sensor Calibration*", ION GNSS+ 2017, Portland, OR, USA, 2017.

Professional Experiences

Consultant, Quantitative Analyst, SunCo Brokering and Services SA, Geneva, Switzerland, Jan 19 - Mar 20: Implementation of predictive modeling tools and market psychology analysis on biodiesel product.

Quantitative Risk Analysis, Cargill, Geneva, Switzerland, Dec. 2015 - Aug. 2016: Improve proprietary data analytic tools and risk measure with cutting edge modeling technique (mutlivariate stress test, extreme value theory, macro-economic risk).

Hedge Fund Dealer, HSBC Private Bank, Geneva, Switzerland, Jan. 2011 - May 2013: Ensure optimal execution for alternative investment orders with a particular attention to the product specific rules.

Research Interests

- Feature Selection
- Financial Econometrics
- Mathematical Statistics
- Time Series Analysis
- Applied statistical research in Finance, Medicine and Engineering.

Teaching

University of Geneva, Switzerland
"*Teaching Assistant*" 2016 - 2021

Weekly seminar sessions, student reception hour, exams preparation and grading, for the following courses:

- "*Financial Econometrics*" (Fall 2016 - 2020)
- "*Stochastic Processes in Finance*" (Fall 2016 - 2018)
- "*Quantitative Risk Management*" (Spring 2017 - 2018)

MSc Thesis Supervision:

- **Jonathan Addo**, "*The Higgs Transaction*", MSc in Wealth Management, May 2018,
- **Deniz Python**, "*The Role of Twitter Sentiment on Bitcoin Returns* ", MSc in Wealth Management, May 2018.

Teaching Interests

- Financial Econometrics
- Computational Statistics
- Statistical Learning
- Time Series
- Data Science

Statistical Software

"swag" - R package: implements the algorithm presented in [7] and [6]. Available on CRAN.
More information: `https://github.com/SMAC-Group/SWAG-R-Package/`.

"avar" - R package: implements the allan variance and allan variance linear regression estimator for time series models. Available on CRAN, downloads ≈ 7K/year. More information: `https://smac-group.github.io/avar/`.

"mgmwm" - R package: implements various methods related to the wavelet variance including the approaches proposed in [3] and [4] to perform multisignal analysis. Available on Github.
More information: `https://github.com/SMAC-Group/mgmwm`.

Computer Skills

- Extensive programming experience with R (functional and OO programming) and Matlab
- Programming experience with Python, C++ & SQL

Languages

- French: Fluent (mother tongue)
- English: Fluent
- Dutch: Intermediate

References

Letter of Recommendation Available upon Request

- Prof. Olivier Scaillet, Professor of Statistics and Econometrics, Geneva School of Economics and Management, University of Geneva & Swiss Finance Institute, olivier.scaillet@unige.ch.
- Prof. Stéphane Guerrier, Assistant Professor of Statistics and Data Science, Faculty of Science & Geneva School of Economics and Management, University of Geneva, stephane.guerrier@unige.ch.
- Prof. Dacheng Xiu, Professor of Econometrics and Statistics, Booth School of Business, University of Chicago dacheng.xiu@chicagobooth.edu.
- Prof. Roberto Molinari Assistant Professor Mathematics and Statistics, Department of Statistics and Mathematics, Auburn University, robmolinari@auburn.edu.

Date

November 25, 2021