Amir Khorrami Chokami

Contact Information

Affiliation

Università di Torino
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Profile

Solid background in mathematical engineering and statistics. Extensive expertise in defining and implementing probabilistic, statistical, and machine learning models, with a specialized emphasis on addressing extreme events and the significance of variables in the context of risk management.

Research Interests

Extreme Value Theory, Records, Order Statistics, Concomitants of Order Statistics, Copulas, (Tail) Dependence, Time Series, Signal Processing and Machine Learning, Shapley Values, Risk Analysis and Management.

Current Position

Assistant Professor *(ITA: RTD-A, Legge n. 240/10, SSD: SECS-S/01)*
ESOMAS Department, University of Torino, Torino, Italy (Oct 2019 - present).

Researcher
"de Castro" Statistics Initiative, Collegio Carlo Alberto, Torino, Italy (Jan 2020 - present).

Past Academic Positions

Post-doctoral Research Fellow
Department of Mathematical Sciences, Politecnico di Torino, Torino, Italy (Jun - Sep 2019).

Education

Bocconi University, Milan, Italy

- Ph.D. in Statistis, Department of Decision Sciences (Sep 2014 - Jan 2019)
  - Thesis title: *New Advances On Records*;
  - Advisors: Michael Falk (University of Würzburg) and Simone Padoan (Bocconi University);
  - Area of study: Extreme Value Theory, Records.

Politecnico di Torino, Torino, Italy

- M.Sc. in Mathematical Engineering (Graduation date: 24 Mar 2014)
  - Thesis title: *Extreme Value Analysis of Severe Rainfalls in the Piemonte and Valle d'Aosta Regions*;

  - Advisors: Mauro Gasparini (Politecnico di Torino) and Simone Padoan (Bocconi University);
  - Final Degree mark: *Magna cum Laude*.

- B.Sc. in Mathematics for Engineering (Graduation date: 31 Mar 2011)
  - Thesis title: *Gevrey regularity of periodic solutions of elliptic equations*;
  - Advisor: Claudio Canuto (Politecnico di Torino);
  - Final Degree mark: 110/110.

Academic Visits

Visiting Researcher

- ESSEC Business School, Cergy-Pontoise and Paris-La Défense, Paris, France (Dec 2021, Mar, Jul 2022).

Visiting Scholar

- University of Würzburg, Würzburg, Germany (Oct 2016 - Jan 2017).

Awards

Academic awards

2019 - present · Annual teaching excellence funds, ESOMAS Department, University of Torino (in each A.Y. they were allocated);
2018 - 2019 · *Merit based Invernizzi Research fellowship* , Bocconi University;
2014 - 2018 · *Merit based Ph.D. fellowship*, Bocconi University.

Competitions

2018 · *Best objective prediction*, Stats Under the Stars IV;
2015 · *Best project*, Stats Under the Stars I.

Academic Service

Positions in Boards and Committees

- Referent of the ESOMAS Department for the TOLC Admission Tests (A.Y. 2022/23), University of Torino, Torino, Italy;
- Committee member of the M.Sc. graduations in Quantitative Finance and Insurance, University of Torino, Torino, Italy;
- Committee member of the M.Sc. graduations in Stochastics and Data Science, University of Torino, Torino, Italy;
- Committee member of the Allievi Honors program graduations, Collegio Carlo Alberto, Torino, Italy.

Supervised or Co-supervised Students

- M.Sc. Students in Quantitative Finance and Insurance (University of Turin):
  - Lorenzo Calvetti (Jointly supervised with Dr. Giovanni Rabitti), (*TBA*) [2023+];
  - Domenica Melone (Jointly supervised with P. Marie Kratz), *An empirical study of the tail dependence between mortality and financial market risks* [2023+];
  - Luca Isaia (Jointly supervised with Dr. Giovanni Rabitti), *Assessing Variable Importance via Shapley Values for Extreme Operational Losses: A Study on Banking Dataset* [2023];
  - Arianna Vallarino (Jointly supervised with Dr. Giovanni Rabitti), *Quantile Regression and Global Sensitivity Measures for Insurance Ratemaking* [2022];
  - Enrico Manzone (Jointly supervised with P. Stefano Favaro), *Empirical Bayes method and its application to sports* [2021];
  - Ismaele Caramello (Co-S., Supervisor P. Luca Regis), *A data driven score model to predict default probabilities* [2021].
- M.Sc. Students in Mathematical Engineering (Politecnico di Torino):
  - Giovanni Porta (Co-S., Supervisor P. Patrizia Semeraro), (*TBA*) [2023+];
  - Maria Cannistrà (Co-S., Supervisor P. Gianluca Mastrantonio), (*TBA*) [2023+].

Teaching

University of Torino, Torino, Italy

- Extreme Value Theory (Ph.D. in Modeling and Data Science 🇬🇧) - A.Y. 2022/23, 2023/24, 8h;
- Numerical and Statistical Methods for Finance (Module: Simulation) - Computational methods for Statistics (M.Sc. in Quantitative Finance and Insurance, M.Sc. in Stochastics and Data Science 🇬🇧) - A.Y. 2019/20, 2020/21, 2021/22, 2022/23, 2023/24, 48h;
- Statistics (B.Sc. in Economics 🇬🇧) - A.Y. 2022/23, 2023/24, 16h.

Collegio Carlo Alberto, Torino, Italy

- Coding in R (Master in Finance, Insurance, and Risk Management 🇬🇧) - A.Y. 2022/23, 2023/24, 14h.

Politecnico di Torino, Torino, Italy

- Statistical Learning - Module: Extreme Value Theory (Ph.D. in Pure and Applied Mathematics 🇬🇧) - A.Y. 2022/23, 8h;
- Data Spaces/Modelli Statistici - Machine learning (M.Sc. in Mathematical Engineering 🇮🇹) - A.Y. 2019/20, 20h;
- Data Spaces/Modelli Statistici - Time Series module (M.Sc. in Mathematical Engineering 🇮🇹) - A.Y. 2018/19, 10h.

Bocconi University, Milan, Italy

- Applied Statistics (B.Sc. in Economic and Social Sciences 🇬🇧) - A.Y. 2018/19;
- Statistics (B.Sc. in Economics and Management for Arts, Culture and Communication 🇮🇹) - A.Y. 2015/16.

Uni-Astiss Polo Universitario, Asti, Italy

- Statistics (BiostAT 2014 Summer School 🇮🇹) - 2014.

SERVICE TO PROFESSION

Editorial activity

2022 - present · Guest Editor of Special Issue *Mathematical Analysis and Its Applications from Decision Theory to Extreme Values*, Symmetry.

Referee service (alphabetical order)

• Extremes • Hydrological Sciences Journal • Journal of Statistical Planning and Inference • RevStat • Statistical Journal • Stochastic Models

Organization of Scientific Events

- Organizer of the European Young Statisticians Meeting (EYSM 2025), Collegio Carlo Alberto, Torino, Italy;
- Organizer of the session *(TBA)* at the 17-th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2024), London, UK;
- Organizer of the session *Extremes and Risk* at the 16-th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023), Berlin, Germany;
- Organizer of the EVA2023 Conference, Bocconi University, Milan, Italy;
- Organizer of Chemical Reaction Networks Workshop (2019), Politecnico di Torino, Torino, Italy.

RESEARCH NETWORKS

Membership to scientific societies

• European Mathematical Society (EMS) • Association for Mathematics Applied to Social and Economic Sciences (AMASES) • Italian Statistical Society (SIS) • Complex Data Modeling Research Network (MIDAS)

FUNDING

PI / Coordinator of Research Groups

2023 - 2025 · Coordinator of the ESOMAS Department research project *Bayesian methods for Functional Data*, University of Torino. Research team: Matteo Ruggiero, Pierpaolo De Blasi, Stefano Favaro, Silvia Montagna, Luigi Bollani, Martina Amongero;

2021 - 2023 · Coordinator of the ESOMAS Department research project *Bayesian methods for complex problems*, University of Torino. Research team: Matteo Ruggiero, Pierpaolo De Blasi, Stefano Favaro, Silvia Montagna, Luigi Bollani, Cecilia Balocchi, Marta Catalano, Giovanni Rebaudo, Matteo Giordano;

2020 - 2022 · PI of the ESOMAS Department research project *Analytics and modelling of cyber-crimes*, University of Torino.

Participation in Research Groups

2024+ · Co-investigator of the International Research Project *Aging Risks and their Long-term impact on the Economy and Society (ARLES)*. PI: Marie Kratz.

2023 - 2025 · Co-investigator of the National Research Project (PRIN 2022) *Discrete random structures for Bayesian learning and prediction*. National coordinator: Antonio Lijoi.

2023 - 2024 · Co-investigator of the Project *Assessing extremal dependence using concomitants* funded by the Labex Modèles Mathématiques et Économiques de la Dynamique, de l'Incertitude et des Interaction consortium (MME-DII-24-1-0000000030). Principal coordinator: Marie Kratz.

2021 - 2022 · Co-investigator of the Project *Extremal dependence using concomitants* funded by the Labex Modèles Mathématiques et Économiques de la Dynamique, de l'Incertitude et des Interaction consortium (MME-DII ANR-11-LABX-0023- 01). Principal coordinator: Marie Kratz.

2017 - 2020 · Co-investigator of the National Research Project (PRIN 2015) *Modern Bayesian nonparametric methods*. National coordinator: Igor Prünster.

Talks and Seminars

Seminars

2024 · *ISFA - Université Lyon 1*, Lyon, France;

2023 · *ISFA - Université Lyon 1*, Lyon, France;

2018 · *Politecnico di Torino*, Torino, Italy.

Invited Talks

2023 · *16th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2023)*, HTW Berlin, University of Applied Sciences, Berlin, Germany;

2023 · *13th Conference on Extreme Value Analysis (EVA 2023)*, Bocconi University, Milan, Italy;

2023 · *Meeting on Statistical Methods and Applications: "From Sharing Knowledge To Co-operation"*, with the participation of the Embassy of Italy in Dakar (Senegal), Politecnico di Torino, Torino, Italy;

2021 · *14th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2021)*, Senate House, University of London, London, UK;

2020 · *13th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2020)*, Senate House, University of London, London, UK;

2018 · *49th Meeting of the Italian Statistical Society*, Università di Palermo, Italy;

2017 · *10th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2017)*, Senate House, University of London, London, UK.

Contributed Talks

2023 · *XLVII Annual Meeting of the Italian Association for Mathematics Applied to Social and Economic Sciences (AMASES 2023)*, University of Milano Bicocca, Milano, Italy;

2023 · *14-th Scientific Meeting Classification and Data Analysis Group (CLADAG 2023)*, University of Salerno, Salerno, Italy;

2023 · *16th German Probability and Statistics Days (GPSD 2023)*, University of Duisburg - Essen, Essen, Germany;

2022 · *15th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2022)*, King's College London, London, UK;
2022 · *51st Meeting of the Italian Statistical Society (SIS 2022)*, University of Campania Luigi Vanvitelli, Caserta, Italy;
2022 · *14th International Conference on Ordered Statistical Data (OSD 2022)*, Vietri sul Mare, Italy;
2017 · *10th Conference on Extreme Value Analysis (EVA 2017)*, Delft, The Netherlands.

Posters

2017 · *Risk Quantification and Extreme Values in Applications*, Lausanne, Switzerland.

Publications

Papers in Refereed Journals

1. **Khorrami Chokami, A.** and Rabitti, G. (2024). *An exact game-theoretic variable importance index for generalized additive models.* Journal of Computational and Graphical Statistics, doi: 10.1080/10618600.2024.2327577.

2. Vallarino, A., Rabitti, G., and **Khorrami Chokami, A.** (2023). *Construction of rating systems using global sensitivity analysis: A numerical investigation*. ASTIN Bulletin: The Journal of the IAA, 1-21.

3. Leonetti, P. and **Khorrami Chokami, A.** (2022). *The maximum domain of attraction of multivariate extreme value distributions is small.* Electron. Commun. Probab. 27 1 –8.

4. **Khorrami Chokami, A.**, Gasparini, M. and Merletti, R. (2021). *Identification of periodic bursts in surface EMG: applications to the erector spinae muscles of sitting violin players.* Biomedical Signal Processing and Control, 65, 102369.

5. Falk, M., **Khorrami Chokami, A.** and Padoan, S. A. (2020). *Records For Time-Dependent Stationary Gaussian Sequences*. Journal of Applied Probability, 00, 1 –19.

6. Falk, M., **Khorrami Chokami, A.** and Padoan, S. A. (2018). *On Multivariate Records from Random Vectors with Independent Components*. Journal of Applied Probability, 55, 1 –11.

7. Falk, M., **Khorrami Chokami, A.** and Padoan, S. A. (2018). *Some Results on Joint Record Events.* Statistics and Probability Letters, 135, 11 –19.

Papers in Conference Proceedings, Notes and Discussions

8. **Khorrami Chokami, A.** and Montagna, S. (2024). *Joint Complete Records occurrence over Farlie-Gumbel-Morgenstern sequences.* (*forthcoming*) Proceedings of the LII Meeting of the Italian Statistical Society.

9. Montagna, S., **Khorrami Chokami, A.** and Tokdar, S. T. (2024). *Detecting Circadian Gene Expressions via Bayesian Analysis: an Application to the Arabidopsis Thaliana Dataset.* (*forthcoming*) Proceedings of the LII Meeting of the Italian Statistical Society.

10. **Khorrami Chokami, A.** (2023). *Complete Records over independent FGM sequences.* Book of Short Papers - CLADAG 2023. Pearson, Italy. ISBN: 978-88-9193-563-2

11. **Khorrami Chokami, A.** and Padoan, S. A. (2022). *On multivariate records over sequences of random vectors with Marshall-Olkin dependence of components.* Proceedings of the LI Meeting of the Italian Statistical Society.

Submitted / Under Review

12. **Khorrami Chokami, A.** and Kratz, M. (2023+). *On the relation between extremal dependence and concomitants.* [ArXiv]
13. Coyle, P., Rabitti, G., Cohen,R. and **Khorrami Chokami, A.** (2023+).*Taxonomies of cyber risk loss: industrial practices and a universal proposal with quantitative evidence.*
14. **Khorrami Chokami, A.** and Merletti, R. (2023+). *Right-Left sEMG Burst Synchronization of the Lumbar Erector Spinae Muscles of Sitting Violin Players.*
15. Khorrami Chokami, K., **Khorrami Chokami, A.**, Cammarata, G., Piras, G., Albertelli, M., Gatto F., Vera, L., Ferone, D., Boschetti, M. (2024+). *Current perspectives in obesity management: unraveling the impact of different therapy approach in real life obesity care.*

Monographs

16. **Khorrami Chokami, A.** (2019). *New Advances On Records*. Ph.D. Thesis.

Ongoing Projects

17. **Khorrami Chokami, A.**, Kratz, M. and Dacorogna, M.(2024+). *Extremal dependence among multiple time series.*
18. **Khorrami Chokami, A.** and Padoan, S. A. (2024+). *Asymptotic Results On Records Over Time-Dependent Stationary Sequences.*
19. **Khorrami Chokami, A.** and Padoan, S. A. (2024+). *Complete Records over multivariate random sequences.*
20. Isaia, L., Rabitti, G. and **Khorrami Chokami, A.** (2024+). *Machine learning data augmentation for the sensitivity analysis of extremes.*

Training

Schools and Workshops

2023 · *Turin-Bath Ph.D. Workshop in Applied Probability and Mathematical Statistics* , Collegio Carlo Alberto, Torino, Italy;
2022 · *Doctoral courses on Extremes, Risks, Climate and Environment,* Institute Henry Poincaré, Paris, France;
2019 · *Chemical Reaction Networks Summer School,* Pragelato, Italy;
2015 · *CRoNoS Winter Course on Robust methods and multivariate extremes,* Senate House, University of London, London, UK.

Internships

2014 · Internship on Modeling extreme rainfall values, CNR - ISAC, Torino, Italy.

Skills

Statistical Software and Programming Language

- R, Matlab, Latex, Markdown, Python (Advanced)
- C, C++, Mathematica, Julia (Intermediate)
- SQL, HTML (Basic)

Languages

- Italian: Mother tongue;
- English: Spoken and written fluent;
- French, Farsi and Spanish: Basic level.

Updated April 22, 2024.