Joerg Osterrieder

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Funding Acknowledgements

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Assoc. Prof. Dr. Jörg Robert Osterrieder Professor of Finance and Artificial Intelligence Department of High-Tech Business and Entpreneurship University of Twente Drienerlolaan 5, 7522 NB Enschede, Netherlands E-mail: joerg.osterrieder@utwente.nl

Summary

Joerg Osterrieder is Associate Professor of Finance and Artificial Intelligence at the University of Twente in the Netherlands, Professor of Sustainable Finance at Bern Business School in Switzerland, and Advisor on Artificial Intelligence to the ING Group's Global Data Analytics Team. He has more than 15 years of experience in financial statistics, quantitative finance, algorithmic trading, and the digitization of the finance industry. Joerg is the Chair of the European COST Action 19130 Fintech and Artificial Intelligence in Finance, an interdisciplinary research network comprised of over 300 researchers from 51 countries globally. As the Coordinator for the nominated Marie Sklodowska-Curie Action Industrial Doctoral Network on Digital Finance, Joerg chairs a consortium comprised of 18 distinguished partners from both academia and industry throughout Europe, dedicated to enhancing and fortifying research and PhD-level education. He is a founding associate editor of Digital Finance, editor of Frontiers Artificial Intelligence in Finance, and frequent reviewer for leading academic journals. He also serves as an expert reviewer for the European Commission's "Executive Agency for Small and Medium-Sized Enterprises" and "European Innovation Council Accelerator Pilot" programs. He was the director of studies for an executive education course titled "Blockchain, Machine Learning, and Data Science in Finance" and the primary organizer of a series of annual research conferences on Artificial Intelligence in Finance. In close collaboration with the Finance industry, he has led or co-led over thirty national and international research projects on a wide range of quantitative, data-driven topics over the past few years. Previously he worked as an executive director at Goldman Sachs and Merrill Lynch, as quantitative analyst at AHL as well as a member of the senior management at Credit Suisse Group. Joerg is now active at the intersection of academia and industry, focusing on the implementation of research results in the financial services industry.

Key Achievements and Outputs

- September 2020 - May 2025. I am the Action Chair of the COST Action CA19130 Fintech and AI in Finance (https://www.cost.eu/actions/CA19130/). With a network of 49 countries and 270+ researchers, we are one of the largest and the most active European COST Action. Within the context of those research cooperations, we are working on a substantial number of research topics, including, but not limited to: Reinforcement learning for trading, Sentiment analysis for Finance, Machine learning for Finance, Fintech applications, Blockchain and Cryptocurrencies.

This COST Action has been funded by the European Union under its research frameworks H2020 and Horizon Europe since September 2020.

- FIN-TECH – Financial Supervision and Technology Compliance Training Programme / Project leader / 200'000 EUR / Europe Horizon 2020 / April 2018 - April 2021, network of 20 partners across Europe, with all 27 national regulatory authorities from the European endorsing and supporting the project. Member of the Executive Commitee and work package leader for Blockchain. 1'200'000 EUR total funding.
- July 2023, Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives, Principal investigator on the Swiss National Science Foundation (SNSF) research project on Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives, coordinating a team of two PhD students and cooperating with additional researchers from Switzerland and across Europe.
- November 2022: SNSF Lead Agency with Czech Republic, Switzerland (B. Hadji Misheva, E. Baumohl, Š. Lyócsa, O. Deev, T. Plíhal, J. Osterrieder), "Network-based credit risk models in P2P lending markets", Co-Principal Investigator on the Swiss National Science Foundation (SNSF) reserach project on Network-based credit risk models in P2P lending markets, coordinating a team of two PhD students and cooperating with additional researchers from Switzerland and the Czech Republic.
- August 2022, SNF Exchange, Anomaly and fraud detection in blockchain networks, Principal Investigator
- Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives / Project leader / Swiss National Science Foundation / 236'118 CHF / August 2023 - August 2026
- Network-based credit risk models in P2P lending markets / Project leader / Swiss National Science Foundation / 347'836 CHF / August 2022 - August 2025
- Anomaly and fraud detection in blockchain networks / Project leader / Swiss National Science Foundation / 6'700 CHF / August 2022 - August 2023
- Fintech and AI in Finance / Project leader / COST Action CA19130 Travel Grants / 6300 EUR/ November 2021 - October 2022
- August 22 - 24, 2022: Head of the Local Organizing Committee, FinanceCom 2022 (https://www.financecom2022.nl/schedule/), International Research Conference on Fintech and Artificial Intelligence in Finance with 30 speakers from 13 countries, University of Twente, Enschede, Netherlands
- 7th European COST conference on Artificial Intelligence in Finance (https://conference.fin-ai.eu/AI-Conference-in-Finance/), Member of the Scientific Committee, Bern, Switzerland, September 30, 2022
- October 11, 2022, Panelists, 11th European Financial Regulation Conference (https://www.qed.eu/event/11th-annual-eu-financial-regulation-conference/), Digital transformation of EU's financial markets, Panelists together with Mattias Levin, Deputy Head of Unit, Digital Finance, European Commission and Ralf Schneider, Allianz Group CIO Panel discussion (https://www.youtube.com/watch?v=JGG5hp3EZs8), Brussels, Belgium
- September 23, 2022, Invited Honorary Speaker, Artificial Intelligence in Finance, FinTech Days Tirana: Digital Transformation: Where Tech meets Finance (https://www.fintechdays.al), Tirana, Albania, opening the conference together with the Vice-Major of Tirana and the Vice-Governor of the Central Bank of Albania
- February 14 -17, 2022, Invited Keynote Speech, Bank for International Settlements, Irving Fisher Committee on Central Bank Statistisk, IFC workshop on "Data science in central banking: Applications and Tools (https://www.bis.org), Fintech and Artificial Intelligence in Finance - An Overview, Presentation (https://www.youtube.com/watch?time_continue=14&v=NbxGTeGtKzA&feature=emb_logo), Recording and Slides (https://www.bis.org/ifc/events/220214_ifc.htm)
- Sept 17, 2021, 7th annual Columbia-Bloomberg Machine Learning in Finance conference (https://cfe.columbia.edu/events/7th-annual-bloomberg-columbia-machine-learning-finance-workshop-2021),

Columbia University in the City of New York, Bloomberg and Columbia University, Generative Adversarial Networks and its Applications in Finance, joint work with Ali Hirsa, Columbia University

- Sept 13-17, 2021, Generative Adversarial Networks and some applications in Finance, Advances in Stochastic Analysis for Handling Risks in Finance and Insurance at the CIRM in Luminy (near Marseille), Invited Speaker, Centre International de Rencontres Mathématiques, CIRM Conference (https://conferences.cirm-math.fr/2266.html)
- Member of the Editorial Board of Journal of Investment Strategies (http://prod.risk.bb8.incinsight.net/journal-of-investment-strategies), since 2021. Editor-in-Chief: Prof. Ali Hirsa, Columbia University. List of Editors (https://www.risk.net/static/journal-of-investment-strategies-editorial-board). Advisory Board: Robert Engle - NYU Stern School of Business (https://www.risk.net/static/robert-engle); Kenneth A. Froot - Harvard Business School (https://www.risk.net/static/kenneth-froot); Robert Jarrow - Cornell University, Johnson School of Business (https://www.risk.net/static/robert-jarrow)

Research Interests

European COST (Cooperation in Science and Technology) Action 19130 Fintech and Artificial Intelligence in Finance

I am the Action Chair of the COST Action Fintech and AI in Finance. With a network of 49 countries and 270+ researchers, we are one of the largest and the most active European COST Action. Within the context of those research cooperations, we are working on a substantial number of research topics, including, but not limited to: Reinforcement learning for trading, Sentiment analysis for Finance, Machine learning for Finance, Fintech applications, Blockchain and Cryptocurrencies. This COST Action has been funded by the European Union under its research frameworks H2020 and Horizon Europe since September 2020.

Global reseearch cooperations

I have close research cooperations with academics from around the globe

- Professor Ali Hirsa, Columbia University, US, jointly working on synthetic data generation, reinforcement learning for finance, explainable artificial intelligence, co-supervising MSc and PhD students
- Professor Stephan Sturm, Worcester Polytechnic Institute, US, working on financial mathematics, including reinforcement learning for Finance, co-supervising MSc and PhD students
- Professor Stephen Chan, American University of Sharjah, UAE, working on blockchain and cryptocurrencies
- Professor Saralees Nadarajah, Manchester University, UK, working on statistical properties of cryptocurrencies
- Professor Codruta Mare, Babes-Bolyai University, Romania, working on sentiment analysis for Finance
- Professor Ioana-Florina Coita, University of Oradea, Romania, working on sentiment analysis for Finance
- Professor Branka Hadji Misheva, Bern University of Applied Sciences, Switzerland, working on reinforcement learning for finance and explainable AI for Finance

- Professor Ronald Hochreiter, Vienna University of Business and Economics, Austria, working on AI and financial technology

PhD Co-supervision and PhD committees

I am involved in the PhD Co-Supervision and PhD committees of several universities in Europe and the US.

Ongoing

- tbd, Strengthening European financial service providers through applicable reinforcement learning, co-promotor, University of Twente, 2024 -
- tbd, Modelling green credit scores for a network of retail and business clients, co-promotor, University of Twente, 2024 -
- tbd, Industry standard for blockchain, co-promotor, University of Twente, 2024 -
- tbd, A recommender system to re-orient investments towards more sustainable technologies, co-promotor, University of Twente, 2024 -
- tbd, Investigating the utility of classical XAI methods in financial time series, co-promotor, University of Twente and BFH, 2024 -
- tbd, Fair Algorithmic Design and Portfolio Optimization under Sustainability Concerns, co-promotor, University of Twente and BFH, 2024 -
- tbd, Classical XAI methods in financial time series, co-promotor, University of Twente and BFH, 2024 -
- tbd, Fair Algorithmic Design under Sustainability Concerns, co-promotor, University of Twente and BFH, 2024 -
- tbd, Narrative Digital Finance, co-promotor and daily supervisor, University of Twente and BFH, 2024 -
- tbd, Application of Machine Learning in Finance Accounting, supervisor, University of Twente, 2024 -
- Gianmarco Gargiulo, Narrative Digital Finance, co-promotor and daily supervisor, University of Twente and BFH, 2023 -
- Maria Voineag, WU Vienna, Innovation and Regulation in the Digital Age: A Study of Regulatory Sandboxes, Stablecoin Assets, and NFT Lending in the European Union, Member of the supervision team, 2023 -
- Lennart Baals, University of Twente, Network-based credit models for P2P lending, co-promotor and daily supervisor, 2022 -
- Yiting Liu, University of Twente, Network-based credit models for P2P lending, co-promotor and daily supervisor, 2022 -
- Sebastian Singer, WU Vienna, 2021 - 2025, co-advisor and member of the PhD Committee

Completed

Dr. Patchara Santawisook, August 2022, "Price Impact of VIX Futures and Two Order Book Mean-Field Games", member of the PhD Committee, main supervisor: Prof. Dr. Stephan Sturm, Worcester Polytechnic University (WPI), US. Dissertation Committee: Dr. Stephan Sturm, WPI (Advisor), Dr. Marcel Y. Blais, WPI, Dr. Jörg Osterrieder, University of Twente, Dr. Andrew Papanicolaou, North Carolina State University, Dr. Qingshuo Song, WPI Dr. Frank Zou, WPI

Dr. Weilong Fu, Innovative Derivate Pricing and Time Series Simulation techniques via machine and deep learning, member of the PhD Committee and co-supervisor, main supervisor: Prof. Dr. Ali Hirsa, Columbia University, US, June 2022

Dr. Piotr Kotlarz, 2019 - 2023, local advisor, PhD at University of Liechtenstein

Dr. Branka Hadji Misheva, 2019 - 2023, local advisor, PhD at University of Pavia, Italy

Dr. Rui Li, 2020, PhD examiner, main supervisor: Saralees Nadarajah, University of Manchester, UK

Dr. Idika Okorie, 2019, PhD examiner, main supervisor: Saralees Nadarajah, University of Manchester, UK

Dr. M. Weibel, 2019, PhD examiner, main supervisor: Juri Hinz, University of Technology, Sydney, Australia

ING Group - University of Twente Cooperation - Associate Professorship Finance and Artificial Intelligence

I am working closing with ING Group, the Global Analytics team, on advanced, quantitative, data-driven research projects, relevant both for academia and industry.

1. Applications of synthetic data generation for Finance

•Testing trading strategies robustness, comparing portfolio construction methods, estimating the risk of a portfolio or a strategy, alternative pricing and hedging of options and other derivatives, generating trading signals, detecting anomalies in fundamental data, with a particular focus on using generative adversarial networks.

•Synthetic generator for (arbitrage-free) volatility surfaces

•Synthetic data generators that are differentially private, i.e. do not leak information about the original data, and still have enough features

2. Research on risk management related topics

3. Privacy-enhancing techniques for storing and analysing confidential data

4. Federated Learning. This is a machine learning technique that trains an algorithm across multiple servers holding local data samples, without exchanging them. Research is needed into how this can be used in Finance applications, especially those that use confidential data.

5. Applications of Reinforcement learning in Finance. Existing applications include portfolio optimization and optimal trade execution. Further research is needed to extend this technique to other areas in finance.

6. The value of innovation projects in Finance. Innovative projects have a high-risk of failure and are often also focused on cost reduction and loss-avoidance topics. Therefore the impact on the P&L of the company is not immediately clear. The project is supposed to find ways of measuring the cost/benefit ratio and provide a conceptual approach.

7. The use of "meta labeling" technique (tailored to non-HFT strategies). The approach consist in building a secondary ML model that learns how to use a primary exogenous model. It can help build an ML system on top of a white box (like a fundamental model founded on economic theory). The advantages of the approach is that it uses a way higher signal to noise ratio than when applying ML directly to (very noisy) traditional financial data.

8. Early warning systems for credit risk. Despite many years of research into credit risk, large and unexpected losses still happen frequently. Research on the causal relationships between market prices and external ratings as well as applying machine learning techniques and using new datasets for predicting downgrading and default of loans is beneficial to reduce credit losses.

Academic Appointments

- June 2021 – University of Twente, Netherlands

Associate Professor of Finance and Artificial Intelligence, Department of High-tech Business and Entrepreneurship, Cooperation with ING Group on Artificial Intelligence in Finance

- August 2022 – Bern University of Applied Sciences, Switzerland

Professor of Sustainable Finance, Institute of Applied Data Science and Finance

- January 2017 – July 2022 Zurich University of Applied Sciences, Switzerland

Professor of Finance and Risk Management, School of Engineering

- January 2015 – December 2016 Zurich University of Applied Sciences, Switzerland

Senior Lecturer in Quantitative Finance, School of Engineering

Additional apppointments

- Non-visiting external examiner in the Department of Artificial Intelligence at the University of Malta, 2023
- Visiting Research Professor at American University of Sharjah, UAE, since January 2022

Visiting Researcher at American University of Sharjah, United Arab Emirates. Various research stays at the Department of Mathematics and Statistics, January 2022 - December 2024. Working on: 1. Anomaly and fraud detection in blockchain networks (Swiss National Science Foundation Grant IZSEZ0_211195) 2. Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives (Swiss National Science Foundation Grant IZCOZ0_213370) 3. Artificial Intelligence in Finance

- Visiting Guest Professor at Bucharest University of Economic Studies, since October 2023

Industry Experience

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- Nov 2012 - Dec 2014: Quantitative Analyst and Portfolio Management, Man Investments, Pfäffikon, Switzerland

Research on multi-asset trading strategies. Implementation of a multi-asset risk parity portfolio (Man AHL Target Risk). Incooperating trend following elements, down-side protection strategies and diversification properties into new products.

- Feb 2012 - Oct 2012: Senior Vice President, Credit Suisse Group, Regulatory Projects, Zürich, Switzerland

Projects related to new regulatory initiatives.

- April 2009- Jan 2012: Vice President, Global Markets, Goldman Sachs, London, UK

Research and implementation of algorithmic execution strategies for the European and US markets.

- April 2007- March 2009: Associate, Global Markets, Merrill Lynch, London, UK

Research and implementation of algorithmic execution strategies for the European and US markets.

- June 2002 - August 2002: Summer Associate, The Boston Consulting Group, Düsseldorf, Germany

Strategy consulting for a large industrial conglomerate

- June 2001 - August 2001: Summer Associate, Oliver Wyman & Co, Frankfurt, Germany

Strategy consulting for a large international insurance company

Education

- January 2016 - December 2017, University Teaching Qualification, Zurich University of Higher Education
- July 2003 - March 2007 PhD Quantitative Finance, ETH Zurich, Swiss Federal Institute of Technology, Department of Mathematics, Switzerland

Thesis: Market microstructure and Arbitrage opportunities in financial markets Thesis supervisors: Prof. Dr. F. Delbaen, Prof. Dr. P. Embrechts, Prof. Dr. T. Rheinländer

- September 1998 - August 2002, MSc in Mathematics and Business, University of Ulm, Germany
- September 2000 - June 2002, MSc in Mathematics, Syracuse University, US

Recent Publications

- Google Scholar (https://scholar.google.com/citations?hl=en&user=ocRaXoIAAAAJ&view_op=list_works&sortby=pubdate)
- Arxiv Author (https://arxiv.org/a/osterrieder_j_1.html)
- OrcID: 0000-0003-0189-8636 (https://orcid.org/0000-0003-0189-8636)
- May 2021: The Applicability of Self-Play Algorithms to Trading and Forecasting Financial Markets, Jan-Alexander Posth, Piotr Kamil Kotlarz, Branka Hadji-Misheva, Joerg Osterrieder, Peter Schwendner, 31 May 2021, Frontiers Artificial Intelligence - Artificial Intelligence in Finance, https://doi.org/10.3389/frai.2021.668465

- Hirsa, A., Osterrieder, J., Misheva, B.H., Cao, W., Fu, Y., Sun, H., & Wong, K.W. (2021). The VIX index under scrutiny of machine learning techniques and neural networks. arxiv (https://arxiv.org/abs/2102.02119)
- Hirsa, Ali and Hadji Misheva, Branka and Osterrieder, Joerg and Posth, Jan-Alexander, Deep reinforcement learning on a multi-asset environment for trading (June 15, 2021). Available at SSRN: https://ssrn.com/abstract=3867800

Publications and Preprints

Working Papers

Machado, M., Amato, A., and Osterrieder, J. R. (2023). Integration of early warning systems and customer segmentation methods in the financial industry - A systematic literature review. International Journal of Information Management Data Insights. Submitted manuscript.

Machado, M. R., van Braak, B., and Osterrieder, J. R. (2023). How can consumers without credit history benefit from the use of information processing and machine learning tools by financial institutions? Information Processing and Management. Submitted manuscript.

A. Hirsa, J. Osterrieder, B. Hadji-Misheva, and J.-A. Posth. Deep reinforcement learning on a multi-asset environment for trading. arXiv preprint arXiv:2106.08437, 2021.

B. H. Misheva, J. Osterrieder, A. Hirsa, O. Kulkarni, and S. F. Lin. Explainable AI in credit risk management. arXiv preprint arXiv:2103.00949, 2021.

J. Osterrieder. Reinforcement Learning - An Overview. Invited paper by the main editor of Digital Finance (Springer).

Osterrieder, Joerg and Seigne, Michael, Rethinking Share Buyback Execution: Insights into Temporal Optionality and Empirical Anomalies (July 29, 2023). Available at SSRN: https://ssrn.com/abstract=4525779 or http://dx.doi.org/10.2139/ssrn.4525779

Osterrieder, Joerg and Seigne, Michael, Temporal Optionality in Share Buyback Execution: An Empirical Anomaly and Value Optimization Approach (July 29, 2023). Available at SSRN: https://ssrn.com/abstract=4525781 or http://dx.doi.org/10.2139/ssrn.4525781

Osterrieder, Joerg and Seigne, Michael, Navigating Share Buyback Programs: A Genetic Algorithm Approach to Outperform the Buyback Benchmark (August 1, 2023). Available at SSRN: https://ssrn.com/abstract=4539469 or http://dx.doi.org/10.2139/ssrn.4539469

Osterrieder, Joerg and Seigne, Michael, The Mysteries of Share Buyback Execution: Trading Anomalies, Benchmarks, and Psychological Misconceptions (July 15, 2023). Available at SSRN: https://ssrn.com/abstract=4511382 or http://dx.doi.org/10.2139/ssrn.4511382

Osterrieder, Joerg and Seigne, Michael, A Free Lunch for Share Buybacks (August 1, 2023). Available at SSRN: https://ssrn.com/abstract=4539767 or http://dx.doi.org/10.2139/ssrn.4539767

Osterrieder, Joerg and Seigne, Michael, A Free Lunch Hypothesis for Share Buybacks (July 30, 2023). Available at SSRN: https://ssrn.com/abstract=4526098 or http://dx.doi.org/10.2139/ssrn.4526098

Seigne, Michael and Osterrieder, Joerg, The Hidden Impact of the SEC's Share Repurchasing Disclosure Modernization on Corporate Governance (August 1, 2023). Available at SSRN: https://ssrn.com/abstract=4537835

Seigne, Michael and Osterrieder, Joerg, The Great Deception: A Comprehensive Study of Execution Strategies in Corporate Share Buy-Backs (July 3, 2023). Available at SSRN: https://ssrn.com/abstract=4499366 or http://dx.doi.org/10.2139/ssrn.4499366

Publications

Osterrieder, J., & Seigne, M. (2023). Examining share repurchase executions: Insights and synthesis from the existing literature. Frontiers in Applied Mathematics and Statistics, 9. https://doi.org/10.3389/fams.2023.1265254

Osterrieder, J., Hadji Misheva, B., & Machado, M. (2023). Digital Finance: Reaching New Frontiers. Open Research Europe, 3, Article 38. https://doi.org/10.12688/openreseurope.15386.1

Coita, I. F., Belbe, S., Mare, C., Osterrieder, J., & Hopp, C. (2023). Modelling taxpayers' behaviour based on prediction of trust using sentiment analysis. Finance Research Letters, 58(Part C), Article 104549. Advance online publication. https://doi.org/10.1016/j.frl.2023.104549

van Hillegersberg, J., Osterrieder, J., Rabhi, F., Abhishta, A., Marisetty, V., & Huang, X. (2023). Preface. In Enterprise Applications, Markets and Services in the Finance Industry: 11th International Workshop, FinanceCom 2022, Twente, The Netherlands, August 23–24, 2022, Revised Selected Papers (pp. vii-viii). (Lecture notes in business information processing; Vol. 467)

Seigne, M., & Osterrieder, J. R. (2023, October 27). Implementation of share buybacks and their impact on corporate governance. Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2023/10/27/implementation-of-share-buybacks-and-their-impact-on-corporate-governance/

Osterrieder J (2023) Share buybacks: a theoretical exploration of genetic algorithms and mathematical optionality. Front. Artif. Intell. 6:1276804. doi: 10.3389/frai.2023.1276804

Osterrieder J and Seigne M. Unraveling market mysteries: a comprehensive review of financial anomalies and puzzles. Open Res Europe 2023, 3:172 (https://doi.org/10.12688/openreseurope.16436.1)

Liu Y, Osterrieder J, Hadji Misheva B et al. Navigating the Environmental, Social, and Governance (ESG) landscape: constructing a robust and reliable scoring engine - insights into Data Source Selection, Indicator Determination, Weighting and Aggregation Techniques, and Validation Processes for Comprehensive ESG Scoring Systems [version 1; peer review: 3 approved]. Open Res Europe 2023, 3:119 (https://doi.org/10.12688/openreseurope.16278.1)

B. Hadji Misheva, D. Jaggi, J. Posth, T. Gramespacher, J. Osterrieder, Audience-dependent Explanations for AI-based Risk Management Tools: A Survey, Frontiers in Artificial Intelligence, 186, 2021

Osterrieder, J. (2022). Discussion on: "Programmable money: next generation blockchain based conditional payments" by Ingo Weber and Mark Staples. Digital Finance, 4(2-3), 137-138. https://doi.org/10.1007/s42521-022-00063-9

Henrici, A., & Osterrieder, J. (2022). Editorial: Artificial intelligence in finance and industry: Highlights from 6 European COST conferences. Frontiers in Artificial Intelligence, 5, Article 1007074. https://doi.org/10.3389/frai.2022.1007074

J.-A. Posth, P. Kotlarz, B. H. Misheva, J. Osterrieder, and P. Schwendner. The applicability of self-play algorithms to trading and forecasting financial markets. Frontiers in Artificial Intelligence, 4:57, 2021.

J. Osterrieder, D. Kucharczyk, S. Rudolf, and D. Wittwer. Neural networks and arbitrage in the Vix. Digital Finance, 2(1):97–115, 2020.

P. Giudici, R. Hochreiter, J. Osterrieder, J. Papenbrock, and P. Schwendner. AI and financial technology. Frontiers in Artificial Intelligence, 2:25, 2019.

J. Osterrieder and A. Barletta. Editorial on the Special Issue on Cryptocurrencies. Digital Finance 1, 1–4, 2019.

J. Osterrieder and J. Lorenz. A statistical risk assessment of bitcoin and its extreme tail behavior. Annals of Financial Economics, 12(01):1750003, 2017.

J. Osterrieder, M. Strika, and J. Lorenz. Bitcoin and cryptocurrencies — not for the faint-hearted. International Finance and Banking, 4(1):56, 2017.

S. Chan, J. Chu, S. Nadarajah, and J. Osterrieder. A statistical analysis of cryptocurrencies. Journal of Risk and Financial Management, 10(2):12, 2017.

J. Chu, S. Chan, S. Nadarajah, and J. Osterrieder. Garch modelling of cryptocurrencies. Journal of Risk and Financial Management, 10(4):17, 2017.

J. Osterrieder. The statistics of bitcoin and cryptocurrencies. In 2017 International Conference on Economics, Finance and Statistics (ICEFS 2017), Hong Kong, 14-15 January 2017. Atlantis Press, 2017.

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J. Lorenz and J. Osterrieder. Simulation of a limit order driven market. The Journal Of Trading, 4(1):23–30, 2008.

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J. R. Osterrieder and T. Rheinländer. Arbitrage opportunities in diverse markets via a non-equivalent measure change. Annals of Finance, 2(3):287– 301, 2006.

Pre-prints and other publications

Lu, J., & Osterrieder, J. (2022). Feature Selection via the Intervened Interpolative Decomposition and its Application in Diversifying Quantitative Strategies. ArXiv.org

F. Eckerli and J. Osterrieder. Generative adversarial networks in finance: an overview. arXiv preprint arXiv:2106.06364, 2021.

R. Samuel, B. D. Nico, P. Moritz, and J. Osterrieder. Wasserstein GAN: Deep generation applied on bitcoins financial time series. arXiv preprint arXiv: 2107.06008, 2021

L. Odermatt, J. Beqiraj, and J. Osterrieder. Deep reinforcement learning for finance and the efficient market hypothesis. Available at SSRN 3865019, 2021.

A. Hirsa, B. Hadji Misheva, J. Osterrieder, W. Cao, Y. Fu, H. Sun, and K. W. Wong. The Vix index under scrutiny of machine learning techniques and neural networks. Available at SSRN 3796351, 2021.

J. Choudary and J. Osterrieder. Machine learning tools for probability of default and rating downgrades of corporate and government bonds. Available at SSRN 3461558, 2019.

J. Osterrieder, L. Vetter, and K. Röschli. The vix volatility index-a very thorough look at it. Available at SSRN 3311727, 2019.

A. Gabler, D. Perez, U. Sutter, D. Kucharczyk, J. Osterrieder, and M. Reitenbach. Pattern learning via artificial neural networks for financial market predictions. Available at SSRN 3243479, 2018.

A. Gabler, M. Wiegand, and J. Osterrieder. Pricing, loss and sensitivity analysis of barrier options via regression. Available at SSRN 3194111, 2018.

D. Kucharczyk, J. Osterrieder, S. Rudolf, and D. Wittwer. Neural networks and arbitrage in the vix–a deep learning approach for the vix. Available at SSRN 3305686, 2018.

S. Fritzmann, D. Jaggi, and J. Osterrieder. A statistical analysis of carry trading. Available at SSRN 2993902, 2017.

J. Rohrbach, S. Suremann, and J. Osterrieder. Momentum and trend following trading strategies for currencies revisited-combining academia and industry. Available at SSRN 2949379, 2017.

J. Osterrieder. The statistics of bitcoin and cryptocurrencies. Available at SSRN 2872158, 2016.

J. Osterrieder. A theoretical model of the limit order book and some applications. Available at SSRN 881274, 2006.

J. Osterrieder. A dynamic market microstructure model with insider information and order book. Available at SSRN 676028, 2005.

Media

- September 2023, Are companies being ripped off by big banks over share buybacks? (https://www.thetimes.co.uk/article/a011bfb4-4f18-11ee-974b-e2b9321088c0?shareToken=fdd0b1d953b4da1d85c0eb3a2be5a6c9), The Sunday Times (https://www.thetimes.co.uk/), September 10, 2023
- August 2023, SocietyBytes Science Magazine, Wie Geschlechtervielfalt und KI die Fintech-Branche verändern (https://www.societybyte.swiss/2023/08/11/was-die-fintech-branche-veraendern-wird/)
- July 2023, Financial Times Weekend Edition, Opinion On Wall Street. If companies are going to buy back shares, they should pay a fair price by Brooke Masters. (https://www.ft.com/content/5303e9a3-603d-4621-88e3-24f07c87fc69) Some are entering into oblique contracts with brokers that can cost far more than purchasing on the open market. Referencing our work on share buybacks.
- February 2022, Künstliche Intelligenz im Staat, Governance aus Sicht der Wissenschaft, Verwaltung und Industrie (https://www.youtube.com/watch?v=cXmuBsNoDaA&t=13s)

- February 2022, Experteninterview Pionierblog-Beitrag für PostFinance, Künstliche Intelligenz in der Finanzindustrie (https://www.postfinance.ch/en/about-us/company/pioneer-stories/financial-industry-using-artificial-intelligence-smartly.html)
- October 2021, Greater Zurich boosts AI in Finance (https://www.greaterzuricharea.com/en/news/greater-zurich-boosts-ai-finance?)
- April 2021: Article on our Innosuisse Fairtrade Capital together with the School of Management and Law, ZHAW; Trying to bring producers and end-consumers together via digital tokens and the blockchain (https://genevasolutions.news/sustainable-business-finance/can-blockchain-help-bridge-the-financing-gap-for-fairtrade-farmers)
- November 2021: Jörg Osterrieder von der ZHAW über Fintech, Openbanking und Blockchain (https://www.netzwoche.ch/news/2020-11-04/joerg-osterrieder-von-der-zhaw-ueber-fintech-openbanking-und-blockchain)
- September 2020, Fintech interview: “Artificial intelligence must not be a black box” (https://www.zhaw.ch/en/engineering/about-us/news/news/event-news/fintech-interview-artificial-intelligence-must-not-be-a-black-box/)

Conference (Co-) Organization

- September 27, 2023 - September 28, 2023, Annual Fintech and AI in Finance MC Meeting, Bern, Switzerland, Main Organizer
- July 10, 2023 - July 11, 2023, Fintech and AI in Finance, Helsinki, Finland, Main (Co-) Organizer
- June 19, 2023 - June 23, 2023, Fintech and AI in Finance Training School, Enschede, Netherlands, Main Organizer
- June 1, 2023 - June 2, 2023, Women in Fintech and AI (3rd edition), Coimbra, Portugal
- May 15, 2023 - May 16, 2023, COST FinAI Meets Brussels, Brussels, Belgium, Main Organizer
- February 1, 2023 - February 2, 2023, Diversity challenges and stakeholders' engagement, Babes-Bolyai University, Cluj Napoca, Romania
- October 5-7, 2022, Co-Organizer, European Alternative Finance Conference, Utrecht, Netherlands
- October 5, 2022, Management Committee COST Action CA19130, Utrecht, Netherlands, Fintech and AI in Finance
- March 24 - 25, 2022, Machine Learning approaches Finance and Management (https://www.wiwi.hu-berlin.de/de/forschung/irtg/events/2022/xai2022), Member of the Organization Committee, Humboldt University Berlin, Germany,
- April 12, 2021, Fintech and Artificial Intelligence in Finance, 1st International Conference on Economics and FinTech, Athens, Greece, organized within the framework of the EU H2020 project Fintech no. 825215 (topic ICT-35-2018, Type of action: CSA) and the COST Action Fintech and AI in Finance (Action Chair: Joerg Osterrieder)
- Main Organizer and Chair of the Organization Committee
  - 1st European Conference on Artificial Intelligence in Industry and Finance, September, 2016, Winterthur, Switzerland
  - 2nd European Conference on Artificial Intelligence in Industry and Finance, September, 2017, Winterthur, Switzerland
  - 3rd European Conference on Artificial Intelligence in Industry and Finance, September, 2018, Winterthur, Switzerland
  - 4th European Conference on Artificial Intelligence in Industry and Finance, September, 2019, Winterthur, Switzerland

    - 5th European Conference on Artificial Intelligence in Industry and Finance, September, 2020, Winterthur, Switzerland
    - 6th European Conference on Artificial Intelligence in Industry and Finance, Winterthur, Switzerland, Sept 9, 2021 (https://www.meetup.com/Fintech_AI_in_Finance/events/275742369/)
    - 7th European Conference on Artificial Intelligence in Industry and Finance, Bern, Switzerland, Sept 8, 2022 (https://conference.fin-ai.eu/AI-Conference-in-Finance/)
    - 8th European Conference on Artificial Intelligence in Industry and Finance, Bern, Switzerland, Sept 28, 2023 (https://www.meetup.com/fintech_ai_in_finance/events/289808544/)

- Innovation Workshops
    - Networking Event Series Artificial Intelligence – Innovation Workshop 2022, March 15, 2022 (https://www.meetup.com/Fintech_AI_in_Finance/events/xgrphsydcfbtb/)

- Academia - Industry Collaboration Workshops
    - Networking Event Series AI – Collaboration Workshop 2022 on Blockchain and DLT, May 11, 2022 (https://www.meetup.com/Fintech_AI_in_Finance/events/277736229/)
    - Networking Event Series AI – Collaboration Workshop 2023 on Data in Industry, May 11, 2023 (https://www.meetup.com/Fintech_AI_in_Finance/events/277736244/)
    - Networking Event Series AI – Collaboration Workshop 2024 on AI in Credit Risk, May 10, 2024 (https://www.meetup.com/Fintech_AI_in_Finance/events/277736251/)

Seminars and Talks (co-) organized

For a recent overview, see Meetup Fintech AI in Finance (https://www.meetup.com/Fintech_AI_in_Finance/events/)

- September 30, 2022, Co-Organizer, 7th European COST conference on Artificial Intelligence in Finance (https://conference.fin-ai.eu/AI-Conference-in-Finance/), International Research Conference on Fintech and Artificial Intelligence in Finance with more than 100 participants from academia and industry, Bern Business School, Bern, Switzerland
- August 22 - 24, 2022: Head of the Local Organizing Committee, FinanceCom 2022 (https://www.financecom2022.nl/schedule/), International Research Conference on Fintech and Artificial Intelligence in Finance with 30 speakers from 13 countries, University of Twente, Enschede, Netherlands
- August 22, 2022, Organizer, COST Action 19130 Fintech and Artificial Intelligence in Finance, Core Group Meeting, University of Twente, Enschede, Netherlands
- August 23, 2022, Co-Organizer, COST Action 19130 Fintech and Artificial Intelligence in Finance, Working Group Meeting, University of Twente, Enschede, Netherlands
- September 9, 2021: Main organizer of the 6th European COST Conference on Artificial Intelligence in Industry and Finance (https://www.zhaw.ch/en/engineering/institutes-centres/iamp/events/artificial-intelligence-in-industry-and-finance/)
- 19th June 2020 Momentum and contrarian effects on the cryptocurrency market - an interactive shiny application I Prof. Pawel Sakowski, University of Warsaw
- 1st July 2020 Explainability of a Machine Learning Granting Scoring Model in Peer-to-Peer Lending I Prof. Javier Arroyo, UCM
- 30th September 2020 Blockchain for finance: Bond issuance and asset trading I Dr. Veni Arakelian, Senior Manager Piraeus Bank
- 29th October 2020 Investing with Cryptocurrencies - On the Informative Effects of Experts Sentiment

I Dr. Simon Trimborn, City University of Hong Kong
- 11th November 2020 Central Bank Digital Currencies I Henry Holden, Advisor – Bank for International Settlements - Innovation HUB
- 3rd December 2020 Portfolio Compression in Financial Networks: Incentives and Systemic Risk I Dr. Steffen Schuldenzucker, Goethe University Frankfurt
- 08 January 2021 Blockchain Technology and Financial Regulation: A Risk-Based Approach to the Regulation of Initial Coin Offerings (ICOs) I Alexis Collomb & Primavera de Filippi, CNAM
- 12 March 2021 Blockchain Technology as a Regulatory Technology: From Code is Law to Law is Code I Samer Hassan, Universidad Complutense de Madrid
- 9 April 2021 FinTech, RegTech, and the Reconceptualization of Financial Regulation I Douglas W. Arner and Ross P. Buckley, University of Hong Kong and University of New South Wales
- 17 May 2021 Machine Learning Inference I Andreas Joseph, Bank of England

- 01.07.2020 Research Seminar: Explainability of a Machine Learning Model in Peer-to-Peer Lending
- 09.07.2020 Research Seminar: Transparency in Fintech
- 30.09.2020 Research Seminar: Blockchain for finance: Bond issuance and asset trading
- 26.10.2020 Workshop for the Central Bank of Hungary: Fintech Risk Management - Day 1
- 27.10.2020 Workshop for the Central Bank of Hungary: Fintech Risk Management - Day 2
- 29.10.2020 Research Seminar: Investing with Cryptocurrencies: On the Informative Effects of Experts Sentiment
- 11.11.2020 Research Seminar: Central Bank Digital Currencies
- 03.12.2020 Research Seminar: Portfolio Compression in Financial Networks: Incentives and Systemic Risk
- 08.01.2021 Research Seminar: A Risk-Based Approach to the Regulation of Initial Coin Offerings
- 22.02.2021 Research Seminar: Digital Asset Banking: Innovation in a Highly Regulated Market
- 25.03.2021 2nd European Research Conference: Blockchain in Finance
- 14.04.2021 Research Seminar: Central Banks on the Blockchain: Risk and Opportunity of CB Digital Currencies
- 10.05.2021 Research Seminar: Blockchain as a Regulatory Technology: From Code is Law to Law is Code
- 12.05.2021 CONFEDERATING THE SWISS CRYPTO MARKET: Blockchain Regulation Conference - Day 1
- 13.05.2021 CONFEDERATING THE SWISS CRYPTO MARKET: Blockchain Regulation Conference - Day 2
- 17.05.2021 Research Seminar: Machine Learning Inference
- 09.09.2021 6th European COST Conference on Artificial Intelligence in Industry and Finance
- June 2020 COST Fintech and AI in Finance Core Group Meeting
- July 2020 COST Fintech and AI in Finance Core Group Meeting
- Sep 20 COST Fintech and AI in Finance Core Group Meeting
- October 2020 COST Fintech and AI in Finance Core Group Meeting
- November 20 COST Fintech and AI in Finance Core Group Meeting
- December 2020 COST Fintech and AI in Finance Core Group Meeting
- January 2021 COST Fintech and AI in Finance Core Group Meeting
- February 2021 COST Fintech and AI in Finance Core Group Meeting
- March 2021 COST Fintech and AI in Finance Core Group Meeting
- Apr 21 COST Fintech and AI in Finance Core Group Meeting
- Mai 21 COST Fintech and AI in Finance Core Group Meeting

- Sep 20 1st COST Fintech and AI in Finance Management Committee Meeting
- December 2020 2nd COST Fintech and AI in Finance Management Committee Meeting
- January 2021 3rd COST Fintech and AI in Finance Management Committee Meeting
- Apr 21 4th COST Fintech and AI in Finance Management Committee Meeting

Scientific Committees

- June 12 - June 16 2023, Main Organizer and Chair, Conference and PhD Training School on Fintech and Artificial Intelligence in Finance, University of Twente, Netherlands
- June 1 - June 2, 2023, Panel Member, Research Conference on Fintech, Coimbra, Portugal
- April 13, 2023 - April 14, 2023, Diversity challenges for a sustainable Fintech, Pavia, Italy
- July 6, 2023 - July 8, 2023 Machine Learning, Artificial Intelligence and Data Protection in Fintech Conference, Dublin, Ireland
- 8th European COST conference on Artificial Intelligence in Finance, Main Organizer, Member of the Scientific Committee, Bern, Switzerland, September 29, 2022
- June 26 - 30, 2023, 22nd ECMI Conference on Industrial and Applied Mathematics (http://ecmi2023.org/), Member of the Scientific Committee, Wroclaw, Poland
- June 18 -, 2023, Queensland, Australia, International joint conference on neural networks (https://2023.ijcnn.org/), IJCNN is the premier international conference in the area of neural networks theory, analysis and applications. Session Organizer, Fair, explainable, and interpretable AI to address Fintech challenges, together with Prof. Silva and Prof. Ribeiro from the University of Coimbra, Portugal
- 5-6 May 2022, Member of the Programme Committee of Technology, Innovation and Stability: New Directions in Finance (TINFIN) (https://sites.google.com/net.efzg.hr/tinfinconference/home?authuser=0) Conference (Zagreb, Croatia and online).
- 7th European COST conference on Artificial Intelligence in Finance (https://conference.fin-ai.eu/AI-Conference-in-Finance/), Member of the Scientific Committee, Bern, Switzerland, September 30, 2022
- Technology, Innovation and Stability: New Directions in Finance (TINFIN) (https://sites.google.com/net.efzg.hr/tinfinconference/home/about?authuser=0), organised by the Faculty of Economics and Business of the University of Zagreb, Croatian Academy of Sciences and Arts and COST Action CA19130 FinAI - Fintech and Artificial Intelligence in Finance - Towards a Transparent Financial Industry, Zagreb, Croatia, May 5-6, 2022
- ECMI 2021 Conference (https://ecmi2021.uni-wuppertal.de/index.php?id=5396&L=0), European Consortium for Mathematics in Industry, April 13-15, 2021, Wupperthal, Germany
- 2015 - 2021, annually: European Conference on Artificial Intelligence in Finance and Industry, Winterthur, Switzerland
- 2021, 2022: European Conference on Artificial Intelligence in Finance, Bern, Switzerland

Services to the Academic Community

- Editor Frontier Topics in AI in Finance "Financial Risk and Blockchain" (since November 2020)
- Editor Frontier Topics in AI in Finance and Industry (since November 2020)
- Member of the Editorial Board of the Journal of Investment Strategies
- Reviewer for the Journal of Investment Strategies (since November 2020)
- Reviewer for The European Journal of Finance

- AI and Financial Technology, Edited Research Topic, https://www.frontiersin.org/research-topics/8810/ai-and-financial-technology
- Artificial Intelligence in Finance and Industry: Highlights from 6 European COST Conferences, Edited Research Topic, https://www.frontiersin.org/research-topics/18514/artificial-intelligence-in-finance-and-industry-highlights-from-6-european-cost-conferences
- Advanced Statistical Modelling for Fintech, Financial Inclusion, and Inequality, Edited Research Topic, https://www.frontiersin.org/research-topics/52797/advanced-statistical-modelling-for-fintech-financial-inclusion-and-inequality

Habilitation Commitees

- January 2023, Member of the Habilitation committee of Ing. Tomáš Plíhal, Ph.D., Finance, Department of Finance, Faculty of Economics and Administration, Masaryk University. Public lecture: FX market volatility modelling: Can we use low frequency data? Habilitation (https://www.econ.muni.cz/kalendar-akci/19431-ing-tomas-plihal-phd-public-lecture-within-the-habilitation-procedure). Board members: Chair prof. Ing. Eva Horvátová, CSc., Faculty of Economics and Administration, Masaryk University; Memers: prof. Roman Horváth, MA, Ph.D. Institute of Economic Studies, Faculty of Social Sciences, Charles University; Prof. Dr. Joerg Osterrieder, University of Twente; Prof. Dr. Natalie Packham, Berlin School of Economics and Law; doc. Ing. Eduard Baumöhl, PhD. Faculty of Economics and Administration, Masaryk University

PhD students

In Progress:

- tbd, Narrative Digital Finance, daily supervisor, 2023 -
- tbd, Narrative Digital Finance, daily supervisor, 2023 -
- Maria Voineag, WU Vienna, Innovation and Regulation in the Digital Age: A Study of Regulatory Sandboxes, Stablecoin Assets, and NFT Lending in the European Union, Member of the supervision team, 2023 -
- Lennart Baals, University of Twente, Network-based credit models for P2P lending, daily supervisor, 2022 -
- Yiting Liu, University of Twente, Network-based credit models for P2P lending, daily supervisor, 2022 -
- Sebastian Singer, WU Vienna, 2021 - 2025, co-advisor and member of the PhD Committee
- Fernando de Meer Pardo, Reinforcement Learning and Generative Adversarial Networks, daily supervisor, March 2021 to July 2022, joint with Worcester Polytechnic University (WPI), US, Prof. Dr. Stephan Sturm

Completed:

- Dr. Piotr Kotlarz, 2019 - 2023, daily supervisor, PhD at University of Liechtenstein
- Dr. Weilong Fu, Innovative Derivate Pricing and Time Series Simulation techniques via machine and deep learning, member of the PhD Committee and co-supervisor, main supervisor: Prof. Dr. Ali Hirsa, Columbia University, US, June 2022, daily (co-) supervisor, 2021 - 2022
- Dr. Patchara Santawisook, August 2022, "Price Impact of VIX Futures and Two Order Book Mean-Field Games", member of the PhD Committee, main supervisor: Prof. Dr. Stephan Sturm, Worcester Polytechnic University (WPI)
- Dr. Branka Hadji Misheva, 2019 - 2022, daily advisor, PhD at University of Pavia, Italy

- Dr. Martin Wiegand, daily advisor (2017), PhD at University of Manchester, 2018

Examination Committess:

- Dr. Rui Li, 2020, PhD examiner, main supervisor: Saralees Nadarajah, University of Manchester, UK
- Dr. Idika Okorie, 2019, PhD examiner, main supervisor: Saralees Nadarajah, University of Manchester, UK
- Dr. M. Weibel, 2019, PhD examiner, main supervisor: Juri Hinz, University of Technology, Sydney, Australia

Doctoral Training Schools

- September 13, 2023 -- September 15, 2023, Advanced Statistical Modelling for Fintech, financial inclusion and inequality, Naples, Italy, Welcome and Introduction
- September 4 - 8, 2023, European Summer School in Financial Mathematics 2023 (https://www.tudelft.nl/evenementen/2023/ewi/diam/finance-summer-school-2023), Mathematics for Fintech, Lecture on Artificial Intelligence and Deep Reinforcement Learning in Finance. Google Colab Jupyter Notebook on RL (https://colab.research.google.com/drive/11FVflQVyQWAiXEtub_H4QtKsn_q8iKim), Deep Reinforcement Learning in Finance Slides (https://drive.google.com/drive/folders/19oOn8I77E7fFkQoGLIIgbRpEykJWyvBU)
- June 19, 2023 - June 23, 2023, Fintech and AI in Finance Training School (https://conference.fin-ai.eu/PhD-School-Fintech-and-AI-in-Finance/), Enschede, Netherlands, Training School on current state-of-the-art and future challenges - Risks and Digital Assets, Main Organizer and Trainer. Welcome and Opening, Deep Reinforcement Learning, Conclusion
- April 26, 2023 -- April 28, 2023, Fintech and AI in Finance: Training School for the latest technologies and upcoming challenges, Tirana, Albania, Trainer

The five most important talks and presentations

- October 11, 2022, Panelists, 11th European Financial Regulation Conference (https://www.qed.eu/event/11th-annual-eu-financial-regulation-conference/), Digital transformation of EU's financial markets, Panelists together with Mattias Levin, Deputy Head of Unit, Digital Finance, European Commission and Ralf Schneider, Allianz Group CIO Panel discussion (https://www.youtube.com/watch?v=JGG5hp3EZs8)

- September 23, 2022, Invited Honorary Speaker, Artificial Intelligence in Finance, FinTech Days Tirana: Digital Transformation: Where Tech meets Finance (https://www.fintechdays.al), Tirana, Albania, opening the conference together with the Vice-Major of Tirana and the Vice-Governor of the Central Bank of Albania

- February 14 -17, 2022, Invited Keynote Speech, Bank for International Settlements, Irving Fisher Committee on Central Bank Statistisk, IFC workshop on "Data science in central banking: Applications and Tools (https://www.bis.org), Fintech and Artificial Intelligence in Finance - An Overview, Presentation (https://www.youtube.com/watch?time_continue=14&v=NbxGTeGtKzA&feature=emb_logo), Recording and Slides (https://www.bis.org/ifc/events/220214_ifc.htm)

- Sept 17, 2021, 7th annual Columbia-Bloomberg Machine Learning in Finance conference (https://cfe.columbia.edu/events/7th-annual-bloomberg-columbia-machine-learning-finance-workshop-2021), Columbia University in the City of New York, Bloomberg and Columbia University, Generative Adversarial Networks and its Applications in Finance, joint work with Ali Hirsa, Columbia University

- Sept 13-17, 2021, Generative Adversarial Networks and some applications in Finance, Advances in Stochastic Analysis for Handling Risks in Finance and Insurance at the CIRM in Luminy (near Marseille), Invited Speaker, Centre International de Rencontres Mathématiques, CIRM Conference (https://conferences.cirm-math.fr/2266.html)

Talks and Presentations

- December 8, 2023, Invited Talk, The 3rd Yushan Conference (https://linminbin.wixsite.com/yushan-conference), National Yang Ming Chiao Tung University, Taiwan. Share Buy-Back Executions - A multi-billion dollar free lunch.
- September 18, 2023, Invited Seminar Talk, National Yang Ming Chiao Tung University, Taiwan. Share Buy-Back Executions - A multi-billion dollar free lunch.

- March 27, 2022, Invited Talk, Mathematical Seminar, Worcester Polytechnic Institute, WPI, Worcester, USA (Prof. Dr. S. Sturm). A tour through Quantitative Finance Research in the Era of Machine Learning and Artificial Intelligence
- March 27, 2022, Invited Talk, Mathematical Finance Seminar, Columbia University, New York, USA. A tour through Quantitative Finance Research in the Era of Machine Learning and Artificial Intelligence

- September 22, 2022, COST FinAI Datathon, Award Ceremony, awarding the COST FinAI Datathon prize to the winners, Tirana, Albania
- September 22, 2022, Co-opening of the COST FinAI Workshop on Diversity, together with the Dean of the Economics Faculty, Tirana, Albania
- September 21, 2022, Moderator of the Session: Fintech: challenges and opportunities – Ongoing COST FinAI projects session, Moderator: Professor Joerg Osterrieder, University of Twente, Netherlands and Bern University of Applied Sciences, Switzerland
  - Prof. Assoc. Dr. Maria Iannario, “The assessment of financial knowledge and the treatment of “don't know” responses by a Multidimentional Latent Mixed Models for panel data”
  - Dr. Olivija Filipovska, “Determinants of SDG-oriented banking in North Macedonia”
  - Prof. Assoc. Dr. Esra Kabaklarli, “Impact of FinTech on Banking Industry”
  - Prof. Assoc. Dr. Luciana Dalla Valle, “Data Integration and Graphical Models for Cryptocurrencies”
- October 6, 2022, Session Chair, Central Bank Digital Currencies, European Alternative Finance Conference, Utrecht, Netherlands
- August 24, 2022, FinanceCom 2022, University of Twente, Netherlands, Fintech and Artificial Intelligence, Cooperation between University of Twente and ING Group, Short talk
- August 22, 2022, COST FinAI Management Committee, University of Twente, Netherlands, The European COST (Cooperation in Science and Technology) Action Fintech and Artificial Intelligence in Finance
- June 16 - 17, 2022, Co-Chair, Digital Disruption in Financial Markets Roundtable (https://icess.ase.ro/digital-disruption-in-financial-markets-round-table/), A workshop in the framework of ICESS (The 5th international conference on economics and social sciences) 2022, Bucharest, Romania

- June 16 - 17, 2022, The European COST (Cooperation in Science and Technology) Action Fintech and Artificial Intelligence in Finance - A History and Definition of Artificial Intelligence, Digital Disruption in Financial Markets Roundtable (https://icess.ase.ro/digital-disruption-in-financial-markets-round-table/), A workshop in the framework of ICESS (The 5th international conference on economics and social sciences) 2022
- June 9, 2022, Artificial Intelligence in Finance - Data challenges and biases, Putting Science Into Standards workshop on Data quality requirements for inclusive, non-biased and trustworthy Artificial Intelligence (https://www.cencenelec.eu/news-and-events/events/2022/2022-06-08-psis/), organized by CEN, CENELEC and the European Commission's Joint Research Centre (JRC)
- May 16 - 17, 2022, COST Action Fintech and Artificial Intelligence in Finance - An introduction, Diversity challenges and opportunities in FinTech, University of Naples Federico II, Italy
- May 16 - 17, 2022, Welcome Address and Session Chair, Diversity challenges and opportunities in FinTech, University of Naples Federico II, Italy
- May 5-6, 2022, Machine learning and artificial intelligence in Finance – with applications to optimal trading strategies, Technology, Innovation and Stability: New Directions in Finance (https://sites.google.com/net.efzg.hr/tinfinconference/home), Zagreb, Croatia, Faculty of Economics and Business, University of Zagreb, Croatian Academy of Sciences and Arts and COST Action CA19130 FinAI - Fintech and Artificial Intelligence in Finance - Towards a Transparent Financial Industry
- December 18, 2022, Generative Adversarial Networks for Finance, Invited talk, Bits and Blocks (Blockchain) Workshop 2021 (https://bitsandblocks2021.super.site/), American University of Sharjah, UAE
- Oct 28, 2021, Leading the 2nd Annual Management Committee Meeting of the COST Action CA19130 Fintech and Artificial Intelligence in Finance, Bucharest University of Economic Studies; Local Organizers: Prof. Vasile Strat, Dean of the Bucharest Business School; Prof. Daniel Pele
- Oct 28, 2021, Annual research conference of the COST Action CA19130 Fintech and Artificial Intelligence in Finance, Bucharest University of Economic Studies; Invited Speaker, Deep Generation of Financial Data
- Oct 15, 2021, European COST (Cooperation in Science and Technology) Action Fintech and Artificial Intelligence in Finance, Skopje, North Macedonia, Fintech and Artificial Intelligence in Finance - An Overview
- Sept 30, 2021, Digital Finance Journal (DFIN) online paper discussion, "Programmable Money: Next-Generation Blockchain-Based Conditional Payments" by Prof. Ingo Weber from the Technical University of Berlin and Prof. Mark Staples from CSIRO's Data61
- Sept 9, 2021, 6th European COST Conference on Artificial Intelligence in Industry and Finance (https://www.zhaw.ch/en/engineering/institutes-centres/iamp/events/artificial-intelligence-in-industry-and-finance/), Invited Speaker, Deep Generation of Financial Data
- Sept 9, 2021, 6th European COST Conference on Artificial Intelligence in Industry and Finance (https://www.zhaw.ch/en/engineering/institutes-centres/iamp/events/artificial-intelligence-in-industry-and-finance/), Invited Speaker, COST (European Cooperation in Science and Technology) Action Fintech and Artificial Intelligence in Finance - An overview
- Trustworthy AI in Europe: multiple perspectives, June 24, 2021, IEEE Portugal, Round table on multiple perspectives of the use of Artificial Intelligence in Europe (event (http://webinars.ieee-pt.org/en/), talk (https://www.youtube.com/watch?v=ULehTM7T3xY&t=5s))

- The Impact of AI on Germany's Industry, June 8, 2021, Artificial intelligence for Finance - opportunities and challenges, Invited panel participant, EU Tech Chamber (https://technology.eu/index/conference/conference.html?id=102)
- Swiss AI4Good – Building a Nexus between Research, Innovation & Society, May 26, 2021, European COST Action Fintech and Artificial Intelligence in Finance, Running a European research network on Artificial Intelligence during Corona-times, online.
- Fintech and Artificial Intelligence in Finance, 1st International Conference on Economics and FinTech, Athens, Greece, April 12, 2021, organized within the framework of the EU H2020 project Fintech no. 825215 (topic ICT-35-2018, Type of action: CSA) and the COST Action Fintech and AI in Finance (Action Chair: Joerg Osterrieder)

Talks and Presentations before 2021

- Fintech and Artificial Intelligence in Finance - Towards a transparent financial industry, 23.10.2020, RegTech Workshop: Fintech Risk Management
- Training ML Models: Decision Trees and Random Forest, 27.10.2020, SupTech Training Sessions for the Central Bank of Hungary: Fintech risk management
- What is Artificial Intelligence? How is it transforming the financial ecosystem? 26.10.2020, SupTech Training Sessions for the Central Bank of Hungary: Fintech risk management
- Blockchain and Distributed Trust, October 1, 2020, Winlink Winterthur, Switzerland
- Bitcoin and Cryptocurrencies, Third International Conference on Mathematics and Statistics, American University of Sharjah, Feb. 2020
- Invited Research Stay at the American University of Sharjah (Feb. 2020)
- Invited Talk at the Haindorf Seminar, Ladislaus von Bortkiewicz Chair of Statistics, International Training Group “High-Dimensional Non-Stationary Time-Series” (Jan. 2019)
- Research stay at the Ladislaus von Bortkiewicz Chair of Statistics, International Training Group “High-Dimensional Non-Stationary Time-Series”, Nov. 26 - 30, 2018
- 2nd Berlin Conference, Crypto-Currencies in a Digital Economy, Nov. 29/30, Berlin, Session Chair “Markets, Bank and Finance”, https://www.ccconf.org
- 2nd Berlin Conference, Crypto-Currencies in a Digital Economy, Nov. 29/30, Berlin, “Introducing Trust into Blockchain”, https://www.ccconf.org
- 11th Conference on Computational and Financial Econometrics (CFE 2017), University of London, Dec. 16, 2017, “Trend-following strategies for currency markets”
- Crypto-Currencies in a Digital Economy, Einstein Center Digital Future, TU Berlin, Nov. 16, 2017, “Cryptocurrencies – Not for the faint-hearted”
- FinTech Innovation Conference, Zurich, Mar. 2017, “Cryptocurrencies and risk management”
- Fintech Workshop, London, Jan. 2017, “A unified standard for modelling financial contracts”
- Keynote Speaker International Conference on Economics and Finance, Hong Kong, Jan. 2017
- Algorithmic Trading - The Rise of the Machines (for Experts), Thursday, Sept. 15, 2016, Swiss Finance Institute Breakfast Seminar with Dr. Jörg Osterrieder
- Algorithmic Trading, internal talk at UBS, 2016
- Invited talk at the Conference: “Creating and Combining Alpha Streams from Big Data”, Research Symposium London, Nov. 19, 2015, Ravenpack

- Moderation of the Conference “Alpha Trader Forum (ATF)”, May 2017, participants were heads of trading from Germany, Switzerland, Austria, dach.buysideintel.com

Research Stay

- Invited Research Stay at the American University of Sharjah, Department of Mathematics, UAE (April 2023), Prof. Chen
- Invited Research Stay at Columbia University, Department of Artificial Intelligence, USA (March 2023), Prof. Ali Hirsa
- Invited Research Stay at the American University of Sharjah, Department of Mathematics, UAE (January 2023), Prof. Chen
- Invited Research Stay at WU Vienna, Business and Economics Department, Vienna, Austria, June 2022, Prof. Hochreiter
- Invited Research Stay at the American University of Sharjah, Department of Mathematics, UAE (April 2022), Prof. Chen
- Invited Research Stay at the American University of Sharjah, Department of Mathematics, UAE (February 2022), Prof. Chen
- Invited Research Stay at the American University of Sharjah, Department of Mathematics, UAE (February 2020), Prof. Chen
- Invited Research Stay at the Haindorf Seminar, Ladislaus von Bortkiewicz Chair of Statistics, International Training Group “High-Dimensional Non-Stationary Time-Series” (Jan. 2019), Prof. Härdle
- Research stay at the Ladislaus von Bortkiewicz Chair of Statistics, International Training Group “High-Dimensional Non-Stationary Time-Series”, Nov. 26 - 30, 2018, Prof. Härdle

Teaching

PhD Training Schools

- European Summer School in Financial Mathematics (https://www.tudelft.nl/evenementen/2023/ewi/diam/finance-summer-school-2023). TU Delft, Netherlands. September 4, 2023 to September 9, 2023. The 15th European Summer School in Financial Mathematics will be hosted by the Delft Institute of Applied Mathematics, TU Delft. The main theme of the summer school will be Mathematics of FinTech and the following topics will be addressed:

Hansjörg Albrecher: Blockchains and Decentralized Insurance Martin Kroll: Introduction to Differential Privacy Kees Oosterlee: Machine Learning for Anti-Money Laundering and Deep Portfolio Optimisation in Finance Jörg Osterrieder: Artificial Intelligence and Deep Reinforcement Learning in Finance In addition to the main courses, there will be talks from PhD students and early career researchers, as well as an afternoon of presentations by practitioners.

Executive Education

- Director of studies for an executive education course on "Blockchain, Big Data and Distributed Ledgers", 2016 -2022
- Director of studies for an executive education course on "Machine Learning and Deep Learning in Finance", 2021

- Data Science, MSc Executive Course, modules on Data Science for Business, Data Science for Finance, Summer 2022, Uni Münster, Germany
- Corporate Banking, Certificate of Advanced Studies (CAS), module on the Future of Banking, Summer 2021, Summer 2022, ZHAW Zurich, Switzerland
- Blockchain, Big Data and Distributed Ledger, Certificate of Advanced Studies (CAS), individual modules, Fall 2018, Spring and Fall 2019, 2020, 2021, Spring 2022, ZHAW Zurich, Switzerland
- Machine Learning and Deep Learning in Finance, Continuing Education, individual modules, Fall 2021, ZHAW Zurich, Switzerland
- MAS / DAS / CAS Sustainable Finance (https://www.finance-weiterbildung.uzh.ch/de/programs/single-courses/fintech-and-sustainability.html), Focus on Artificial Intelligence, University of Zurich, Fall 2021, Fall 2022

Courses

MSc Courses

- Reinforcement Learning in Finance, University of Twente, Netherlands, Spring 2023, Spring 2022
- Information Systems for the Financial Services Industry, University of Twente, Netherlands, Spring 2022, Spring 2023

BSc Courses

- Digital Finance, Bern Business School, Switzerland, Fall 2022, Fall 2023
- Empirical Methods in Finance, Spring 2022, ZHAW Zurich, Switzerland
- Topics of Financial Engineering, Spring 2022, 2021, 2020, 2019, 2018, 2017, 2016, ZHAW Zurich, Switzerland
- Quantitative Risk Management, Spring 2021, 2017, 2016, 2015, ZHAW Zurich, Switzerland
- Mathematics of Financial Markets I, Spring 2015, 2016, ZHAW Zurich, Switzerland
- Mathematics of Financial Markets II, Fall 2015, 2016, ZHAW Zurich, Switzerland
- Introduction to interest rate theory, Spring 2018, 2019, ZHAW Zurich, Switzerland

Supervision of researchers at graduate and postgraduate level

login: j.osterrieder pwd: yH^j SmFd 6Q2uE)%e 1234 you have to remove four digits and two spaces from the pwd

BSc

- Bor, Roelofs, CBDCs effects on European Society, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/A_qualitative_study_of_Central_Bank_Digital_Currencies_and_their_impacts_on_European_consumers)
- Davis, Jason, Owuor, Hezekiah, Schwarzrock, Erich Complexity Analysis of Reinforcement Learning Models Applied to Stock Trading, BSc, Spring 2022 (https://wiki.fin-ai.eu/index.php/Complexity_Analysis_of_Reinforcement_Learning_Models_Applied_to_Stock_Trading)

- Romain Délèze, Danijel Jevtic, Artificial Intelligence for Trading Strategies, BSc, Spring 2022 (https://wiki.fin-ai.eu/index.php/AI_for_Trading_Strategies)
- Frensi, Zejnullahu, Maurice, Moser, Applications of Reinforcement Learning in Finance, BSc, Spring 2022 (https://wiki.fin-ai.eu/index.php/Applications_of_Reinforcement_Learning_in_Finance)
- Mike, Kraehenbuehl, The efficient market hypothesis for Bitcoin in the context of neural networks, BSc, Spring 2022 (https://wiki.fin-ai.eu/index.php/The_EMH_for_Bitcoin_in_the_context_of_neural_networks)
- Nikolaj, Brux, A study of Artificial Intelligence for VIX and VIX futures, BSc, Spring 2022 (https://wiki.fin-ai.eu/index.php/A_study_of_Artificial_Intelligence_for_VIX_and_VIX_futures)
- Kia, Farokhnia, High-Frequency Causality in the VIX Index and its derivatives: Empirical Evidence, BSc, Spring 2022 (https://wiki.fin-ai.eu/index.php/High_Frequency_Causality_in_the_VIX_Index_and_its_derivatives_Empirical_Evidence)
- Philipp, Kessler, Vorhersagen von Bewegungen am Kryptowährungsmarkt mit Hilfe von Candlestick Charts und künstlich neuronalen Netzen, BSc, Spring 2022
- John, Machine Learning in Finance Business Model, BSc Spring 2022 (https://wiki.fin-ai.eu/index.php/Machine_learning_in_Finance_Business_Model)
- Kia, Farokhnia, The VIX Index and its derivatives, BSc, Fall 2021 (https://wiki.fin-ai.eu/index.php/The_VIX_Index_and_its_derivatives)
- Romain Délèze, Danijel Jevtic, Generative Adversarial Networks for financial time-series, BSc Fall 2021
- Leander, Odermatt, Jetmir, Beqiraj, Deep Reinforcement Learning for Finance and the Efficient Market Hypothesis, BSc, Spring 2021
- Chris, Bucher, Risk Parity for Multi-Asset Futures Allocation - A Practical Analysis of the Equal Risk Contribution Portfolio, BSc, Spring 2021
- Florian, Eckerli, Generative Adversarial Networks in finance: an overview, BSc , Spring 2021
- Moritz, Pfenninger, Samuel, Rikli, Bigler, Daniel Nico, Wasserstein GAN: Deep Generation applied on financial time series, BSc, Spring 2021
- Leander, Odermatt, Jetmir, Beqiraj, Deep Reinforcement Learning and trading in simulated stock movements, BSc, Fall 2020
- Chris, Bucher, Deep Reinforcement Learning for different macro-environments, BSc, Fall 2020
- Tsonev, Bozhidar, Which asset classes are an effective and reliable hedge against inflation?, BSc, Summer 2022
- Serhad, Erdogan, Value Investing & Machine Learning, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Value_Investing_and_Machine_Learning)
- Roman, Linder, Artificial Intelligence for Trading Strategies, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Artificial_Intelligence_for_Trading_Strategies)
- Terence, Schwab, Blockchain and Fraud Detection, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Blockchain_and_Fraud_Detection)
- Kim, Zumstein, Bewertung der Effizienzmarkthypothese im Devisenmarkt durch künstliche Intelligenz, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Bewertung_der_Effizienzmarkthypothese_im_Devisenmarkt_durch_künstliche_Intelligenz)
- Laura, Fraga, Digital Currencies - Risks and Oportunities of CBDCs, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Digital_Currencies_-_Risks_and_Oportunities_of_CBDCs)
- Yannic, Rieder, Digital Currencies - CBDCs, BSc, Spring 2023
- Lorent, Shabani, Digital Currencies - Challenges in the Implementation of CBDC, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Digital_Currencies_-_Challenges_in_the_Implementation_of_CBDC)
- Pieter-Jan, Vliegen, Machine Learning for Trading Strategies, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Machine_Learning_for_Trading_Strategies)

- Wouter, Wilmer, Central Bank Digital Currencies, Spring 2023
- Ward, de Lange, Machine Learning for Trading Strategies, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/MA_for_Trading_Strategies)
- Noah, Koerselman, Digital Finance, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Digital_Finance)
- Tudor, Nechiti, Anomaly and Fraud Detection in Blockchain Networks, BSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/Anomaly_and_Fraud_Detection_in_Blockchain_Networks)
- Giovanni, Herbert, Missing Data Replacement for ML Credit Risk Predictions, Spring 2023
- Dutt Miranda, Anil, Artificial Intelligence for Investment Strategies, Spring 2023
- [1] (https://wiki.fin-ai.eu/index.php/Artificial_intelligence_for_investment_strategies)

MSc

- Daniel Sam Attard, Leveraging Uncertainty Information in Deep Learning for Algorithmic Trading, Non-visiting external examiner in the Department of Artificial Intelligence at the University of Malta, 2023
- Antonio, Rosolia, Predicting VIX Futures with Neural Networks, MSE, Fall 2020, ZHAW
- Antonio, Rosolia, Analyzing deep generated financial time series for various asset classes, MSE, Spring 2021, ZHAW
- David, Müller, Technologische Implikationen auf das Kreditgeschäft einer mittelgrossen Kantonalbank – eine Szenarioentwicklung, MAS Digital Transformation, Q4 2021 / Q1 2022, ZHAW
- Bella, Wu, Predicting Directional Movements of E-Mini S&P 500 Futures for Intraday Trading, MSFE, Summer 2022, Columbia University
- Mina, Meng, Predicting Directional Movements of E-Mini S&P 500 Futures for Intraday Trading, Management Science & Engineering, Summer 2022, Columbia University
- Loohuis, Daan, The Impact of Carbon Emissions on Corporate Financial Performance, Digital Business and Analytics, 3rd and 4th semester 2022, University of Twente (https://wiki.fin-ai.eu/index.php/The_Impact_of_Carbon_Emissions_on_Corporate_Financial_Performance,)
- Basil, Vollenweider, the digital franc - Our money of the future, MSc BA, Fall 2023, BFH
- Bruins, Roel, Value of innovation in the financial market, MSc BA, Digital Business and Analytics, 2023, University of Twente (https://wiki.fin-ai.eu/index.php/Value_of_Innovation_in_the_Financial_Market)
- Chen, Daniel, Development of Financial Distress Prediction Model for the Watchlist Classification of Wholesale Banking Clients, MSc IEM, 2023, University of Twente (https://wiki.fin-ai.eu/index.php/Development_of_financial_distress_prediction_model_for_the_watchlist_classification_of_wholesale_banking_clients)
- van den Broek, Sander, Robotic Process Automation in the External Audit Function: Defining and Validating an Evaluation Framework, MSc BA, Financial Management, 2024, University of Twente (https://wiki.fin-ai.eu/index.php/Robotic_Process_Automation_in_the_External_Audit_Function:_Defining_and_Validating_an_Evaluation_Framework)
- Brian, Franch Sabaidini, The macroeconomic determinants of small-cap stock performance in the USA, MSc, Spring 2023 (https://wiki.fin-ai.eu/index.php/The_Macroeconomic_Determinants_of_Small-Cap_Stock_Performance,)
- Cristian Verdecchia, Temporal Aspects of Stock Price Prediction: Quantifying the Role of Historical Data using Partitioned Dynamic Bayesian Networks, MSc CS, 2023, University of Twente (https://wiki.fin-ai.eu/index.php/Temporal_Aspects_of_Stock_Price_Prediction,)
- Alessandra Amato, Applications of Early Warning Systems for Customer Segmentation of Wholesale Banking Clients, MSc BIT, 2023, University of Twente (https://wiki.fin-ai.eu/index.php/Applications_of_Early_Warning_Systems_for_Customer_Segmentation_of_Wholesale_Banking_Clients)

- Kozian, Luca, Commodity price co-movement: Comparing models and correlation measures, MSc BA, Financial management, 2023, University of Twente (https://wiki.fin-ai.eu/index.php/Commodity_price_co-movement:_Comparing_models_and_correlation_measures)
- Dyon Kok, Stakeholder-centric approach to applying machine learning to probability of default models, MSc IEM, 2024, University of Twente (https://wiki.fin-ai.eu/index.php/Stakeholder_centric_approach_to_applying_machine_learning_to_probability_of_default_models)
- Siem Peters, Generative Adversarial Networks and Quasi-Monte Carlo simulation for option pricing, MSc IEM, 2024, University of Twente (https://wiki.fin-ai.eu/index.php/Option_pricing_using_Generative_Adversarial_Networks)
- Quinten Kropmans, The application of AI in corporate finance, MSc BA, 2024, University of Twente
- Sebastian Goldmann, Enhancing Credit Risk Prediction in Retail Banking: Integrating Time Series and Classical ML Algorithms, MSc IEM, 2024, University of Twente (https://wiki.fin-ai.eu/index.php/Enhancing_Credit_Risk_Prediction_in_Retail_Banking_Integrating_Time_Series_and_Classical_ML_Algorithms)

Executive Education

- CAS Big Data Analytics, Blockchain and Distributed Ledger, June 2022, Andre Camenzind, Analysis of LendingClub big data sets with the help of visualizations, co-supervisor
- CAS Big Data Analytics, Blockchain and Distributed Ledger, April 2022, Frank Peisert, Data Based Project Insights, co-supervisor
- CAS Big Data Analytics, Blockchain and Distributed Ledger, April 2022, Christian Meier, k-means clustering, co-supervisor
- CAS Big Data Analytics, Blockchain and Distributed Ledger, April 2022, Lukas Ruppen (UBS), Credit card limit management - Machine learning for real-time default prediction, co-supervisor
- CAS Big Data Analytics, Blockchain and Distributed Ledger, September 2021, Thomas Aebi (ZKB), An interactive Shiny application for trading systems for the structured products business, co-supervisor
- CAS Big Data Analytics, Blockchain and Distributed Ledger, September 2021, Fabienne Rehnelt (Vontobel), Analytic Platform for Vontobel Electronic Trading Solutions, main supervisor

PhD

- Fernando de Meer Pardo, Reinforcement Learning and Generative Adversarial Networks, March 2021 to February 2025, joint with Worcester Polytechnic University (WPI), US, Prof. Dr. Stephan Sturm
- Patchara Santawisook, April 27,2021, "Price Impact of VIX Futures and Two Order Book Mean-Field Games", member of the PhD Committee, main supervisor: Prof. Dr. Stephan Sturm, Worcester Polytechnic University (WPI), US. Dissertation Committee: Dr. Stephan Sturm, WPI (Advisor), Dr. Marcel Y. Blais, WPI, Dr. Jörg Osterrieder, Zurich University of Applied Sciences, Dr. Andrew Papanicolaou, North Carolina State University, Dr. Qingshuo Song, WPI Dr. Frank Zou, WPI
- Sebastian Singer, 2021 - 2025, member of the PhD Committee, main supervisor: Prof. Dr. Ronald Hochreiter, WU Vienna, Austria
- Dr. Rui Li, 2020, PhD examiner, main supervisor: Saralees Nadarajah, University of Manchester, UK
- Dr. Idika Okorie, 2019, PhD examiner, main supervisor: Saralees Nadarajah, University of Manchester, UK

- Dr. M. Weibel, 2019, PhD examiner, main supervisor: Juri Hinz, University of Technology, Sydney, Australia

Other graduate and post-graduate students

- Florian Bozdharaj, 2019 - 2021
- Florian Hinz, 2020
- Dr. Branka Hadji Misheva, PhD at University of Pavia, 2020
- Piotr Kotlarz, PhD at University of Liechtenstein, since 2018
- Matas Pocevicius, Finance industry, 2017 – 2018
- Dr. Martin Wiegand, PhD at University of Manchester, 2018
- Dr. Daniel Kucharczyk, Finance industry, 2017- 2019

Projects and other student works

- Title of project, Link to google colab, link to google folder with documents, Names of Authors, Name University, Month Year
- Predict S&P 500 with Neural Networks and Classifiers, Google Drive (https://drive.google.com/drive/folders/1zFxQy6uzCgkZt63vgVL2oQDkVG68Axcr?usp=sharing,),Google Colab (https://drive.google.com/file/d/1p1D8MrB_k3Z-eReSOcBddTQWBcKj4yfG/view?usp=sharing,), Maurice, Moser, Frensi, Zejnullahu, (https://wiki.fin-ai.eu/index.php/Applications_of_Reinforcement_Learning_in_Finance) Jannic, Cavegn, Zurich University of Applied Sciences, June 2022
- Minimizing global drawdowns in financial markets during the COVID-19 pandemic using Machine Learning, Google Drive (https://drive.google.com/drive/folders/1STWvtduu9hEw-LumPfCJKDMC2mRSiSiR?usp=sharing,), Google Colab (https://colab.research.google.com/drive/17Hs7k7HDtvhzBSqtvxQ_3Zd2NqdRHcGb?usp=sharing,), Rafael Berther, Tobias Kuhn, Alexander Kunz, Leonhard Keller, Zurich University of Applied Sciences, June 2022
- The use of different ML algorithms for day trading the bitcoin, Google Colab (https://colab.research.google.com/drive/166MZOQFEMhPDJii4g98uqNA3nJrOTn7D?usp=sharing,), Alessandro dos Santos Simões, Yannick Höfler, Senthuran Elankeswaran, Zurich University of Applied Sciences, June 2022

Research projects

Since 2015, I have worked on more than 30 research projects, mainly as project lead or principal investigator, funded by Europe Horizon 2020, Horizon Europe, Swiss National Science Foundation, Innosuisse and the Finance industry. The topics cover many aspects of quantitative, data-driven topics for Finance, ranging from trading strategies, efficient markets to machine learning and artificial intelligence in Finance, including latest developments such as blockchain, virtual currencies, Fintech and sustainable Finance.

Most notable international projects

- MSCA Industrial Doctoral Network on Digital Finance
- Cooperation ING Group - University of Twente
- Action Chair COST Action 19130 Fintech and Artificial Intelligence, Horizon Europe
- FIN-TECH – Financial Supervision and Technology Compliance Training Programme, EU Horizon 2020

- Network-based credit risk models in P2P lending markets, Swiss National Science Foundation
- Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives, Swiss National Science Foundation

Swiss National Science Foundation Projects

https://wiki.fin-ai.eu/index.php/SNF_Narrative_Digital_Finance

https://data.snf.ch/grants/person/701038

Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives

- Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives / Project leader / Swiss National Science Foundation / 236'118 CHF / August 2023 - August 2026
- Summary of the research plan:

Large fluctuations, instabilities, trends and uncertainty of financial markets constitute a substantial challenge for asset management companies, pension funds and regulators. Nowadays, most asset management companies and financial institutions follow a so-called systematic trading approach in their investment decisions. Systematic trading refers to applying predefined, rule-based trading strategies for buy- and sell orders. However, automated or rules-based trading activities bring certain risks for market participants and the whole financial market. In times of increased market volatility, market turmoil or so-called market sell-offs, investors applying similar trading rules might undertake the same actions, escalating and increasing systemic market risk through such behavior. Such situations have been frequently observed on financial markets for instance, in March 2020 (sell-off related to the Covid pandemic), during the European Sovereign Debt crisis and the global financial crisis 2007-08. Research in economics and management has begun to embrace the role that narratives play in guiding individual and collective decision- making. McCloskey (2011) describes unforeseen growth in economic development yet goes on to explain that no economic theory is able to capture this extent. She argues that a change in rhetoric had basically freed a social class (the bourgeoisie) and given it a sense of dignity and liberty. As such, economic change, she argues, depends to a great extent on social narratives that shape ideas and the beliefs of people. Yet, despite the notion that narratives, individual and collective actions, and market outcomes are inextricably linked, our knowledge about the mechanisms or processes through which they interact and how narratives can inform opinions or sway current thinking is still evolving. Entrepreneurs, for example, may use verbal communication to achieve plausibility (i.e., generate the sense that a given interpretation of events appears acceptable) or resonance (i.e., obtain alignment with the beliefs of the target audience; see van Werven et al., 2019). They may do so through rhetoric such as storytelling (Navis & Glynn, 2011) or crafting compelling arguments (van Werven et al., 2015) as well as employing combinations of figurative language and gesturing (Clarke et al., 2021) as they manage and conform with the expectation of their audience. Outcomes of invoking narratives are consequential. The literature has indeed documented various forms of verbal communication– including written texts such as social media posts and blogs, or business plans or spoken text (Garud et al., 2014; Clarke et al., 2019, Clarke et al., 2021) – as a crucial means to secure support and investment. The narratives or rhetoric employed in these stories are used as vehicles for assembling and communicating details about ideas and future possibilities (Garud et al., 2014). In summary, narratives help audiences make sense of situations and situate the description into the audience's social and cultural framework (Lounsbury and Glynn, 2001). In the following, we, therefore, explore computational techniques to predict financial market outcomes using text, speech, and video/picture data. Advances in data processing and machine learning allow new ways of analysing data and may have profound implications

for empirical testing of lightly studied, yet complex, empirical financial relationships. This project therefore integrates various forms of narratives into the context of financial market analysis, leverages machine learning techniques, and aims to show how narratives are inextricably interwoven in the continuously unfolding financial market evolutions. We will extend quantitative research through novel measurement techniques, the creation of new data sets, offering new solutions towards prediction problems, and the induction of new theories (Obschonka & Audretsch, 2020). We will also contribute to recent works that demonstrated the potential of theoretical and methodological advancements through the application of machine learning in the research practice (Mullainathan & Spiess, 2017; von Krogh, 2018). In pursuit of both practical 'relevance' of our research (Wiklund et al., 2019) and the contribution of "AI-integrated" research (Levesque et al. 2020), our approach will provide actionable insights.

Network-based credit risk models in P2P lending markets

- Network-based credit risk models in P2P lending markets / Project leader / Swiss National Science Foundation / 347'836 CHF / August 2022 - August 2025

P2P (peer-to-peer) lending today consists of the lending of money to individuals and businesses through online services without bank intermediation (Thakor, 2020). P2P platforms offer a secure cyberspace (Niu et al., 2020) where borrowers are linked to investors who engage (usually) in a buyout auction, where the bidding process ends when the loan has been fully funded (Xia et al., 2017). Bank lending is backed by deposits, uninsured debt and equity; thus, banks have skin in the game, unlike P2P lending platforms, where loans are funded by investors directly, i.e., through investors' equity. Higher interest rates and diversification potential incentivize lenders, represented by individuals and recently also by banks, hedge funds, venture capital firms and private equity firms (Giudici et al. 2019a), to participate in P2P lending. Traditional banks receive loan repayments that are used to pay out depositors, subordinated debt holders and potentially shareholders, while P2P platforms receive fees from loan origination (paid by the borrower) and transaction fees. Administration of lending tends to be cheaper for P2P platforms, which provide an online marketplace and initial risk classification, while banks are subject to much tighter regulation and thus have higher costs (Thakor, 2020). However, banks have much richer data at their disposal (e.g., through long-term relational banking), which makes their task of identifying potential nonperforming loans easier. One would therefore expect P2P platforms to attract borrowers who would otherwise not be eligible for bank loans. This effect is amplified during recessions, as reduced access to bank credit directs riskier borrowers towards the P2P markets. This phenomenon has been observed empirically, as several studies have found that after the 2008 recession, the growth of P2P markets accelerated (e.g., Jin and Zhu, 2015). Similar growth is likely to unfold during and after the current worldwide economic crisis induced by the COVID-19 pandemic. Given the nature of P2P markets, they are characterized as immature industries with loose regulation, greater information asymmetry and increased credit risk, which all lead to higher default rates. This leaves the door open to considerable risks. To mitigate adverse selection and moral hazard problems, one needs to build trust. In traditional bank-lending markets, trust is constructed via relational banking, using collateral, certified accounts, risk monitoring, the presence of a board of directors, tighter regulation, etc. (Emekter, 2015). Voluntary implementation of these mechanisms would incur significant costs and thus marginalize the competitive edge of P2P lending markets. Several recent studies have found that the failure of P2P platforms in China is related to general market conditions (bond yields), ownership, information disclosure, and popularity, while political ties were found to also play an important role (e.g., Gao et al.,

2021, He and Li, 2021). A hands-on approach to establishing trust between investors and P2P markets is to use accurate credit risk models. The main objective of the proposed research project is to design a state-of-the art and interpretable credit risk models for P2P lending markets.

Anomaly and fraud detection in blockchain networks

- Anomaly and fraud detection in blockchain networks / Project leader / Swiss National Science Foundation / 6'700 CHF / August 2022 - August 2023

This project aims to study the problem of anomaly and fraud detection from the perspective of blockchain- based networks. The major developments of blockchain technology and cryptocurrencies have brought benefits such as increased efficiency and transparency to all, but the immutability property means that fraudulent transactions or transfers of information cannot be reversed. Rapid detection of anomalies from such activities is critical in order to prevent damage from occurring, or correct any damage as soon as possible to reduce the severity of its impact. Anomaly and fraud detection in blockchain-based networks, is more complex due to their unique properties such as decentralisation, global reach, anonymity, etc., which make them different from traditional networks. The proposed research work comprises three main parts: i) studying the evolution of blockchain-based networks over time; ii) investigating static anomaly detection methods for blockchain-based networks; iii) developing dynamic anomaly detection methods for blockchain-based networks. This will contribute to better understanding of the sources and behaviours of anomalies and fraud in blockchain-based networks, and development of new improved methods for anomaly detection, especially in reducing the false positive rate. In addition, it will help to develop new methods that can be used alongside blockchain-based systems to detect anomalies and fraud in real time, as new data is generated.

Hybrid Approach for Robust Identification and Measurement of Investors Driving Corporate Sustainability and Innovation. Design of Policy Tools for Evaluating the Impact of Specific Investors and Assessing the Quality of Companies' Investor Bases

- Hybrid Approach for Robust Identification and Measurement of Investors Driving Corporate Sustainability and Innovation. Design of Policy Tools for Evaluating the Impact of Specific Investors and Assessing the Quality of Companies' Investor Bases. / Project leader / Swiss National Science Foundation / 150'000 CHF / February 2020 - August 2021

Following several decades of profit-oriented research in finance and economics, we have recently been observing a profound transformation in investor perception and a visible shift towards a sustainable financial system. The list of UN PRI signatories includes already over 2,000 large asset owners and keeps growing every year. Several reports (US SIF 2018) indicate that over 20% of professionally managed assets in the U.S. is already being invested according to the principles of socially responsible investing (SRI). While an increasing number of institutional investors are indicating their commitment to social and environmental sustainability, it remains unclear which investors have the most substantial and lasting effect on the sustainability of companies. In this project, we intend to measure the extent to which specific investors influence the sustainability of companies they invest in. We focus on the measurable side of sustainability, in particular the environmental impact of the activity of companies, and the level of corporate innovation, measured using patents data. By combining a previously untested dataset with a novel, hybrid methodology, we seek to answer deep-rooted scientific and practical questions such as whether the investor base affects the sustainability and innovation potential of a company. If so, can we identify and highlight investors who are effectively driving the future development of companies across the globe? By answering these questions, we will provide clear guidance on the design of policy tools to support investors and monitor the investor bases of companies. To maximize the societal and scientific

impact of this project, we will use our findings to design two practical tools for policymakers and investors, which will empower them to make more viable and future-oriented decisions concerning sustainability and innovation. The first tool will enable an evaluation of the impact of a specific investor on sustainability, based on their historical behavior. The second tool will provide information whether company's investor base is likely to promote its sustainable development. Our approach differs sharply from other projects in this field: - While the bulk of existing studies either use investor groups, we focus on the impact of individual investors on the evolution of sustainability of the companies they invest in. This will involve building and using untested dataset on investors and company data. - We extend the scope of the analysis to include crucial investors such as insurers, banks, pension funds, hedge funds as well as sovereign wealth funds. - We focus simultaneously on sustainability and innovation, which has not been investigated in a comprehensive analysis so far. - We include European and U.S. companies and investors, in contrast to U.S.-focused studies. - The proposed hybrid methodology combines linear and non-linear approaches as well as machine learning. It provides a variety of novelties over conventional approaches such as: adaptivity and time variation, addresses the spurious regression problem, and combines linear and non-linear dynamics. We also include a multi-tier data aggregation technique. - We provide user-friendly assessment tools and seek to maximize usability of results. Through contacts with national and international organizations as well as public and private sector investors, we will disseminate the research and tools to an academic and non-academic audience.

Mathematics and Fintech - the next revolution in the digital transformation of the finance industry

- Mathematics and Fintech: The next revolution in the digital transformation of the finance industry / Project leader / Swiss National Science Foundation / 300k CHF / January 2016 - December 2019 /

Our focus will be on the digitization and transformation of the finance industry. In recent years, Fintech companies, defined as organizations that combine innovative business models and technology to enable, enhance and disrupt financial services, have gained substantial funding and are the main drivers of innovation and digitalisation. Projections show that Fintech companies are expected to take away up to 60% of the revenues of the traditional banking sector within the next ten years. This topic is particularly relevant for Switzerland as one of the main global financial centers. Worldwide Venture Capital (VC) investment in Fintech ventures tripled in 2014 to more than $12 billion, while the Swiss banking industry is substantially lacking behind compared to other world financial centres. As a reaction, the Swiss government has now set Fintech as a top priority on their agenda. This research project will help in the transformation of the Swiss finance industry by laying the academic and mathematical foundations for the use of Fintech in the area of algorithmic strategies, risk management and investment banking. Its academic concepts and conclusions can also be used in a more general context and applied to a larger range of industries. In particular, the methods developed can also be applied in the context of Industry 4.0. This research is directly related to the goals and deliverables of the COST Action TD1409 (Mathematics for Industry Network - MI-NET).

Marie Sklodowska-Curie Action Industrial Doctoral Network on Digital Finance

Introduction and Timeliness

A competitive European financial sector is vital for the modernisation of the European economy across sectors and to turn Europe into a global digital player. The term Digital Finance refers to the rapid development of new technology, goods, and business models that have taken place in recent years.

We have identified the five most pertinent areas within this domain: Towards a European financial data space. Artificial intelligence for financial markets. Towards explainable and fair AI-generated decisions. Driving digital innovations with Blockchain applications. Sustainability of Digital Finance.

What they have in common: They are all key strategic priorities of the European Commission over the next five years. They contribute to the UN Sustainable Development Goals. Europe must invest significantly in them over the next five years if it is to remain globally competitive. They are characterised by a significant shortage of skilled labour. Initial progress has been made in academia, but there are still numerous unanswered research questions. They have the potential to revolutionise the Finance industry with new technologies, business models, and products, while strengthening the resilience of Europe. They are the foundation for a new generation of PhD candidates and training in Digital Finance.

Considering these developments across industries and within the financial sector, it is absolutely essential to work on those research topics now and to train new PhD graduates, because: Digital Finance has already changed the way the Finance industry works. To deal with the realities of academia and industry, PhD graduates in Finance will be required to acquire the skill set of Digital Finance. There is a substantial research gap in academia that needs to be resolved now by academics and a new generation of Digital Finance PhDs to keep Europe's Finance industry competitive.

Network

For this purpose, we have gathered an internationally recognized network consisting of eight leading European Universities (WU Vienna, HU Berlin, University of Twente, Bucharest University of Economic Studies, Babes-Bolyai University, Bern Business School, Kaunas University of Technology and University of Naples), all ranked among the top 200 universities globally in their fields, four major international corporations (Deloitte, Swedbank, Intesa Sanpaolo and Raiffeisen Bank) with a significant R&D presence across Europe, two SMEs (Cardo AI and Royalton Partners) being some of the most innovative ones in their field, three large and internationally renowned research centres (ARC Greece, EIT Digital and Fraunhofer Institute) and the European Central Bank, as one of the seven principal decision-making bodies of the European Union and the Euratom as well as one of the world's most important central banks. The results of the research carried out within DIGITAL are of substantial interest to three leading European-wide research networks that our members either lead or serve on the management committee for: COST Action CA19130 Fintech and AI in Finance (240 researchers across 39 European countries), European Consortium of Mathematics for Industry (200 researchers across Europe) and the European Consortium of Innovative Universities (13 European Universities). It is only through a network that incorporates the expertise of all distinct shapers of the financial industry (technology experts, academics, Fintechs, domain experts, incumbents, regulators, civil society) that we can see a comprehensive shift towards innovation and digitalization of a sector that is notoriously averse to change.

Objectives

Today, Digital Finance does not exist as a standalone research discipline, despite many research gaps, the EU’s key strategic priorities and the urgent needs from industry. DIGITAL will overcome this and significantly advance the methodologies and business models for Digital Finance through the use of five interconnected and coherent research objectives and a total of seventeen Early Stage Researchers (ESRs) hired by the beneficiaries, both from academia and industry. The main objectives are: Towards a European financial data space. Ensure sufficient data quality to contribute to the EU's efforts of building a single digital market for data (WP 1). Artificial intelligence for financial markets. Address deployment issues of complex artificial intelligence models for real-world financial problems (WP 2). Towards

explainable and fair AI-generated decisions. Validate the utility of state-of-the-art explainable artificial intelligence (XAI) algorithms to financial applications and extend existing frameworks (WP 3). Driving digital innovations with Blockchain applications. Design risk management tools concerning the applications of the Blockchain technology in Finance (WP 4). Sustainability of Digital Finance. Simulate financial markets and evaluate products with a sustainability component (WP 5).

Research Training for Digital Finance

The network will specifically train young researchers in R&D topics that cover the multiple disciplines required in the rapidly evolving field of Digital Finance substantially going beyond the traditional Finance PhD education in a wide range of inter-sectoral applications: data quality, Artificial Intelligence (AI) and Machine Learning (ML), Explainability of AI (XAI), Blockchain applications and sustainable finance; all of which are required for a wide range of industrial (financial products, risk management, customer-centric products, enhanced processes, and improved services) and scientific (new AI techniques, new business models, and enhanced modelling) applications, necessitating new scientific insight, new training courses, and future specialists in the field.

Need for an Industrial Doctoral Network

The European Finance industry needs to compete on a global scale. To overcome key hurdles which financial service companies will face in the near future, they will have to find answers to (WEF 2020): Data quality issues related with the increasing dimensionality of financial data. Deployment issues of complex models in real-world applications. Deficits in trust and user adoption of AI-supported financial products. Potential data or algorithmic bias inherent in AI models. Labour shortage: AI leaders overwhelmingly argue that access to talent represents a key obstacle to the digitization efforts in finance, as more sophisticated solutions demand different employee capabilities. All of those hurdles towards scientific, societal and economic/ technological impact will be solved in DIGITAL.

Detailed Research Project List

- MSCA Industrial Doctoral Network on Digital Finance / Coordinator / Horizon Europe / 3'500'000 EUR / January 2024 - December 2027
- Strategic Research fund within the BMS Research Theme Emerging Technologies & Societal Transformations “Digital Transformation of Finance and Society / PI / 20'000 EUR / January 2023 - December 2023
- Strategic Research fund for a research conference on AI in Finance within the research theme Humane Digital Transformation / PI / 5'000 EUR / January 2023 - December 2023
- Strategic Research fund for a MSCA Doctoral Network on Digital Finance / PI / 10'000 EUR / January 2023 - December 2023
- Strategic Research fund for a NSF - SNF cooperation on Explainable AI / Co-PI / 5'000 EUR / January 2023 - December 2023
- Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives / Project leader / Swiss National Science Foundation / 236'118 CHF / August 2023 - August 2026
- Network-based credit risk models in P2P lending markets / Project leader / Swiss National Science Foundation / 347'836 CHF / August 2022 - August 2025
- Anomaly and fraud detection in blockchain networks / Project leader / Swiss National Science Foundation / 6'700 CHF / August 2022 - August 2023

- Fintech and AI in Finance / Project leader / COST Action CA19130 Travel Grants / 6300 EUR/ November 2021 - October 2022
- 8th European COST Conference on AI in Finance, Bern Business School, Switzerland / Project leader / COST Action CA19130 Conference Grant / 4000 EUR / September 2022
- 11th FinanceCom Conference, University of Twente, Netherlands / Project leader / COST Action CA19130 Conference Grant / 6000 EUR / August 2022
- Fintech and AI in Finance / Project leader / COST Action CA19130 Dissemination Grant / 800 CHF / October 2022
- Fintech and AI in Finance / Project leader / COST Action CA19130 Dissemination Grant / 200 CHF / September 2022
- Conferences on Artificial Intelligence in Finance / Innosuisse / Project leader / 80'000 CHF / Januar 2021 - July 2022
- Strengthening Swiss Financial SMEs through Applicable Reinforcement Learning / Deputy project leader / Innosuisse / 312'315 CHF / April 2021 - July 2022
- COST Action Fintech and Artificial Intelligence in Finance - Grant Holder / Project leader / Horizon Europe / 800'000 EUR / April 2020 - April 2025
- Human-machine centered collaboration to crowdsource insights / Project leader / Innosuisse / 15'000 CHF / June 2021 - December 2021
- Towards Explainable Artificial Intelligence and Machine Learning in Credit Risk Management / Project co-leader / Innosuisse / 282'969 CHF / Sept 2020 - Sept 2022
- Decentralized financing of Fairtrade producers using a blockchain-based solution / Deputy project leader / Innosuisse / 250'539 CHF / August 2020 - January 2023
- Advanced/AI-supported Rating Models for P2P systems / Project co-leader / Innosuisse / 15'000 CHF / July 2020 - July 2021
- Currency hedging for SMEs and pension funds / Project leader / Innosuisse / 439'610 CHF / Oct 2018 - Oct 2021
- Hybrid Approach for Robust Identification and Measurement of Investors Driving Corporate Sustainability and Innovation. Design of Policy Tools for Evaluating the Impact of Specific Investors and Assessing the Quality of Companies' Investor Bases. / Project leader / Swiss National Science Foundation / 150'000 CHF / February 2020 - August 2021
- Digitalisation non-bankable assets (specifically: art) / Deputy project leader / Innosuisse / 300k CHF / January 2020 - June 2020
- Deep Learning & Neuronal Networks: Selbstständige KI-Agenten zur Entwicklung von neuartigen Handelsstrategien im Asset Management auf Basis von Self-Play / Deputy project leader / Innosuisse / 15'000 CHF / July 2019 - January 2020
- Assessment of derivatives-based hedging solutions / Project co-leader / Swiss Asset Manager / 15'000 CHF / June 2021 - November 2021
- Enhancing the Financing of Fairtrade Producers using Blockchain Technology / Innosuisse / Team member / 250'539 CHF/ August 2020 - January 2023
- 6th European Conference on Artificial Intelligence in Finance and Industry 2021 / Project leader / 20'000 CHF / Industry funding / January 2021 - September 2021
- 5th European Conference on Artificial Intelligence in Finance and Industry 2020 / Project leader / 20'000 CHF / Industry funding / January 2020 - September 2020
- 4th European Conference on Artificial Intelligence in Finance and Industry 2019 / Project leader / 20'000 CHF / Industry funding / January 2019 - September 2019
- 3th European Conference on Artificial Intelligence in Finance and Industry 2018 / Project leader / 20'000 CHF / Industry funding / January 2018 - September 2018
- 2nd European Conference on Artificial Intelligence in Finance and Industry 2017 / Project leader / 20'000 CHF / Industry funding / January 2017 - September 2017

- 1st European Conference on Artificial Intelligence in Finance and Industry 2016 / Project leader / 20'000 CHF / Industry funding /January 2016 - September 2016
- FIN-TECH – Financial Supervision and Technology Compliance Training Programme / Project leader / 200'000 EUR / Europe Horizon 2020 / April 2018 - April 2021
- Digitales Immobilien Dossier (DIGIM) / Project co-leader / Innosuisse / 204'012 CHF / November 2018 - April 2020
- Swisscom E-Signatur TP Technik / Project leader / Swisscom / 80k CHF / January 2018 - December 2019
- Blockchain and Virtual Currencies / Project co-leader / Swiss National Science Foundation / 100k CHF / January 2018 - December 2018
- Large Scale Data-Driven Financial Risk Modelling / Team member / Innosuisse / 309'000 CHF / January 2017 - July 2019 /
- Mathematics and Fintech: The next revolution in the digital transformation of the finance industry / Project leader / Swiss National Science Foundation / 300k CHF / January 2016 - December 2019 /
- Swissnex Research Stay New York / Project leader / Swissnex / 10k CHF / July 2018
- Quantitative trading strategies / Project leader / Industry funding / 80k CHF / April 2016 - December 2017
- Long historical data for futures / Project leader / Industry funding / 20k CHF / April 2016 - December 2016
- Automation and industrialization of quantitative research / Project leader / University funding / 10k CHF / April 2015 - December 2016
- RENERG2 - RENewable enERGies in future energy supply / Innosuisse / Team member / 48'000 CHF / July 2013 - December 2016

Research grants submitted and acting as supervisor

- Sept 1, 2022. Marie-Sklowdowka Curie Action Postdoctoral Fellowship. Marcos Machado, Assistant Professor in Business and Information Systems at the Industrial Engineering and Business Information Systems (IEBIS) department section of the University of Twente. TITLE OF PROJECT. LINK TO NEW WIKI PAGE, enter it like that TITLE OF PROJECT. On this new page, kindly add a few details, at least title and abstract.

- Sept 1, 2022. Marie-Sklowdowka Curie Action Postdoctoral Fellowship. Ioana-Florina Coita, Lecturer in Statistics, University of Oradea, Romania. TITLE OF PROJECT. LINK TO NEW WIKI PAGE, enter it like that TITLE OF PROJECT. On this new page, kindly add a few details, at least title and abstract.

- Dec 1, 2022. SNSF Swiss Postdoctoral Fellowships. Lei Zhou, Ph.D Candidate, National Yang Ming Chiao Tung University, Taiwan. TITLE OF PROJECT. LINK TO NEW WIKI PAGE, enter it like that TITLE OF PROJECT. On this new page, kindly add a few details, at least title and abstract.

European Union

- FIN-TECH – Financial Supervision and Technology Compliance Training Programme / Project leader / 200'000 EUR / Europe Horizon 2020 / April 2018 - April 2021, network of 20 partners across Europe, with all 27 national regulatory authorities from the European endorsing and supporting the project. Member of the Executive Commitee and work package leader for Blockchain. 1'200'000 EUR total funding.

- COST Action CA19130 Fintech and AI in Finance, Action Chair, April 2020 - May 2025.

Swiss Naional Science Foundation (SNSF)

- July 2023, Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives, Principal investigator on the Swiss National Science Foundation (SNSF) research project on Narrative Digital Finance: a tale of structural breaks, bubbles & market narratives, coordinating a team of two PhD students and cooperating with additional researchers from Switzerland and across Europe.
- November 2022: SNSF Lead Agency with Czech Republic, Switzerland (B. Hadji Misheva, E. Baumohl, Š. Lyócsa, O. Deev, T. Plíhal, J. Osterrieder), "Network-based credit risk models in P2P lending markets", Co-Principal Investigator on the Swiss National Science Foundation (SNSF) reserach project on Network-based credit risk models in P2P lending markets, coordinating a team of two PhD students and cooperating with additional researchers from Switzerland and the Czech Republic.
- August 2022, SNF Exchange, Anomaly and fraud detection in blockchain networks, Principal Investigator
- August 2020, SNF Spark, Hybrid Approach for Robust Identification and Measurement of Investors Driving Corporate Sustainability and Innovation. Design of Policy Tools for Evaluating the Impact of Specific Investors and Assessing the Quality of Companies' Investor Bases, Co-Principal Investigator
- January 2020, SNSF, Virtual Currencies, Project lead for the technical work package
- January 2020, SNSF, Mathematics and Fintech - the next revolution in the digital transformation of the finance industry, Principal Investigator

Research grants under evaluation

European Union

- September 2022, Erasmus+ Alliance for Innovation, LaunchPad for Innovation in FinTech through academia-industry alliances, work package leader for LaunchPad framework and methodology for collaboration between industry and academia in FinTech, consortium members from Netherlands, France, Estonia, Hungary, Malta
- November 2022, MSCA Industrial Doctoral Network, MSCA Industrial Doctoral Network. Digital Finance - Reaching New Frontiers.

Trainings and other extracurricular activities

- COST Academy (https://www.cost.eu/academy/): Media Skills Training, March 16, 2023, Training for COST Action Chairs
- COST Academy (https://www.cost.eu/academy/): Sustainability of COST Actions, February 16, 2023, Training for COST Action Chairs

- COST Academy (https://www.cost.eu/academy/): How to manage and coordinate international research networks, March 30, 2022 and March 31, 2022, Training for COST Action Chairs
- University of Twente, Presenting with impact, Presentation Skills Training, October and December 2021
- COST Academy (https://www.cost.eu/academy/): Science Diplomacy in practice every day! September 2021 and October 2021, Training for COST Action Chairs
- COST Academy (https://www.cost.eu/academy/): How to pitch your research (elevator pitch) - May 18 and May 25, 2021, Training for COST Action Chairs
- COST Academy (https://www.cost.eu/academy/): How to engage with European Union Policymakers - April 27, 2021, Training for COST Action Chairs
- University Teaching Qualification (UTQ), University of Twente, Netherlands, 2022
- Certificate in Advanced Studies: University Teaching certificate, ZHPH, Switzerland, 2018
- Leadership in Academia, University training, ZHAW, Switzerland, 2018

Other academic activities

Reviewer of academic papers

- Frequent reviewer for academic journals, such as Annals of Operations Research (Springer), Journal of Banking and Finance (since 2018), Empirical Economics (Springer, since 2018), European Finance Journal (since 2019), Frontiers in Artificial Intelligence in Finance (since 2018), Journal of Investment Strategies (since 2020)

Editorships

- Member of the Editorial Board of Journal of Investment Strategies (http://prod.risk.bb8.incinsight.net/journal-of-investment-strategies), since 2021. Editor-in-Chief: Prof. Ali Hirsa, Columbia University. List of Editors (https://www.risk.net/static/journal-of-investment-strategies-editorial-board). Advisory Board: Robert Engle - NYU Stern School of Business (https://www.risk.net/static/robert-engle); Kenneth A. Froot - Harvard Business School (https://www.risk.net/static/kenneth-froot); Robert Jarrow - Cornell University, Johnson School of Business (https://www.risk.net/static/robert-jarrow)
- Associate Editor "Digital Finance" (Springer)
- Associate Editor "Frontiers Artificial Intelligence in Finance"

Expert Reviewer for the European Commission

- Expert reviewer for the European Commission's "Executive Agency for Small and Medium-Sized Enterprises", EIC Work Programme 2020
- Expert reviewer for the European Commission's " European Innovation Council Accelerator Pilot" program, EIC Work Programme 2021
- Expert reviewer for the European Commission's " European Innovation Council Accelerator Pilot" program, EIC Work Programme 2022

- Expert reviewer for the REA (Research Executive Agency) under the power delegated by the European Commission in the context of the EISMEA / European Innovation Council and SMEs Executive Agency programme, 2023

Outreach activities

- Academia - Government workshop - Policy workshop on AI in Finance, Brussels, May 2023
- Research workshop on Blockchain at the Hungarian Central Bank (April 2021)
- Research workshop on Artificial Intelligence at the Hungarian Central Bank (March 2020)
- Research workshop on Big Data at the Hungarian Central Bank (June 2019)
- Swissnex mobility grant, New York City (2016)
- "Von Chatbots, Tradingrobotern und Versicherungsoptimierern", contribution to ZHAW Impact (2019)
- Academia-industry round-table discussion: Big Data Analytics – FinTech Risk Management Tools (July 2019)
- Organization of Academia-Industry conferences
- 8th European Conference on AI in Finance and Industry (2023)
- 7th European Conference on AI in Finance and Industry (2022)
- 6th European Conference on AI in Finance and Industry (2021)
- 5th European Conference on AI in Finance and Industry (2020)
- 4th European Conference on AI in Finance and Industry (2019), 30 speakers; 250 participants from Switzerland and 19 European countries
- 3rd European COST Conference on AI in Finance and Industry (2018), 30 speakers; 260 participants from Switzerland and 16 European countries
- 2nd European COST Conference on AI in Finance and Industry (2017), 20 speakers; 180 participants from within Switzerland and across Europe
- 1st European COST Conference on Mathematics for Industry (2016), 20 speakers; 120 participants from within Switzerland
- Many Academia-Industry research projects with knowledge transfer since 2015

Activities on Fintech and AI

- Chair of a research network on Fintech and Artificial Intelligence in Finance (150 researchers from 36 countries)
- Member of the Board of a European Fintech, Blockchain and Artificial Intelligence project with 22 participating European countries and 27 national supervisory authorities
- Blockchain Work Package Manager in Finance, EU H2020 Project
- Member of the Management Committee of a European COST network for mathematics and industry
- Director of studies for an executive education course on "Blockchain, Big Data and Distributed Ledgers" as well as "Machine Learning and Deep Learning in Finance"
- Project leader for several research projects with the financial industry on blockchain
- Project leader for the SNSF project "Mathematics and Fintech - The Next Revolution in the Digital Transformation of the Financial Industry"
- Extensive research networks at a national and international level, interdisciplinary with teams from business, law and engineering schools
- Contributor to a research application for a European industrial doctorate on "Financial Data Science"
- Responsible for the Fintech Initiative of the School of Engineering

- Head of the organisation committee of an annual (since 2016) conference on "Artificial Intelligence in Finance and Industry" (260 participants from 19 European countries)
- Head of the organisation committee of an international research workshop on "Big Data Analytics"

Honors and awards

- Scholar of the German National Merit foundation for graduate studies
- Scholar of the German National Merit foundation for PhD studies

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Current as of August 2021.
