



**6th European Conference on
Artificial Intelligence in
Industry and Finance**

9th September 2021

12:30-17:15 CET, online

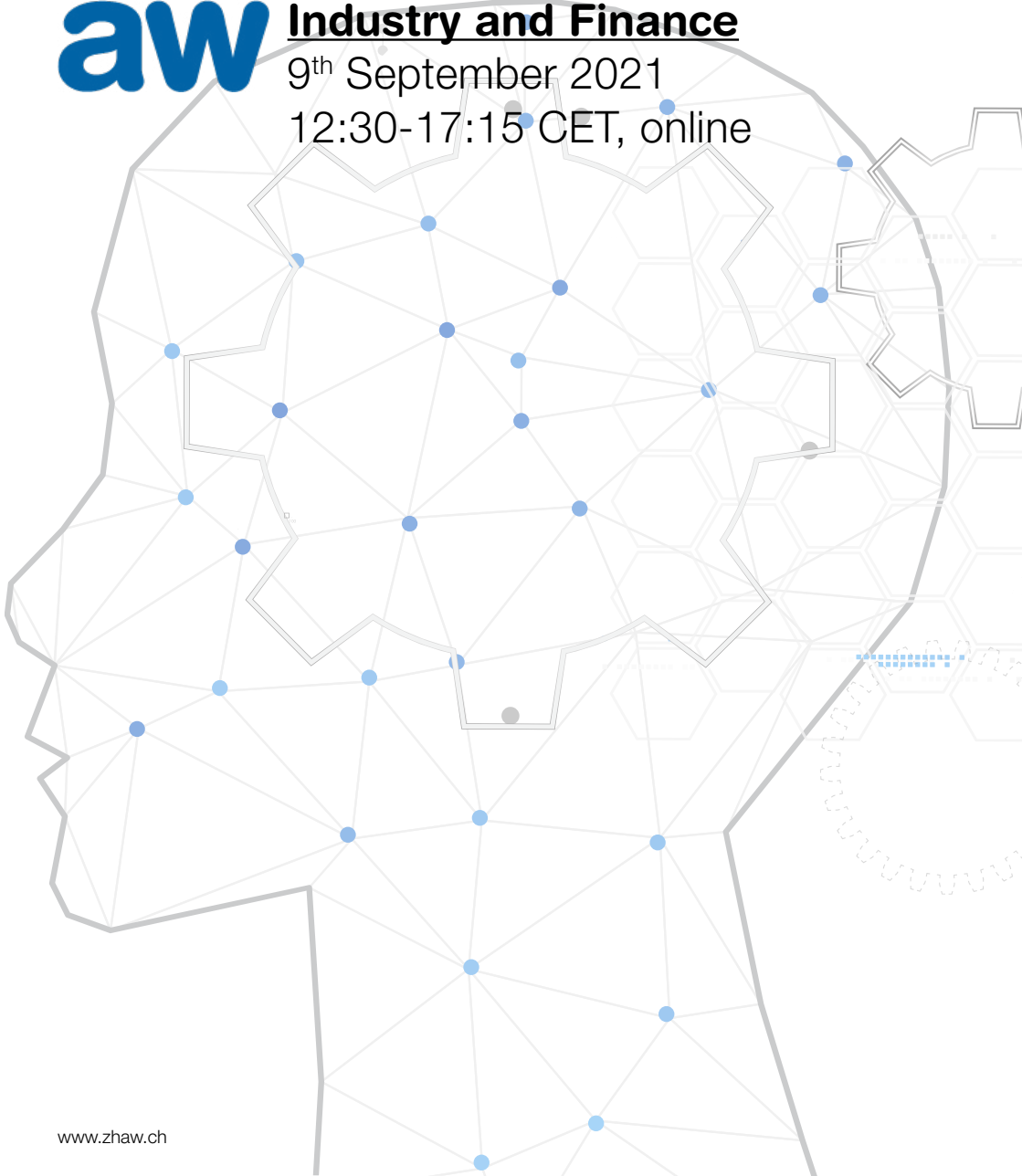


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Foreword

Dear distinguished speakers and participants,

We would like to welcome you to the 6th European Conference on Artificial Intelligence in Industry and Finance. It is a true pleasure to organize this conference, which is now taking place for the 6th year in a row. We are excited to host more than 300 participants from Switzerland, Europe and around the globe as well as 25 distinguished speakers both from academia and industry. The conference brings together policy makers, academics, participants from finance and industry and it serves as a forum for interdisciplinary discussion and exchange of ideas on the adoption of innovative artificial intelligence technologies in finance and industry.

Looking back at the beginnings of this conference we have reason to be proud. Six years ago, we started with 20 speakers and about 80 participants, mostly from Switzerland. In the meantime the European Conference on Artificial Intelligence in Industry and Finance has grown to a truly global event with participants and speakers from all-over the world.

This series of conferences has started with research funding from the European Union under the COST scheme, the longest-running European intergovernmental framework for cooperation in science and technology. We are now running our own COST Action on Fintech and AI in Finance, which will last another four years, so we are looking beyond the current times to the next in-person conferences again.

Due to the extraordinary times at the moment, we had to switch to an online-conference. We will miss the personal interactions, the chats and coffee breaks. On the upside we are now able to welcome speakers and participants from (almost) all corners of the world, making this "European" conference a truly global one, with an unprecedented number of participants.

This year we have four streams of presentations that focus on the following fields:

Artificial Intelligence in Finance

Artificial Intelligence in Industry

Ethical Questions in Artificial Intelligence

Industry-Academia co-operations and best practices

In the name of the entire team at ZHAW, I wish you an enjoyable, fruitful and exiting time at our online-conference.

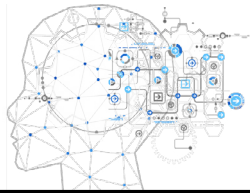


Sincerely,

Prof. Dr. Jörg Osterrieder, ZHAW

On behalf of the entire organization team

Timetable



6th European Conference on Artificial Intelligence in Industry and Finance

When: September 9th, 2021 (online), 12:30-17:15 CET

[Registration](#)
[More information](#)



12:30 13:00 **Warm-Up/Matchmaking**
 13:00 13:10 **Intro by Prof. Dr. Dirk Wilhelm, Dean of ZHAW School of Engineering**
 13:10 13:40 **Keynote: Dr. Alessandro Curioni, IBM**
What's next in Artificial Intelligence?
 13:40 14:00 **Break**

	Industry	Finance	Ethics	Academia-Industry best practices
	<i>Session Chair:</i> Dirk Wilhelm and Ruedi Füchslin	<i>Session Chair:</i> Jörg Osterrieder and Peter Schwendner	<i>Session Chair:</i> Andreas Henrici	<i>Session Chair:</i> Branka Hadji Misheva
14:00 14:20	Dr. Pascal Paysan, Varian Medical Systems Applications for AI in Image Formation for Radiation Therapy at Varian	Prof. Dr. Dirk Edelbueffel, TileDB Using R for Machine Learning in a Multilingual World	Dr. Teresa Scantamburlo, Uni Venedig Surveying the Opinion of European Citizens on AI	Prof. Dr. Dirk Wilhelm ZHAW Innosuisse Overview Innovation / Best Practices
14:20 14:40	Dr. Iason Kastanis, CSEM Deep Learning for quality inspection of injection molding parts	Prof. Dr. Josef Teichmann, ETHZ Model Free Deep Hedging	Dr. Joachim Baumann, ZHAW Fairness of insurance premiums: May personalized risk models lead to discrimination and social injustice?	Prof. Dr. Galena Pisoni, University of Côte d'Azur Innovative Big Data and AI-Empowered Solutions for Financial Companies
14:40 15:00	Dr. Andreas Fitze, SwissCognitive Data Explosion but all hidden in your data-center	Dr. Miquel Noguer i Alonso, AI Finance Institute A Meta-Learning Approach to Model Uncertainty in Financial Time Series	Dr. Michael Karner, Virtual Vehicle Research GmbH Bringing Internet of Things and Artificial Intelligence Together – But Is It Trustworthy?	Dr. Gabriele Schwarz Get support for your innovation project: Innosuisse mentoring

15:00 15:30 **Break**

15:30 15:50	Michael Berns, PWC AI Superpowers for Sustainability - how do we leverage AI-driven insights to speed up our climate change strategy?	Dr. Jochen Spuck & Dr. Alex Posth, Econsight/ ZHAW Thematic Investing in GreenTech	Dr. Gabriele Bolek-Fügl, Compliance 2b GmbH Definition of Wrong	Prof. Dr. Patricia Deflorin, FH Graubünden Open Innovation for Industry 4.0
15:50 16:10	Dr. Stefan Pauli, VTU Engineering Machine learning in the GMP regulated industries	Prof. Dr. Natalie Packham, Berlin Correlation Scenarios and Correlation Stress Testing Prof. Dr. Peter Schwendner, ZHAW Interpretable Machine Learning for Diversified Portfolio Construction	Dr. Branka Hadji Misheva, ZHAW Explainable AI in Finance	Prof. Dr. Jörg Osterrieder Generative Adversarial Networks COST Fintech and Artificial Intelligence in Finance Jürgen Büscher & Piotr Kotlarz, QCAM/ ZHAW Currency Hedging with Overlays

16:10 16:45 **Break**

16:45 17:15 **Closing panel** Automation of Journalism
 Guido Keel, ZHAW; Dr. Jessica Kunert, Senior Research Associate, Journalism and Mass Communication, University of Hamburg; Johanna Wild, Open Source Investigator Bellingcat; Stefan Trachsel, CH media

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Funded by the European Union

Speakers

Keynote Speaker

Dr. Alessandro Curioni: «What's Next in AI»



Dr. Alessandro Curioni is responsible for IBM corporate research in Europe and IBM's global research agenda in Future of Computing and Security. Dr. Curioni is an internationally recognized leader in the area of high-performance computing and computational science, where his innovative thinking and seminal contributions have helped solve some of the most complex scientific and technological problems in healthcare, aerospace, consumer goods and electronics. He was a member of the winning team recognized with the prestigious Gordon Bell Prize in 2013 and 2015. His research interests include AI and novel compute paradigms, such as quantum and neuro-morphic computing, and the convergence of computing technologies to accelerate discovery.

Abstract

What's Next in AI: Today's AI is narrow. While many AI models deliver value in specific, well-defined situations, applying those same models to new challenges requires an immense amount of new data and training. Enterprises need AI that is fluid and adaptable, capable of applying knowledge acquired for one purpose to new domains and challenges. They need AI that can combine different forms of knowledge, unpack causal relationships, and learn new things on its own. In short, enterprises need AI with fluid intelligence. To achieve this vision, we'll have to make significant strides in algorithm development while improving our AI engineering tools and hardware and to make sure it's trusted and secure.

Industry

Dr. Pascal Paysan: «Applications for AI in Image Formation for Radiation Therapy at Varian»



Pascal is working as Sr. Research Scientist in the medical imaging domain for Varian, a Siemens Healthineers Company, since more than 10 Years. Beginning his career at Varian he worked in product development and lead the development of Iterative Cone Beam CT (iCBCT) reconstruction algorithms. Since 2019, he became part of Applied Research exploring future technologies for improved image guidance in radiation therapy. In this context he is guiding several projects leveraging deep learning techniques to improve image quality and model patient motion. In his current role he is in charge of research collaborations with leading scientists in the medical imaging field such as DKFZ and UCLA.

Pascal graduated at University of Basel and attained his PhD in computer science 2010 for his work on statistical modeling of facial aging. During his PhD research he applied machine learning, generative 3D shape models, computer graphics, and computer vision methods. At University of Applied Sciences Esslingen he obtained his Dipl. Ing. degree 2004. During his studies he worked for Daimler AG in the computer vision for autonomous driving field. He carried out his diploma thesis, about detection of oncoming cars using stereo vision and machine learning, at MIT in Boston.

Abstract

Varian, a Siemens Healthineers company is the market leader in radiation oncology hard- and software solutions and has a long track record in transforming technical innovation into successful customer facing products, touching cancer patients throughout the world. Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL) technologies made their way into every day's applications and are currently of huge interest in various domains.

In recent research it became evident that AI can be successfully applied in various medical imaging domains. In our studies we are focusing on X-ray based imaging and computed tomography. Ongoing studies applying data driven methods in this domain are showing promising results and are subject to explore the practical clinical value prior a product development decision will be made.

In this presentation promising early results, implementation strategies and product opportunities will be discussed to demonstrate the potential added value of AI technology in clinical Image-Guided Radiation Therapy (IGRT).

Industry

Dr. Iason Kastanis: «Deep Learning for quality inspection of injection molding parts»



Iason Kastanis obtained his MSc (2002) and PhD (2007) in computer science from University College London. He focused on signal processing, computer vision and optimization methods. He continued his career as a developer of image reconstruction software in the UK integrating his PhD research in a medical product. He worked as Post-Doc in the University of Barcelona in the area of Virtual Reality. His passion for applying new technology in the real-world has led him to CSEM in 2013. He is currently an Expert in Machine Learning and Vision leading multiple projects in the fields of predictive maintenance and quality inspection.

Abstract

Camera based systems for quality inspection are nowadays available as Commercial Off The Shelves (COTS) hardware and software bundles. While COTS have come a long way in the last 20 years, there are still a variety of problems where customized solutions are required. On the contrary open source tools are offering a wide selection of methods, but that is typically too complex to be used by non-expert users. In this talk we will present the complete design and development of an optical quality control system for KNF (<https://www.knf-flodos.ch>) pump parts. An often neglected and underestimated stage is that of data preparation. Data preparation includes not only the acquisition of images, but also the annotation and processing in order to make the data set analysis ready for the algorithms. We will present how we can simplify this process with effective tools and the use of AI. Often in academic studies data sets are fixed, and the evolution of real-world systems is not accounted for. In this sense many works present excellent results on static benchmark problems. It is very common in industrial applications that the problem is dynamic and changes over time. The presented system is capable of evolving through user input without requiring the intervention of a data scientist. The models are adapting to changing conditions according to the direction given by the operator in the form of labelling. It is exactly this limitation of many available solutions that restricts their readiness for real world application, our system is designed to be flexible at the hands of the customer.

Industry

Dr. Stefan Pauli: «Machine learning in the GMP regulated industries»



Stefan Pauli did his PhD related to computer science and mathematics at ETH Zürich. He gained additional experience in algorithm development in several industrial companies and startups. His background, including an industrial apprenticeship, and his experience helps him to link the world of algorithms with the industrial practice. Today he is a Senior Data Scientist at VTU Engineering, where he implements data analysis projects mainly in the chemical and pharmaceutical production, according to the motto: start small and grow with the success.

Abstract

In industry, the increased amount and availability of process, machine and quality control data has opened up profitable opportunities by analyzing this data with advanced methods such as machine learning. In this context, machine learning is already successfully used for production optimization to guarantee e.g. high and consistent quality as well as increased throughput. However, in GMP (Good Manufacturing Practices) environments such as pharmaceutical production, the high regulatory requirements must be met at all times. This places high demands on the quality and documentation of machine learning-driven data analyses.

Industry

Michael Berns: «AI Superpowers for Sustainability - how do we leverage AI-driven insights to speed up our climate change strategy»



AI Superpowers for Sustainability - how do we leverage AI-driven insights to speed up our climate change strategy? In this short overview Michael will summarize his TEDx talk and latest findings from international AI projects to improve sustainability.

Abstract

In this talk, I will give a brief introduction to Inverse Reinforcement Learning (IRL), and give examples of its potential applications for quantitative finance.

Abstract

Michael's talk is about how to use AI for sustainability, not only to inspire and educate but as a call to action! Michael is Director for AI & FinTech at PwC. Michael has a broad background across blue chip names such as Morgan Stanley & Moody's as well as a range of smaller innovative AI Firms.

Aside from his day job he also takes a keen interest in understanding the latest in innovation by helping AI firms to scale and has been a Mentor and Judge for organizations like Startup Bootcamp, Virgin Money Startup, Cocoon Network, Level 39, MIT IIC and the United Nations World Food Program for the last 10 years.

As a well-known Expert in his field, Michael acts as keynote speaker at international conferences and guest lecturer at London Business School and Mannheim Business School.

The "AI Book" to which he contributed as Co-Author was released last year, together with the PwC „AI in Financial Services“ study (based on 150 experts).

Many of Michael's other articles, past speaking engagements and contributions to AI are available via his LinkedIn profile. This talk was given at a TEDx event using the TED conference format but independently organized by a local community. Learn more at <https://www.ted.com/tedx>

Industry

Dr. Andreas Fitze: «Data explosion, but all hidden in your data centre»



Andy Fitze is a digital cognitive strategist, top global AI and digital transformation advisor for start-ups and enterprise boards, tactical leader, and an AI influencer. With Dalith Steiger, Andy is the co-founder of the award-winning start-up SwissCognitive, and the CognitiveValley Foundation. He is president of the Swiss IT Leadership Forum, a member of the Board of Directors of SwissICT, and a Chairman & Member of various boards of Directors. Andy is a lecturer and member of the Strategic Advisory Board at Bern University of Applied Sciences and a lecturer at the ETH Zürich. To share his 30 years of extensive knowledge and experience, he is often seen on global stages. He is also a passionate skipper on the oceans – providing him with an excellent balance for head and soul.

Abstract

In my keynote, I focus on the interrelation between data quality, quantity, accessibility, infrastructure, and literacy and how these components can be advanced in harmony with human cognition to translate into efficiency and productivity for society and business.

Data on its own is nothing. So is technology. There are many ingredients in play. Still, even top-notch data and technology would not line up without human intervention. No component plays a more critical role than the other. Human cognition can advance the interrelation between data and AI in harmony for the benefit of all aspects of our lives.

Finance

Prof. Dr. Dirk Eddelbuettel: «Using R for Machine Learning in a Multi-Lingual World»



Dirk Eddelbuettel is the author / coauthor of several dozen R packages on CRAN including Rcpp; co-creator of the Rocker Project for R use on Docker; an editor at the Journal of Statistical Software; the Debian/Ubuntu maintainer for R, numerous CRAN packages and other quantitative software; an elected board member of the R Foundation; an adjunct Clinical Professor at the University of Illinois at Urbana-Champaign where he teaches a class on Data Science Programming Methods, and a principal software engineer at TileDB. He holds a MA and PhD in Mathematical Economics from EHESS in France, and a MSc in Industrial Engineering from KIT in Germany.

Abstract

John Chambers, the key driver behind the S language underlying the R language, environment, and project, stated in his most recent book (Extending R, CRC, 2016) that `_Interfaces to other software are part of R_`. We illustrate this with use cases from widely deployed interface packages. As a concrete example, we discuss `mlpack` by Curtin et al which brings a performant and very complete Machine Learning library to R (using C++ bindings). But connecting to `.code` in other languages is only a first step, connecting to data flow in a portable cross-language manner is another. We highlight some recent work in language agnostic data representations.

Finance

Prof. Dr. Josef Teichmann: «Model free Deep Hedging »



Josef Teichmann is a professor at ETH Zürich with particular interest in Mathematical Finance, Stochastic Analysis and Machine Learning in Finance. Recent work focuses on several fundamental problems in Finance such as Pricing, Hedging, Prediction or Calibration from a Machine Learning perspective, and in turn applies methods from Stochastic Finance to deepen the understanding of those new technologies.

Abstract

We combine techniques from Bayesian model selection (D'ambgen, Rogers 2014) and Deep Hedging (Bühler, Gonon, Teichmann, Wood 2019) to obtain a purely data driven artificial risk manager. In contrast to Deep Hedging no particular scenario generating process has to be chosen (joint work with Thorsten Schmidt).

Finance

Dr. Miquel Noguera i Alonso: «A Meta-Learning approach to Model Uncertainty in Financial Time Series»



Miquel Noguera i Alonso is a financial markets practitioner with more than 20 years of experience in asset management, he is the Founder of Artificial Intelligence Finance Institute. Head of Development at Global AI and co-Editor of the Journal of Machine Learning in Finance.

He worked for UBS AG (Switzerland) as Executive Director. He is member of European Investment Committee for the last 10 years. He worked as a Chief Investment Office and CIO for Andbank from 2000 to 2006. He started his career at KPMG.

He is Visiting Professor at NYU Courant Institute of Mathematical Sciences and the CQF institute. He has been Adjunct Professor at Columbia University teaching Asset Allocation, Big Data in Finance and Fintech. He is also Professor at ESADE teaching Hedge Fund, Big Data in Finance and Fintech. He taught the first Fintech and Big Data course at the London Business School in 2017.

He received an MBA and a Degree in business administration and economics in ESADE in 1993. In 2010 he earned a PhD in quantitative finance with a Summa Cum Laude distinction (UNED – Madrid Spain). He completed a Post-doc in Columbia Business School in 2012. He collaborated with the Mathematics department of Fribourg during his PhD. He also holds the Certified European Financial Analyst (CEFA) 2000. He also holds the ARPM certificate.

His research interests range from asset allocation, big data, machine learning to algorithmic trading and Fintech. His academic collaborations include a visiting scholarship in Columbia University in 2013 in the Finance and Economics Department, in Fribourg University in 2010 in the mathematics department, and giving presentations in Indiana University, ESADE and CAIA and several industry seminars like the Quant Summit USA 2019 and 2010.

Abstract

Financial markets have experienced several negative sigma events in recent years; these events occur with much more regularity than current risk models can predict. There is no guarantee that the training set's data generating process will be the same in the test set in finance. Mathematical models are designed to operate with unlimited and changing data, and yet, actual events keep making life hard for most models. The assumption of independent and identically distributed random variables and a stationary time series do not hold in reality. Over-reliance on historical data and backtesting of models is not a sufficient approach to overcome these challenges. Reinforcement-learning faces similar challenges when applied to financial time series. Out-of-distribution generalization is a problem that cannot be solved without assumptions on the data generating process. If the test data is arbitrary or unrelated to the training data, then generalization is not possible. Finding these particular principles could potentially help us build AI and financial modeling systems. N-Beats, Oreshkin et al. [2020], is a deep neural architecture with backward and forward residual links and a deep stack of fully-connected layers. N-Beats can be considered as a meta-learning model for time series prediction. Meta-Learning is a machine learning approach that intends to design models that can learn new skills or adapt to new environments rapidly with few training examples. We explore the performance of N-Beats and compare its performance with other deep learning models. The results are not conclusive in establishing N-Beats as a better model than the other models tested in this study. We show in this study that other neural network-based models offer similar performance.

Finance

Prof. Jochen Spuk & Dr. Alex Posth: «Thematic Investing in GreenTech: Patent-data-driven Identification of Green Technology Trends and Sustainable Investment Opportunities»



Dr. Jochen Spuk, Chief Technology Officer EconSight studied organic and inorganic chemistry at the University of Fribourg in Switzerland and graduated as Dr. rer. nat in inorganic chemistry (combined studies on inorganic polymer chemistry („Smart Polymers“) and computational chemistry (factor analysis (multivariate statistics) and other methods). Between 1999 and 2008, he worked as project manager and later head of R&D in two SME's in Switzerland developing and producing digital print media, often in cooperation with larger companies as well as Head of International Customer Support at Mettler Toledo's Sensor Branch. He joined the Institute of Intellectual Property (IGE, the „Swiss Patent Office“) in Bern in 2008 and worked from 2008 and 2018 as a researcher and examiner and most recently as head of product developments of ip-search, the international service branch of the IGE. He was the responsible head of the Artificial Intelligence group for patent searches as well as the patent searchers' digital toolbox. In addition, as Head of Business Development, he was responsible for digital business methods in the field of patents and IP as well as for relations with corporate clients.

He achieved QPIP certified patent searcher and analyst status and was educated as patent search trainer by the EPO. He also developed the foundation of the technology field project, which evolved later to be the heart of the company EconSight, GmbH, which he co-founded in 2019 together with Kai Gramke. He is now responsible for the technological content of the company's products, analysis and studies. As such he contributed largely to technology analysis for and in cooperation with EPO, ESA, Bertelsmann Foundation, Handelsblatt, Forbes Digital or VbW Zukunftsrat Bavaria as well as many other (industry & finance) corporate patent and technology projects meanwhile.



Dr. Jan-Alexander Posth is a senior lecturer at the Institute for Wealth and Asset Management at the ZHAW School of Management and Law, with a research focus GreenTech and AI in finance. He has more than 12 years' of professional track record in the financial industry, where he gained extensive expertise as a risk manager, quant and portfolio manager. Starting at Deutsche Postbank as a credit risk manager, Alex moved on to Landesbank Baden-Württemberg where he led the fund derivatives trading desk. Joining STOXX Ltd. in 2012, he was responsible for the development of smart-beta equity indices before becoming Head of Research and Portfolio Management at a start-up hedge fund in 2015. Alex changed to ZHAW in 2017; he holds a PhD in theoretical physics.

Abstract

Thematic Investing in GreenTech: Patent-data-driven Identification of Green Technology Trends and Sustainable Investment Opportunities. GreenTech is the single-most important enabler to unlock the technological transformation and innovation potential necessary for the change towards a more sustainable economy and society. By now, it has been recognized that ESG compliance and more sustainability will not be realized by economization only; rather, ESG-compliant investing and policy design is needed to creatively reshape entire industries and proactively advance this transformation. We will discuss how AI-supported analysis of patent data helps to identify up-and-coming trends in green technologies, how maps of GreenTech can provide guidance for policy makers and regulators, and how essential technology trends can be mapped to thematic investment themes.

Finance

Prof. Dr. Natalie Packham: «Correlation scenarios and correlation stress testing»



Natalie Packham is Professor of Mathematics and Statistics at Berlin School of Economics and Law and Principal Researcher within the International Research Training Group "High Dimensional Nonstationary Time Series" (IRTG 1792) at Humboldt University Berlin. Natalie has several years of industry experience as a front office software engineer at an investment bank. Her research expertise includes Mathematical Finance, Financial Risk Management and Computational Finance, and her academic work has been published in Mathematical Finance, Finance & Stochastics, Quantitative Finance, Journal of Applied Probability and many other academic journals. Natalie holds an M.Sc. in Computer Science from the University of Bonn, a Master's degree in Banking & Finance from Frankfurt School, and a Ph.D. in Quantitative Finance from Frankfurt School.

Abstract

We develop a general approach for stress testing correlations in stock and credit portfolios. Using Bayesian variable selection methods, we build a sparse factor structure, linking individual names or stocks with country and industry factors. We specify a parametric form of the correlation matrix, where correlations of stock returns are represented as a function of the country and industry factors. Regular calibration yields a distribution of economically meaningful stress scenarios on the factors, which can then be translated into stressed correlations. The method also lends itself as a reverse stress testing framework: using e.g. the Mahalanobis distance on the joint risk factor distribution, allows to infer worst-case correlation scenarios. We give examples of stress tests on a large portfolio of European and North American stocks.

Finance

Prof. Dr. Peter Schwendner: «Interpretable Machine Learning for Diversified Portfolio Construction»



Peter Schwendner leads the Institute of Wealth & Asset Management at Zurich University of Applied Sciences, School of Management and Law. He collected 15 years of work experience in the financial industry as a head of quantitative research at Sal. Oppenheim and as a partner at Fortinbras Asset Management after he completed a doctorate in physics. He has been developing analytics for primary and secondary markets and quantitative risk premia strategies with financial industry partners.

Abstract

The use case benchmarks hierarchical risk parity (HRP) relative to equal risk contribution (ERC) as examples of diversification strategies allocating to liquid multi-asset futures markets with dynamic leverage (volatility target). The authors use interpretable machine learning concepts (explainable AI) to compare the robustness of the strategies and to back out implicit rules for decision-making.

Ethics

Dr. Teresa Scantamburlo: «Surveying the Opinion of European Citizens on AI»



I'm a post-doc at the European Centre for Living Technology (ECLT), Ca' Foscari University (Italy), working on the AI4EU project. Before now, I worked on the ThinkBIG project at the University of Bristol (UK). My research interests lie at the intersection of Philosophy and Artificial Intelligence. Currently I'm interested in the social and ethical impacts of AI, in particular, on human decision-making and social regulation. I received my PhD in Computer Science from Ca' Foscari University (Venice, Italy) under the supervision of professor Marcello Pelillo. My PhD thesis explored the philosophical foundation of machine learning and pattern recognition. I completed a B.Sc. in Computer Science and a M.A. in Digital Humanities at the same University.

Abstract

In this talk I will outline a collaborative research conducted in the context of AI4EU, a Horizon 2020 project connecting AI stakeholders and AI resources in a dedicated platform. The goal of this effort was to understand the view of European citizens on AI. In particular, our research aimed to explore: 1) to what extent EU citizens are aware of AI and its impact; 2) citizens' attitude towards AI; 3) citizens' trust in AI. To investigate these topics we launched a survey involving a sample of 4000 citizens spread across 8 EU countries in May 2021. In this presentation I will briefly introduce the methodology we used and some meaningful results that we collected.

Ethics

Joachim Baumann: «Fairness of insurance premiums: May personalized risk models lead to discrimination and social injustice»



Joachim Baumann is a PhD candidate at the Zurich University of Applied Sciences and the University of Zurich. Prior to starting the joint PhD program in 2021, he graduated from the University of Zurich with a master's degree in information systems and data science. He worked as an application developer and later on in project management consulting. In his research, he focuses on the intersection of algorithms and ethics. In particular, he is interested in questions of fairness when applying machine learning for automated decision making. He investigates these topics on a theoretical and a practical level in various fields such as insurance, recruitment, and criminal justice.

Abstract

More and more, personalized risk models are used for determining insurance premiums. In this context, issues of fairness, discrimination, and social injustice might arise: Algorithms for estimating the risk based on personal data may be biased towards specific social groups, leading to systematic disadvantages for those groups. Personalized premiums may thus lead to discrimination and social injustice. It is well known from many application fields that such biases occur frequently and naturally when prediction models are applied to people unless special efforts are made to avoid them. Insurances are no exception.

Ethics

Dr. Michael Karner: «Bringing Internet of Things and Artificial Intelligence together – but is it trustworthy?»



Dr. Michael Karner is lead researcher at VIRTUAL VEHICLE in Graz, Austria. He received a master's (Information and Computer Engineering) and doctoral degree (Electrical Engineering) from Graz University of Technology. He was the coordinator for the recently finished ECSEL project SCOTT (focussing on cost-efficient solutions of wireless, end-to-end secure, trustworthy connectivity and interoperability in the Internet of Things), with a budget of 40M€ and involving nearly 60 partners from 11 European countries and Brazil). Currently, he is coordinator of the ECSEL InSecTT (Intelligent Secure Trustable Things) project dealing with bringing the Internet of Things and Artificial Intelligence together and making it trustworthy, with a budget of over 40M€ and involving more than 50 partners from 12 countries. He has more than ten years industrial and scientific experience in the field of intelligent and connected systems (including artificial intelligence, automated driving, trustworthiness...). Furthermore, he is active as a reviewer and technical program committee member in several conferences

and journals.

Abstract

Artificial Intelligence of Things (AIoT) is the natural evolution for both Artificial Intelligence (AI) and Internet of Things (IoT) because they are mutually beneficial. AI increases the value of the IoT through Machine Learning by transforming the data into useful information, while the IoT increases the value of AI through connectivity and data exchange. However, users are challenged to understand and trust their increasingly complex and smart devices, sometimes resulting in mistrust, usage hesitation and even rejection.

InSecTT – Intelligent Secure Trustable Things, a pan-European effort with 52 key partners from 12 countries (EU and Turkey), provides intelligent, secure and trustworthy systems for industrial applications. This results in comprehensive cost-efficient solutions of intelligent, end-to-end secure, trustworthy connectivity and interoperability to bring the Internet of Things and Artificial Intelligence together. InSecTT aims at creating end-user trust in AI-based intelligent systems and solutions as a major part of the AIoT. Trustworthy AI has three components: it should be lawful, it should be ethical, and it should be robust. In InSecTT, we focus on robustness and ethics, ensuring our developed systems are resilient, secure and reliable, while prioritising the principles of explainability and privacy.

Ethics

Dr. Gabriele Bolek-Fügl: «Definition of Wrong»



Gabriele Bolek-Fügl worked for more than 22 years in the area of IT compliance, primarily at international auditing networks with the areas of data protection, compliance frameworks and cyber security. The current focus of her activities is artificial intelligence and how companies can successfully use it for operations. In doing so, she connects the requirements of business with legal requirements and digital tools/algorithms.

In 2020, she founded the startup Compliance 2b and, together with her co-founders, provides a legally compliant channel for anonymous internal reporting in organizations. This system supports whistleblowers in submitting high quality reports as well as compliance officers in resolving them with AI functions.

Abstract

We believe we have a solid understanding of many things in our everyday working lives, such as wrongdoing in our own organization. But what does wrongdoing actually mean? While it is quite easy to define theft, it is often more difficult to do so in other areas. When and with which actions does, for example, bullying begin?

We use AI algorithms to reduce wrongdoing in organizations. In my presentation, I will talk about the challenges that need to be considered.

Ethics

Dr. Branka Hadji Misheva: «Explainable AI in Finance»



Branka Hadji Misheva is researcher at ZHAW Zurich University of Applied Sciences, working on AI applications in finance, XAI methods, network models and fintech risk management. She holds a PhD in Economics and Management of Technology with a specific focus on network models as they apply to the operation and performance of P2P lending platforms, from the University of Pavia, Italy. At her position at ZHAW, she leads several research and innovation projects on Artificial Intelligence and Machine Learning for Credit Risk Management. She is a research author of 10 papers in the field of credit risk modeling, graph theory, predictive performance of scoring models, lead behavior in crypto markets and explainable AI models for credit risk management.

Abstract

Artificial Intelligence (AI) has created the single biggest technology revolution the world has ever seen. For the finance sector, it provides great opportunities to enhance customer experience, democratize financial services, ensure consumer protection and significantly improve risk management. While it is easier than ever to run state-of-the-art machine learning models, designing and implementing systems that support real-world finance applications have been challenging. In large part this is due to the lack of transparency and explainability which in turn represent important factors in establishing reliable technology. The research on this topic with a specific focus on applications in credit risk management has been limited. In this paper, we implement different advanced post-hoc model agnostic explainability techniques to machine learning (ML)-based credit scoring models applied to loan performance data. We present multiple comparison scenarios and we discuss in detail the practical challenges associated with the implementation of these state-of-art explainable AI (XAI) methods

Academia-Industry best practices

Prof. Dr. Dirk Wilhelm: «Innosuisse Overview Innovation / best practices»



Dirk Wilhelm is Professor and Dean of the ZHAW School of Engineering, Zurich, Switzerland. He received his Master's degree in Physics from University of Göttingen in Germany and his PhD in Mechanical Engineering from ETH Zurich in Switzerland. He worked as a development engineer for Alstom Power Systems in the gas turbine development department. Afterwards he joined the biomedical company Bruker BioSpin, where he headed a development department. In 2013 Dirk Wilhelm joined the School of Engineering at Zurich University of Applied Sciences (ZHAW) and became professor for Medical Physics. Since 2019 he is Dean of the School of Engineering and member of the University Board. He has 15 years of work experience in applied physics and mathematics. His research interests are in Medical Physics, Nuclear Magnetic Resonance Spectroscopy, Computational Fluid Dynamics, and Numerical Methods.

Academia-Industry best practices

Prof. Dr. Galena Pisoni: «Innovative big data and AI-empowered solutions for financial companies »



Galena Pisoni is a Lecturer and Innovation & Entrepreneurship (I&E) coordinator at University of Côte d'Azur, in this role she teaches I&E courses for computer science students and plan and coordinate local research projects and developments towards I&E

Academia-Industry best practices

Dr. Gabriele Schwarz



Gabriele Schwarz has been an accredited Innosuisse mentor for more than 8 years and has accompanied more than 250 projects since then. With a background and PhD in Information Management and several years of experience working in industry she founded her own company Innovista Management in 2012 which supports companies in innovation and technology.

Abstract

Innosuisse is the Swiss Innovation Agency. Its role is to promote science-based innovation in the interest of the economy and society in Switzerland. Innosuisse supports science-based innovation projects carried out by companies, private or public institutions in cooperation with research partners. The agency also funds preliminary studies with innovation cheques as well as innovation projects conducted by research institutes without implementation partners.

To stimulate the innovation activities in times of pandemic, Innosuisse launched the additional Impulse program Swiss Innovation Power. Its objective is to maintain the innovative strength and secure the long-term competitiveness of small to medium-sized companies in Switzerland in view of the current Covid-19 pandemic. Within the scope of this impulse program, the contributions of SMEs as the implementation partners can be reduced in comparison to the standard innovation projects.

The Innosuisse Guide (<https://www.innosuisse.guide/#/en>) helps all interested partners to find the right support offer in just a few steps. From individual advice through to national and international networking opportunities and financial support for projects.

The innovation mentors help organizations kick-start their innovation project and find the right partners. They know the Swiss innovation scene like the back of their hand. This service is free for SMEs with less than 250 full-time employees. Applications can be submitted to Innosuisse online.

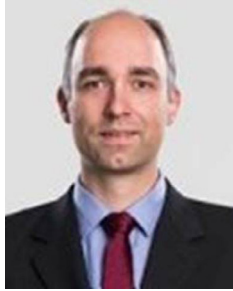
Prof. Dr. Patricia Deflorin



Prof. Dr. Patricia Deflorin is Research Director at the Swiss Institute for Entrepreneurship (SIFE) and lecturer at the University of Zurich. Her research focus on innovation, supply chain and digital transformation. Her area of experience includes the design and implementation of data-based services, the generation and analysis of IoT business models and the identification of necessary technologies for the successful implementation of digital transformation.

Academia-Industry best practices

Prof. Dr. Jörg Osterrieder: «European Cooperation in Fintech and Artificial Intelligence in Finance»



Joerg Osterrieder is Professor of Finance and Risk Modelling at the ZHAW School of Engineering (Switzerland). He has been working in the area of financial statistics, quantitative finance, algorithmic trading, and digitisation of the finance industry for more than 15 years.

Joerg is the Action Chair of the European COST Action 19130 Fintech and Artificial Intelligence in Finance, an interdisciplinary research network combining 200+ researchers and 38 European countries as well as five international partner countries. He is the director of studies for an executive education course on „Big Data Analytics, Blockchain and Distributed Ledger“ and has been the main organizer of an annual research conference series on Artificial Intelligence in Industry and Finance since 2016. He is a founding associate editor of Digital Finance, an editor of Frontiers Artificial Intelligence in Finance and frequent reviewer for academic journals.

In addition, he serves as an expert reviewer for the European Commission on the „Executive Agency for Small & Medium-sized Enterprises“ and the „European Innovation Council Accelerator Pilot“ programmes.

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 also active at the intersection of academia and industry, focusing on the transfer of research results to the financial services sector in order to implement practical solutions.

Academia-Industry best practices

Jürgen Büscher



With more than 25 years of experience in the financial markets, the FX specialist Jürgen Büscher is contributing valuable experience and a broad professional network to QCAM.

As a pioneer in the development of the foreign exchange options market and the FX overlay business in Germany, he worked in leading positions at HSBC Trinkaus and Burkhardt Düsseldorf until 1995. This was followed by five years in Frankfurt as Head of Foreign Exchange at DG Bank and Head of Treasury Services & FX Overlay at ABN AMRO Bank.

Since 2001, the German has been living in Switzerland and for many years held global responsibility for the foreign exchange and commodity business at Deutsche Bank Private Wealth Management.



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