CIFEr Conference 2024

FINTECH RISK AND ETHICS

AGENDA

October 22-23, 2024
Stevens Institute of Technology

STEVENS INSTITUTE OF TECHNOLOGY 1870
School of Business

CRAFT
CENTER FOR RESEARCH TOWARD ADVANCING FINANCIAL TECHNOLOGIES

IEEE

IEEE Computational Intelligence Society

ABOUT THE ORGANIZERS

STEVENS INSTITUTE OF TECHNOLOGY 1870
School of Business

Stevens Institute of Technology is a premier, private research university in Hoboken, New Jersey, overlooking the Manhattan skyline. Since its founding in 1870, technological innovation and entrepreneurship have been the hallmarks of Stevens' education and research. Stevens prepares its more than 8,000 undergraduate and graduate students for an increasingly complex and technology-centric world. Our exceptional students collaborate closely with world-class faculty in an interdisciplinary, student-centric, entrepreneurial environment, readying them to fuel the innovation economy. Academic and research programs spanning finance, computing, engineering and the arts expand the frontiers of science and leverage technology to confront the most challenging problems of our time. Stevens is consistently ranked among the nation's leaders in ROI and career services and is in the top 1% nationally of colleges with the highest-paid graduates.

CRAFT
CENTER FOR RESEARCH TOWARD ADVANCING FINANCIAL TECHNOLOGIES

The Center for Research toward Advancing Financial Technologies (CRAFT) is housed in the Stevens School of Business. It is the first fintech-focused Industry University Cooperative Research center funded by NSF. Working together, the center's academic and industry partners collaboratively create innovative solutions such as decentralized finance, AI-enabled finance, quantum finance and solutions to climate-related impacts on investment, while also helping secure our financial data, create and test more equitable trading platforms, inform financial regulations, and support improved market simulation and stress-testing tools that ensure financial system stability for all.

IEEE Computational Intelligence Society

Since 1995, the IEEE Symposium on Computational Intelligence for Financial Engineering and Economics (CIFEr) has been a leading forum for research and applications of Computational Intelligence in Business, Finance and Economics. The financial services industry is presently undergoing considerable change due to the development of new technologically focused products and services. The understanding of these innovations requires multidisciplinary approaches from the perspective of industry, societal and government policies. This year's conference brings together a global community of researchers and practitioners with a particular emphasis on fostering cross disciplinary collaboration. Technical exchanges will encompass keynote talks, research presentations and tutorials.

ORGANIZING COMMITTEE

Steve Yang | Co-Chair of the Organizing Committee
Stevens Institute of Technology
Aparna Gupta | Co-Chair of the Organizing Committee
Rensselaer Polytechnic Institute

- **Agostino Caponi** (Columbia University, US)
- **Maggie Chen** (Cardiff University, UK)
- **Uzay Kaymak** (Eindhoven University of Technology, Netherlands)
- **Tae-Wan Kim** (Seoul National University, South Korea)
- **Dietmar Maringer** (University of Basel, Switzerland)
- **Ruppa Thulasiram** (University of Manitoba, Canada)
- **Jing-bo Yang** (University of Manchester, UK)
- **Ruixun Zhang** (Peking University, China)

TECHNICAL COMMITTEE

Zach Feinstein | Chair of the Technical Committee
Stevens Institute of Technology

- **Pablo Campos de Carvalho** (BIS)
- **Yi Cao** (Edinburgh Business School)
- **Zhenyu Cui** (Stevens Institute of Technology)
- **Roy S. Freedman** (NYU Tandon School of Engineering)
- **Robert Golan** (DBMind)
- **Anqi Liu** (Cardiff University)
- **Lydia Manikonda** (Rensselaer Polytechnic Instiute)
- **Kevin Mo** (Invesco US)
- **David Quintana** (University Carlos II de Madrid)
- **Majeed Simann** (Stevens Institute of Technology)

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FEATURED SPEAKERS

Agostino Capponi
Professor of Industrial Engineering and Operations Research, Director of the Center for Digital Finance and Technologies at Columbia University

Andrei Kirilenko
Professor of Finance, Director of the Cambridge Center for Finance, Technology & Regulation at the University of Cambridge

Bart Frijns
Dean Faculty of Management Sciences at Open Universiteit, Editor of the Journal of Futures Markets

Shanker Ramamurthy
Managing Partner Global Banking & Financial Markets, IBM

PARALLEL SESSIONS TABLES

TUESDAY | 10:30 AM - 12:10 PM

Session Name	Room Name	Session
Large Language Models	Tech Flex Room A	A1
Risks	Tech Flex Room B	B1
Optimization	Tech Flex Room C	C1
AML / Fraud	Gallery Room	D1

TUESDAY | 1:30 PM - 3:10 PM

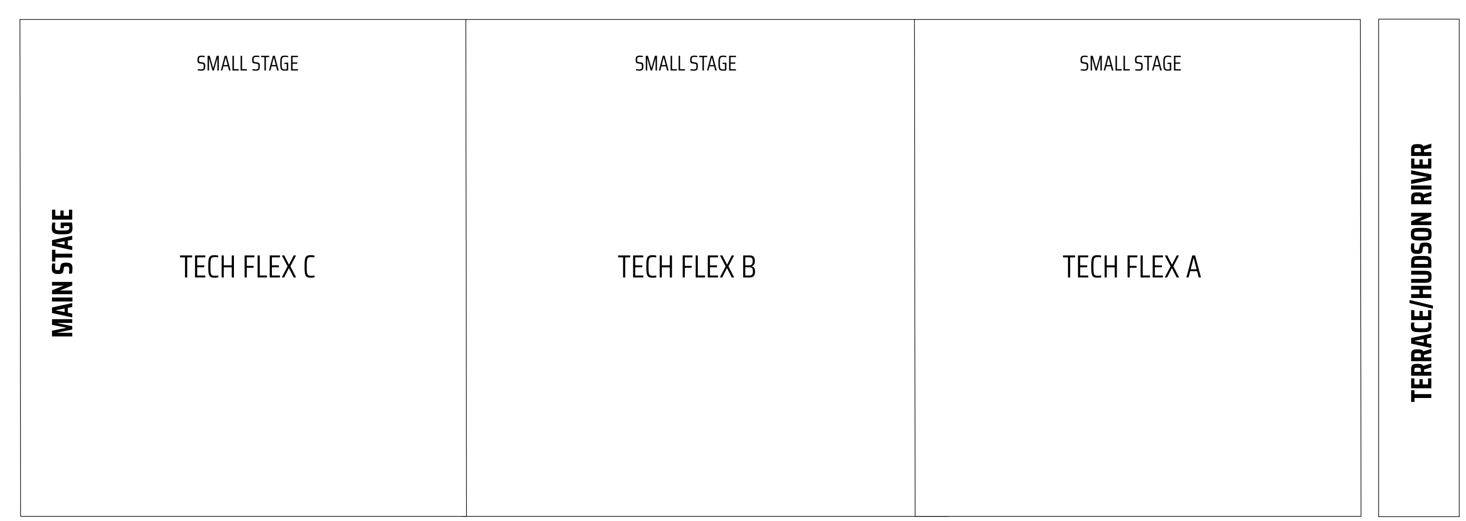
Session Name	Room Name	Session
Natural Language Processing	Tech Flex Room A	A2
Market Simulation	Tech Flex Room B	B2
Reinforcement Learning / Financial Optimization	Tech Flex Room C	C2
Time Series / Prediction	Gallery Room	D2

WEDNESDAY | 10:30 AM - 12:10 PM

Session Name	Room Name	Session
AI in Finance	Tech Flex Room A	A3
Blockchain	Tech Flex Room B	B3
Discussion Session 1	Tech Flex Room C	C3
Reasoning	Gallery Room	D3

WEDNESDAY | 1:30 PM - 3:10 PM

Session Name	Room Name	Session
AI in Finance 2	Tech Flex Room A	A4
Tables and Datasets	Tech Flex Room B	B4
Discussion Session 2	Tech Flex Room C	C4



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TUESDAY, OCTOBER 22, 2024

8 - 8:45 AM | Gallery Room
REGISTRATION, BREAKFAST AND NETWORKING

8:45 - 9 AM | Gallery Room
OPENING REMARKS

9 - 10 AM | Gallery Room
KEYNOTE ADDRESS BY AGOSTINO CAPPONI

10 - 10:30 AM | Gallery Room
COFFEE BREAK

10:30 AM - 12:10 PM | Techflex + Gallery Room
PARALLEL SESSION 1

	LARGE LANGUAGE MODELS Session Chair: Zachary Feinstein Tech Flex Room A	RISKS Session Chair: Takanobu Mizuta Tech Flex Room B	OPTIMIZATION Session Chair: Robert Golan Tech Flex Room C	AML/FRAUD Session Chair: Oshani Seneviratne Gallery Room
10:30 -10:55 AM	**Company Similarity Using Large Language Models** Dhruv Desai, Dhagash Mehta, Dimitrios Vamvourellis, Snigdh Bhagat, Mate Toth and Stefano Pasquali	**Analyzing Network Dynamics: The Contagion Effects of SVB Collapse on the US Tech Industry** Fan Wu, Anqi Liu, Jing Chen and Yuhua Li	**Asset Liability Management Under Sequential Stochastic Dominance Constraints** Giorgio Consigli, Darinka Dentcheva, Francesca Maggioni and Giovanni Micheli	**A Risk-Based AML Framework: Finding Associates Through Ultimate Beneficial Owners** Sasan Jafarnejad, François Robinet and Raphaël Frank
10:55 - 11:20 AM	**Large Language Model in Financial Regulatory Interpretation** Zachary Feinstein and Zhiyu Cao	**An Interaction Between a Leveraged ETF and Futures in a Crash Investigated by an Agent-based Model** Takanobu Mizuta and Isao Yagi	**Leveraging Stochastic Optimization in Asset Allocation for Enhanced Index Tracking** Yuanyuan Liu and Yongxin Yang	**Optimizing Anti-Money Laundering Strategies in Brazil: Reducing False Positives with Machine Learning for Better Operational Cost Efficiency** Jose Ricardo de Oliveira and Adriano Galindo Leal
11:20 - 11:45 AM	**Financial Risk Disclosure Return Premium: A Topic Modeling Approach** Beichen Zhang and Steve Yang	**Attribution Methods in Asset Pricing: Do They Account for Risk?** Dangxing Chen and Yuan Gao	**Mean-Variance Efficient Reinforcement Learning** Masahiro Kato, Kei Nakagawa, Kenshi Abe, Tetsuro Morimura and Kentaro Baba	**Explainable Artificial Intelligence and Causal Inference based ATM Fraud Detection** Vadlamani Ravi, Yelleti Vivek, Abhay Mane and Laveti Ramesh Naidu
11:45 - 12:10 PM	**LLM-Based Code Generation for Querying Temporal Tabular Financial Data** Aaron Green, Mohamed Lashuel, Gulrukh Kurdistan, John Erickson, Oshani Seneviratne and Kristin Benn	**Market Instability from Option Flows** Amir Alamir, Alexander Becker and Ivan Julio	**The Impact of Transaction Costs on Forecast-Based Trading Strategy Performance** James Lewis-Cheetham, Yuhua Li, Federico Liberatore and Qingwei Wang	**Fed-RD: Privacy-Preserving Federated Learning for Financial Crime Detection** Md Saikat Islam Khan Bappy, Aparna Gupta, Oshani Seneviratne and Stacy Patterson

12:10 - 1:30 PM | Techflex
LUNCH

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1:30 - 3:10 PM | Techflex + Gallery Room
PARALLEL SESSION 2

	NATURAL LANGUAGE PROCESSING Session Chair: Aparna Gupta Tech Flex Room A	MARKET SIMULATION Session Chair: Masanori Hirano Tech Flex Room B	REINFORCEMENT LEARNING / FINANCIAL OPTIMIZATION Session Chair: Steve Yang Tech Flex Room C	TIME SERIES / PREDICTION Session Chair: Leandro Maciel Gallery Room
1:30 - 1:55 PM	**Semantic Graph Learning for Trend Prediction from Long Financial Documents** Bolun Xia, Mohammed J. Zaki and Aparna Gupta	**Model Based Simulation VS Generative Modeling in Limit Order Books** Umur Cetin and Andreea Minca	**Q-Learning-Driven Dynamic Optimization of Moving Average Strategies in Financial Markets** Bhavesh Kumar	**Adaptive Fuzzy Modeling and Forecasting of Financial Time Series** Leandro Maciel, Rosangela Ballini and Fernando Gomide
1:55 - 2:20 PM	**Quantitative Market Situation Embeddings: Utilizing Doc2Vec Strategies for Stock Data** Frederic Voigt, Jose Alcarez Calero, Keshav Dahal, Qi Wang and Kai von Luck	**Experimental Analysis of Deep Hedging Using Artificial Market Simulations for Underlying Assets Simulators** Masanori Hirano	**A Methodology for Developing Deep Reinforcement Learning Trading Strategies: A Case Study in the Futures Market** Leonardo Conegundes and Adriano Machado	**An On-line Predictive Test for the Common Break: Optimal Timing for Portfolio Adjustment** Rui Fan, Cindy Wang and Yimeng Xie
2:20 - 2:45 PM	**Sentiment-driven Stock Selection in Japan using Language Models** Hiroki Sakaji and Masahiro Suzuki	**Time Series Generation with GANs for Momentum Effect Simulation on Moscow Stock Exchange** Vitaliy Pozdnyakov, Maksim Kazadaev and Ilya Makarov	**Modeling Investor Sentiment Jumps Using Deep Reinforcement Learning with a Hawkes Cross-Excitation Modeling Approach** Yangyang Yu and Steve Yang	**On the Dollar Factor in Exchange Rates** Arash Aloosh and Geert Bekaert
2:45 - 3:10 PM	**Sentiment Trading with Large Language Models** Kemal Kirtac	**An Integrated Econometric and Artificial Intelligence Methodological Framework for Measurements of Housing Affordability** Sayanti Roy and Amlan Mitra	**A Two Time-Scale Evolutionary Game Approach to Multi-Agent Reinforcement Learning and Its Application in Algorithmic Collusion Studies** Nan Chen, Yumin Xu, Ruixun Zhang and Mingyue Zhong	**Synergistic Approach: Stacking Bagging Ensembles for Time Series Forecasting in Stocks** Igor Felipe and Carboni Battazza

3:10 - 3:30 PM | Gallery Room
COFFEE BREAK

3:30 - 4:30 PM | Gallery Room
KEYNOTE ADDRESS BY SHANKER RAMAMURTHY

4:30 - 6:30 PM
BREAK

6:30 - 6:45 PM | 14th Street Pier in Hoboken
BOARDING FOR NYC DINNER CRUISE

7 - 10 PM | Around the Financial District of Manhattan
NYC DINNER CRUISE

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WEDNESDAY, OCTOBER 23, 2024

8 - 9 AM | Gallery Room
REGISTRATION, BREAKFAST AND NETWORKING

9 - 10 AM | Gallery Room
PANEL DISCUSSION WITH AGOSTINO CAPPONI, BART FRIJINS AND MAGGIE CHEN (MODERATOR)

10 - 10:30 AM | Gallery Room
COFFEE BREAK

10:30 - 12:10 PM | Techflex + Gallery Room
PARALLEL SESSION 3

	AI IN FINANCE Session Chair: Anqi Liu Tech Flex Room A	BLOCKCHAIN Session Chair: Jing Chen Tech Flex Room B	REASONING Session Chair: Leandro Maciel Gallery Room
10:30 - 10:55 AM	**Generalized Groves of Neural Additive Models: Pursuing Transparent Machine Learning Models in Finance** Dangxing Chen and Weicheng Ye	**Smart Contracts, Smarter Payments: Innovating Cross Border Payments and Reporting Transactions** Maruf Ahmed Mridul, Kaiyang Chang, Aparna Gupta and Oshani Seneviratne	**Evidential Reasoning in the Calculation of Individual Claims Reserves** Karim Derrick and Xi Liu
10:55 -11:20 AM	**Can machine learning models better volatility forecasting A combined method** Beining Han, Anqi Liu, Jing Chen and William Knottenbelt	**Synthetic KYC: Detecting Irregularities and Money Laundering on Blockchains** Irene Aldridge	**A New Belief Rule Based Model to Predict Reserves for Public Liability Insurance Claims** Dong-Ling Xu, Zhuqing Liu, Jian-Bo Yang, Xi Liu and Karim Derrick
11:20 - 11:45 PM	**Whack-a-mole Learning: Physics-Informed Deep Calibration for Implied Volatility Surface** Kentaro Hoshisashi, Carolyn E. Phelan and Paolo Barucca	**Predictive Analysis of Cryptocurrency Market Trends Using Genetic Algorithms: A Behavioral Economics Approach** Rishi Gottimukkala	**Representation Learning for Regime Detection in Block Hierarchical Financial Markets** Alexa Orton and Tim Gebbie
11:45 - 12:10 PM	**FedPNN: One-shot Federated Classifier to predict Credit Card Fraud and Bankruptcy in Banks** Polaki Durgaprasad, Yelleti Vivek and Vadlamani Ravi		

DISCUSSION SESSION 1
Session Chair: Junhuan Zhang
Tech Flex Room C

10:30 - 11:03 AM	**FINMEM: A Performance-Enhanced LLM Trading Agent with Layered Memory and Character Design** Haohang Li, Yangyang Yu, Zhi Chen, Yuechen Jiang, Yang Li, Rong Liu, Jordan Suchow, Khaldoun Khashanah and Denghui Zhang
11:03 - 11:36 AM	**FinCon: A Synthesized LLM Multi-Agent System with Conceptual Verbal Reinforcement for Enhanced Financial Decision Making** Yangyang Yu, Zhiyuan Yao, Haohang Li, Zhiyang Deng, Yuechen Jiang, Yupeng Cao, Zhi Chen, Jordan Suchow, Rong Liu, Zhenyu Cui, Denghui Zhang, Koduvayur Subbalakshmi, Guojun Xiong, Yueru He, Jimin Huang, Dong Li and Qianqian Xie
11:36 - 12:09 AM	**Vulnerability and profitability of block reorganization in Ethereum 2.0** Junhuan Zhang and Haodong Wang

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12:10 - 1:30 PM | Techflex
LUNCH

1:30 - 3:10 PM | Techflex + Gallery Room
PARALLEL SESSION 4

	AI IN FINANCE 2 Session Chair: Irene Aldridge Tech Flex Room A	TABLES AND DATASETS Session Chair: Kazuma Kadowaki Tech Flex Room B
1:30 -1:55 PM	**Beyond Chat GPT: Managing Lack of Stationarity with Unsupervised AI** Irene Aldridge	**JaFIn: Japanese Financial Instruction Dataset** Kota Tanabe, Masahiro Suzuki, Hiroki Sakaji and Itsuki Noda
1:55 - 2:20 PM	**α–dominance Two-Objective Optimization Genetic Programming for Algorithmic Trading Under a Directional Changes Environment** Xinpeng Long and Michael Kampouridis	**Analysis of Important Phrases in Bidding Documents Using Table Encoder Joint Extraction** Tomoki Ito and Shun Nakagawa
2:20 - 2:45 PM	**What Data Series Matter? Explaining Key Trends and Factors Generated by Artificial Intelligence** Irene Aldridge	**Towards Enhanced Information Access in Finance: A Dataset for Table Structure Understanding in Annual Securities Reports** Kazuma Kadowaki, Yasutomo Kimura and Hokuto Ototake
2:45 - 3:10 PM	**Learning Embedded Representation of the Stock Correlation Matrix using Graph Machine Learning** Bhaskarjit Sarmah, Nayana Nair, Riya Jain, Dhagash Mehta and Stefano Pasquali	**Financial Semantic Textual Similarity: A New Dataset and Model** Shanshan Yang, Steve Yang and Feng Mai

DISCUSSION SESSION 2
Session Chair: Brian Clark
Tech Flex Room C

1:30 - 2:03 PM	**Firm Complexity and Information Asymmetry: Evidence from ML-based Complexity to Measure Information Processing Costs** Brian Clark, Sai Palepu and Akhtar Siddique
2:03 - 2:36 PM	**Reinforcement Learning in Agent-Based Market Simulation: Unveiling Realistic Stylized Facts and Behavior** Zhiyuan Yao, Zheng Li, Matthew Thomas and Ionut Florescu
2:36 - 3:09 PM	**ECC Analyzer: Extract Trading Signal from Earnings Conference Calls Using Large Language Model for Stock Performance Prediction** Yupeng Cao, Zhi Chen, Qingyun Pei, Prashant Kumar, Nathan Lee, K.P. Subbalakshmi and Papa Momar Ndiaye

3:10 - 3:30 PM | Gallery Room
COFFEE BREAK

3:30 - 4:30 PM | Gallery Room
KEYNOTE ADDRESS BY ANDREI KIRILENKO

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