The Booklet of the 8th FINACT-IRAN Intrnational Conference on Financial and Actuarial Mathematics

Conference Priorities and Topics:

- Emerging Technologies in Financial and Insurance Sciences (Fintech, Insurtech, Blockchain, Artificial Intelligence, Machine Learning, etc.).
- Re-Insurances: Quantitative Methods and Catastrophic Risk Management.
- Actuarial Science and Modeling in Life, Social, and Mutual Insurances.
- Design, Modeling, and Pricing of Innovative Financial Instruments.
- Quantitative Methods in Financial Engineering and Risk Management in Financial-Banking Institutions.
- Integrated Risk Management and Corporate Governance Requirements in the Stock and Exchange Market.

July 18-20, 2023

Welcome

Finance and mathematics are pivotal disciplines that play a crucial role in fostering the growth of the banking and insurance industries. They encompass a wide range of essential subjects such as pricing, hedging, minimum capital requirements, life and non-life insurances, and reserve management. These topics have been extensively studied for numerous years within these disciplines.

In recent times, the banking and insurance industries have witnessed remarkable advancements, resulting in an even greater demand for research and education in these areas. As a response to this need, FINACT-IRAN has been established. Comprising a collective of academics and practitioners, we are dedicated to organizing various events, including conferences and workshops, to facilitate the continuous development of financial and actuarial mathematics. Our aim extends beyond academia and encompasses the wider community of professionals and enthusiasts.

We cordially invite you to join us at this prestigious conference, where experts from around the globe will converge to exchange knowledge, share insights, and explore the latest trends and advancements in finance and mathematics. Prepare to immerse yourself in a vibrant atmosphere of intellectual discourse and collaborative learning.

FINACT-IRAN 2020, is the eighth edition of the series of FINACT-IRAN international conferences that is held at Kharazmi University, and is co-organized Institute for Research in Fundamental Sciences (IPM).

The main Priorities and Topics of this year conference are:

- Emerging Technologies in Financial and Insurance Sciences
  (Fintech, Insurtech, Blockchain, Artificial Intelligence, Machine Learning, etc.).
- Resilient Insurances: Quantitative Methods and Catastrophic Risk Management.
- Actuarial Science and Modeling in Life, Social, and Mutual Insurances.
- Design, Modeling, and Pricing of Innovative Financial Instruments.
- Quantitative Methods in Financial Engineering and Risk Management
  in Financial-Banking Institutions.
- Integrated Risk Management and Corporate Governance
  Requirements in the Stock and Exchange Market.

On behalf of the organizing committee, I would like to welcome you to this year conference.

Hirbod Assa, PhD
Conference Chair

Policy Council:

Ali Hasanbeigi, Chancellor of Kharazmi University, Iran
Hirbod Assa, (Chair of Conference) University of Essex, UK
Ali Foroush Bastani, Institute for Advance Studies in Basic Sciences (IASBS), Iran

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Mojtaba Ranjbar, Kharazmi University, Iran
Ahmadreza Yazdanian, Kharazmi University, Iran
Seyed-Mohammad-Mahdi Kazemi, Kharazmi University, Iran

Keynote and Invited Speakers:

Peter Tankov, ENSAE, Institut Polytechnique de Paris, France
Luca Vincenzo Ballestra, University of Bologna, Italy
Arash Fahim, Florida State University, USA
Sule Sahin, School for Business and Society, University of York, York, UK
Hasan Omidi Firouzi, Royal Bank of Canada, Canada
Naser Asghari, Manager of FEC Governance and Data, The Netherland
Samim Ghamami, *Financial Services Forum Co., USA*
Laleh Samarbakhsh, *Toronto Metropolitan University, Canada*
Amin Hassan Zadeh, *Pennsylvania State University, USA*

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Workshop Lecturer:

Hirbod Assa, (Chair of Conference) University of Essex, UK
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Mostafa Pouralizadeh, *Rahbord Institute, Iran*
Salman Yazdani, *Pishro Broker, Iran*

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Maryam Salmasi, Taavon Insurance Co., Iran
Mehdi Saeidi Kousha, Kharazmi University, Iran
Meysam Bolgorian, Kharazmi University, Iran
Mohammad Aghababaei, Kharazmi University, Iran
Mohammad Ali Rastegar Sorkheh, Tarbiat Modares University, Iran
Mohammad-Ali Jafari, Kharazmi University, Iran
Mojtaba Ranjbar, Kharazmi University, Iran
Neda Esmaeili, University of Isfahan, Iran
Rahim Mahmoudvand, Bu-Ali Sina University, Iran
Ramin Okhrati, University College London, UK
Samin Ghamami, UC Berkeley, USA
Sasan Barak, University of Southampton, UK
Seyed-Mohammad-Mahdi Kazemi, Kharazmi University, Iran
Shima Ara, Saman Insurance Co., Iran
Shiva Zamani, Sharif University of Technology, Iran

Schedule, 1st day Tuesday, July 18, 2023			
Time		**Lecturers and Titles of Talks**	**Venue**
8:00	8:30	Registration Mirasi Building, Kharazmi University (Tehran Campus)	Mirasi Building
8:30	09:30	**Opening and Welcoming**	17-Shahrivar Lecture Hall
		Ali Hasanbeigi *Chancellor of Kharazmi University, Iran*	
		Hirbod Assa *Head of FINACT-IRAN Group* and *Conference Chair*	
		CEO's representative *Lotus Parsian Investment Bank, Iran*	
		Mohsen Gharahkhani *Chairman of the Board, TehranRe, Iran*	
		Mohammad Aryamanesh *Vice-President for Research of Insurance research Center (IRC), Iran*	
9:30	10:00	**Hossein Dastkhan** *Kharazmi University, Iran* **Systemic Risk in Financial Systems: A Special Focus on Network Analysis**	
10:00	10:30	Group Photo & Coffee Break	Mirasi Building
10:30	11:00	**Davood Ahmadian** *Tabriz University, Iran* **An Efficient Monte Carlo Variance Reduction Method for valuation of Geometric Asian Option under the Variance Gamma Process**	17-Shahrivar Lecture Hall
11:00	11:30	**Hirbod Assa** *University of Essex, UK* **Factor Models**	
11:30	12:30	**Peter Tankov** *[Virtual Presentation]* *ENSAE, Institute Polytechnique de Paris, France* **Investing for Climate Impact**	
12:30	13:30	Lunch	Tehran Campus
13:30	14:10	**Luca Vincenzo Ballestra** *[Virtual Presentation]* Luca Vincenzo Ballestra, Italy **Modeling Commodity Prices when Stochastic Volatility, Convenience Yield and Interest Rate are stochastic**	17-Shahrivar Lecture Hall
14:10	14:50	***A Panel Discussion on*** ***"Harnessing the Power of New Technologies: Navigating their Impact on Financial Markets"*** *(moderator: Ahmadreza Yazdanian, Kharazmi University)*	
14:50	15:30	**Arash Fahim** *[Virtual Presentation]* *Florida State University, USA* **Asset Pricing and Corporate Governance**	
15:30	15:50	Coffee Break	Mirasi Building

15:50	16:30	**Samim Ghamami** *[Virtual Presentation]* *Financial Services Forum Co., USA* To be announced...	17-Shahrivar Lecture Hall
16:30	17:00	**Saghar Heidari** *Shahid Beheshti University, Iran* **Efficiency Analysis of Performance Metrics in Using Machine Learning Algorithms for Options Pricing: An Empirical Study**	
17:00	17:45	**Naser Asghari** *[Virtual Presentation]* *FEC Governance and Data Co., Netherland* **Why Model Risk Management (Framework?)**	
17:45	17:50	**Break**	Mirasi Building
17:50	18:10	**Bagher Adabi Firouzjaee** *Gonbad Kavous University, Iran* **Instruments and requirements of supply chain finance (SCF)**	17-Shahrivar Lecture Hall
		Maryam Abdollahzadeh *Allameh Tabataba'i University, Iran* **VIX option surfaces**	Class A
		Maryam Ebrahimi *Kharazmi University, Iran* **Portfolio Optimization with Deep Cointegration Financial Time Series**	Class B
18:10	18:30	**Mahdi Akbari** *Kharazmi University, Iran* **Implementation of the Loss Distribution Approach for the Machine Estimation of Operational Risk Coverage Capital of Banks**	17-Shahrivar Lecture Hall
		Maedeh Hosseini *Amirkabir University of Technology, Iran* **Portfolio Optimization using Mean-variance and Risk Parity methods**	Class A
		Diba Daraei *Western University, Canada* **Determining Safe Withdrawal Rate for Post-retirement via Advanced Ruin Model**	Class B
18:30	18:50	**Amir Hossein Ghatari** *Amirkabir University of Technology, Iran* **Identifiability and Performance of LASSO Logistic and Probit Regression Models: A Comparative Study on Audit Data**	17-Shahrivar Lecture Hall
		Fatemeh Mirzaabdollahi Ha *Amirkabir University of Technology, Iran* **Bitcoin Price Prediction using Machine Learning**	Class A
		Fateme Fasihi *Kharazmi University, Iran* **The Numerical Solution of Time Fractional Black-Scholes PDE using RBFs Method via Variable Shape Parameter Strategy**	Class B

Schedule, 2nd day Wednesday, July 19, 2023			
Time		**Lecturers and Titles of Talks**	**Venue**
8:30	9:00	**Saman Vahabi** *Saman Insurance Co., Iran* **Design a Long-Term Care Contract Based on Stochastic Transition Intensity: Wishart Processes Approach**	17-Shahrivar Lecture Hall
9:00	9:45	**Amin Hassan Zadeh** *[Virtual Presentation]* *Pennsylvania State University, USA* **Forecasting the USA Mortality using Phase-type Process**	
9:45	10:30	**Erfan Salavati** *[Virtual Presentation]* *Amirkabir University of Technology, Iran* **A Novel Robust Portfolio Selection Framework Utilizing Artificial Neural Networks**	
10:30	11:00	**Coffee Break**	Mirasi Building
11:00	11:30	**Rahim Mahmoudvand** *Bu-Ali Sina University* **On the Quality of Data for Insurance Studies**	17-Shahrivar Lecture Hall
11:30	12:30	**Sule Sahin** *[Virtual Presentation]* *University of York, UK* **Expect the Unexpected Modelling Mortality in the Presence of Catastrophic Events**	
12:30	13:15	**Lunch**	Tehran Campus
13:15	14:00	***A Panel Discussion on*** ***"Digital Technologies and Their Impact on the Reinsurance Industry"*** *(moderator: Esmaeil DavarPanah, CEO of TehranRe Co.)*	17-Shahrivar Lecture Hall
14:00	14:20	**Amir Bahrami** *Insurance Research Center (IRC) & Islamic Azad University, Iran* **Presentation of the in Iran's Insurance Industry model the Insurtech Model for Insurance Startups**	
		Mohammad Nouralizadeh *Kharazmi University, Iran* **Addressing Missing Labels in Health Insurance Fraud Detection: A Heterogeneous Transfer Learning Approach with ANN**	Class A
		Zahra Alipour *Allameh Tabataba'i University, Iran* **Assessing the Moderating Role of Risk Management Capability in the Relationship between Service Innovation and Financial …**	Class B
14:20	14:40	**Hadiseh Nateghi** *Saman Insurance Co., Iran* **Modeling Policyholders' Lapse behaviors**	17-Shahrivar Lecture Hall
		Somaye Mohebbi *University of Zanjan, Iran* **Systemic Risk Assesment in Iranian Banking Network Using Kalman Fiter Model**	Class A

14:20	14:40	**Seyed Hosein Shojaei Langari** *Shahid Beheshti University, Tehran, Iran* **Designing A Plan & Actuarial Calculations Employment In A Pension Fund**	Class B
14:40	15:00	**Sepideh Sahraei** *Allameh Tabataba'i University, Tehran, Iran* **Asset-liability Modeling in life Insurance by Machine Learning Approach**	17-Shahrivar Lecture Hall
		Vahid Mohammadi *Central Tehran Branch, Islamic Azad University, Iran* **Multiple Bubbles in the Iranian Currency Market**	Class A
		Sina Moradi *Urmia University, Iran* **Risk management in financial and banking institutions: A Game theory approach**	Class B
15:00	15:40	**Mohsen Rezapour** *[Virtual Presentation]* *Vertex pharmaceutical inc., USA* **Risk based monitoring in randomized clinical trial**	17-Shahrivar Lecture Hall
15:40	16:00	**Coffee Break**	Mirasi Building
16:00	16:45	**Hassan Omidi Firouzi** *[Virtual Presentation]* *JP Morgan Chase & Co., Houston, Texas, USA* **From Conventional Methods to AI/ML-based Approaches: Detecting Transaction Fraud in Financial Institutions**	17-Shahrivar Lecture Hall
16:45	17:30	**Laleh Samarbakhsh** *[Virtual Presentation]* *Toronto Metropolitan University, Canada* **Does FinTech Reduce Risk? Evidence from a Meta-Analysis**	
17:30	17:40	**Break**	Mirasi Building
17:40	18:00	**Aida Aalabeyki** *Shahid Beheshti University, Iran* **Modeling and Forecasting Mortality Rate based on Lee Carter Family**	17-Shahrivar Lecture Hall
		Fariba Pourrahimi *Amirkabir University of Technology, Iran* **Simulation of Random Variable in Sublinear Expectation**	Class A
		Farnoush Raygani *Institute for Advanced Studies in Basic Sciences (IASBS), Iran* **Numerical Method for Solving the Fractional Riccatti Equation arising from the Rough Heston Model**	Class B
18:00	18:20	**Elham Mashayekhi** *Semnan University, Iran* **Numerical Solution of the Black-Scholes model with Transaction Cost under the Jump-Diffusion Model**	17-Shahrivar Lecture Hall
		Amirreza Sedghi *Allameh Tabataba'i University, Tehran, Iran* **Pricing of fixed rate mortgages: Machine learning approach**	Class A

18:00	18:20	**Fatemeh Yousefian Azari Asl** *Tolo Mehr University, Iran* **The Effect of Cost Stickiness on the Quality of Financial Disclosure with the Mediating Role of Corporate Social Responsibility in Companies Listed on the Tehran Stock Exchange**	Class B
18:20	18:40	**Nima Mohammadi** *Amirkabir University of Technology, Iran* **Pricing Options and Computing Implied Volatilities with Artificial Neural Networks using real market data**	17-Shahrivar Lecture Hall
		Nazanin Tafakhori *Shahid Madani University, Iran* **Symmetric Variable Shape Parameter Strategy for Space-Time Radial Basis Function Collocation Method with Applications in Financial Problems**	Class A

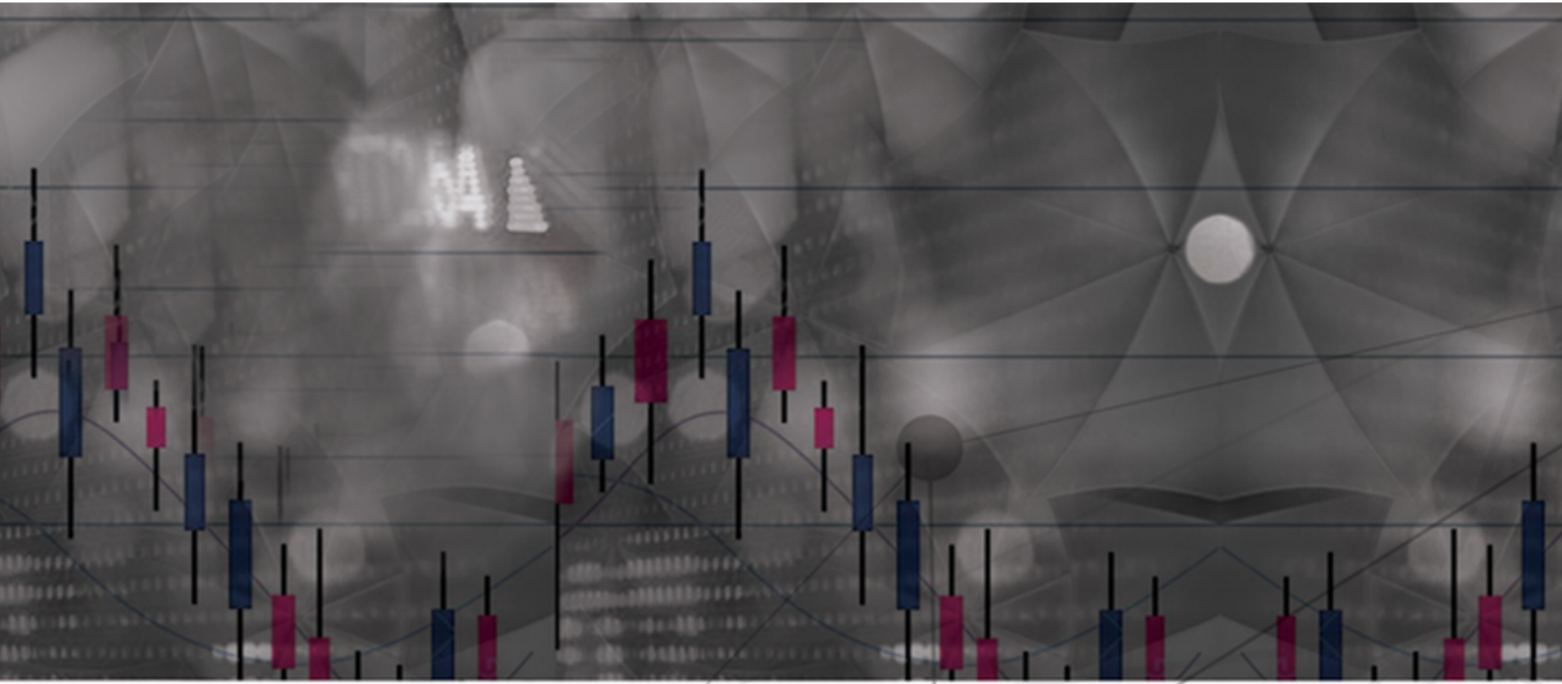
Schedule, 3rd day Thursday, July 20, 2023			
Time		Lecturers and Titles of Talks	Venue
8:30	9:00	**Mohammad Fayaz** *Allameh Tabataba'i University, Iran* **The Comparison between SMOTEN, Up-Sampling and Normal highimbalance insurance data with Gradient Boosting Algorithms**	17-Shahrivar Lecture Hall
9:00	9:30	**Sarvnaz Darvari** *Insurance Tehran Re Co., Tehran, Iran* **Understanding Life Reinsurance and Its Varied Treaty Structures: Indepth Analysis of Treaty Structures and Implications**	
9:30	10:00	**Mitra Ghanbarzadeh** *Insurance Research Center, Iran* **Data Mining Application in Churn Prediction of Life Insurance Customers**	
10:00	10:20	Coffee Break	Mirasi Building
10:20	10:50	**Asma Hamzeh** *Insurance Research Center, Iran* **The Types of Pricing Models in Usage-based Car Insurance**	17-Shahrivar Lecture Hall
10:50	11:20	**Fatemeh Atatalab** *Shahid Beheshti University, Iran* **Pricing Catastrophe Reinsurance based on Peak over Threshold Model**	
11:20	11:40	**Mohammad Amin Raeisi Makiani** *Allameh Tabataba'i University, Iran* **Physics-Informed Neural Network in Finance**	
		Hossein Ziyadi *Amirkabir University of Technology, Iran* **Housing Price Forecasting Using Artificial Intelligence (LSTM Algorithm)**	Class A

11:20	11:40	**Khosrou Safie** *IASBS & Persian Gulf Investment Bank, Iran* **Bilateral Counterparty Risk Valuation of CDS Contracts: Under Multivariate Subordinated Brownian Motion Process with Flexible Dependence Structure**	Class B
11:40	12:00	**Mehran Paziresh** *Tabriz University, Iran* **Inverse Problems for Solutions of Stochastic Differential Equations**	17-Shahrivar Lecture Hall
		Nazanin Rahimdel Mofrad *Kharazmi University, Iran* **The COVID-19 Pandemic and its Effects on the Stock Market as a Black Swan Event in the Iranian Capital Market**	Class A
		Zahra Alipour *Allameh Tabataba'i University, Iran* **The Role of Startups as New Technologies in the Profitability of the Insurance Industry**	Class B
12:00	12:15	Closing	17-Shahrivar Lecture Hall

Workshop, 1st day Monday, July 17, 2023			
Time		Lecturers and Titles	Venue
13:30	15:30	**Hirbod Assa** *University of Essex, UK* **Title: Text analysis in finance**	Niaavaran Building (IPM)
15:30	16:00	Coffee Break	
16:00	18:00	**Hassan Omidi Firouzi** *[virtual presentation]* *JP Morgan Chase & Co., USA* **Title: Unlock the Power of Public Cloud: Exploring Amazon Web Services (AWS)**	Niaavaran Building (IPM)

Please note that the venue for the first day of workshops is the "School of Mathematics (IPM), Niavaran Bldg., Niavaran Square, Tehran, Iran"

Workshop, 2nd day Thursday, July 20, 2023			
Time		Lecturers and Titles	Venue
14:00	16:00	**Mostafa Pouralizadeh** *Rahbord Institute, Iran* **Title: An introduction of the Graph Machine Learning and its Applications to Finance**	17-Shahrivar Lecture Hall (Kharazmi University)
16:00	16:30	Coffee Break	
16:30	18:30	**Salman Yazdani** *Pishro Broker, Iran* **Title: How to find a job as a derivative market expert in Iran: A road map to student success**	17-Shahrivar Lecture Hall (Kharazmi University)



Financial and Actuarial Mathematics, Iran

FINACT-IRAN

هشتمین کنفرانس بین‌المللی مهندسی مالی و بیم‌سنجی

- Secretariat: Financial sciences faculty of Kharazmi university, Roodsar Ave., Hafez Ave., Tehran, Iran.
- Venue: Tehran campus of Kharazmi university, No. 43. South Mofatteh Ave., Tehran, Iran