Ali Habibnia
Virginia Tech

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Education

2017	Ph.D. in Statistics, **London School of Economics and Political Science**, UK
2012	M.S. in Quantitative Finance, **Bayes (Cass) Business School**, UK
2010	M.S. in Economics, **University of Tehran**, Iran
2007	B.S. in Economics, **University of Tehran**, Iran

Areas of research interest

Big Data Econometrics • Deep Learning • Nonlinear Systems • Forecasting
Quantum Machine learning • Computational Finance • Financial Network Analysis

Current Appointment

2018-	Assistant Professor, Department of Economics, Virginia Tech, USA
2018-	Affiliate Faculty in Computational Modeling & Data Analytics, College of Science, Virginia Tech
2020-	Associate Faculty in Deep Learning, NMIMS Institute of Management Studies, India
2021-	Associate Faculty in Machine Learning, Indian Institute of Technology Kharagpur (IIT-KGP), India
2022-	Affiliated Faculty, The Kellogg Center for Philosophy, Politics, and Economics

Past appointments

2017-2019	Director, *Dataism Limited, UK*
2017-2017	Advisor for Macro Planning, *Ministry of Economic Affairs and Finance, Iran*
2012-2017	Research Fellow, *LSE Systemic Risk Centre, UK*
2012-2017	Research Fellow, *LSE Time Series and Statistical Learning Group, UK*
2016-2018	Scientific Chair of Big Data Economics, *Tehran Institute of Advanced Studies, Iran*
2015	Founder member of *Tehran Institute of Advanced Studies (TeIAS), Iran*
2013	Quantitative Research Analyst, *Pantheon Ventures, UK*
2008-2011	Head of Equity Market & Research Department, *Rahbord Investment Co, Iran*
2009-2010	Derivatives Trading Strategist, *Wise Enterprises FZCO, UAE*
2009-2010	Stock Market Analyst Intern, *Nikan Capital, Iran*

Grants, honors & awards

2023	Outstanding Faculty in Undergraduate Courses "Department of Economics, Virginia Tech"
2022	Kellogg Center PPE Research Fellowship for "The History and New Trends of Measuring Dependence: From Bayes, Galton, and Pearson to the 21st Century"
2021	Lay Nam Chang Dean's Discovery Fund for "Deep Learning for Non-linear Common-factor Modeling and Forecasting in Economics", with Russell J. Hewetta & Dawson Miller (VT Mathematics).
2015	Highly commended research prize, LSE Research Festival
2014	Doctoral Fellowship, ESRC & LSE Systemic Risk Centre
2012	Ph.D. Scholarship, LSE Department of Statistics
2010	Recognized as a Scientific Elite, Iran National Elites Foundation
2007	Recognized as an Exceptional Talent, Iran National Organization of Exceptional Talents

Publications & Resources

Peer-Reviewed Journal Articles

2023 Habibnia, A, Kalhor, A and Saffar, M. "A Geometric Approach for Accelerating Neural Networks Designed for Classification Problems," R & R at IEEE Transactions on Neural Networks and Learning Systems

2023 "Elliptically Symmetric Principal Component Analysis: Modeling Temporal/Contemporaneous Dependence using non-Gaussian Distributions," R&R at Econometric Reviews *with Karo Solat (WU) & Aris Spanos (VT).*

2021 Habibnia, A, Maasoumi, E. "Forecasting in Big Data Environments: An Adaptable and Automated Shrinkage Estimation of Neural Networks (AAShNet)", Journal of Quantitative Economics 19:363-381 01 Dec 2021

2017 Etesami, J, Habibnia, A and Kiyavash, N. "Econometric modeling of systemic risk: going beyond pairwise comparison and allowing for nonlinearity", SRC Paper (No. 66). Systemic Risk Centre, The London School of Economics and Political Science, London, UK.

2011 Habibnia, A, Haeri, A and Rabbani, M. "Mathematical Models For Decision Making And Forecasting On Euro-Yen In Foreign Exchange Market", Journal of Iranian Economic Review, Article 4, Volume 16, Issue 30, Page 67-91

Conference Proceedings

2018 Etesami, J, Habibnia, A and Kiyavash, N. "Econometric modeling of systemic risk: A Time Series Approach", In MiLeTS 18, London, United Kingdom. ACM, New York, NY, USA, Article 4, 9 pages. https://doi.org/10.475/1234

Work in Progress

"A Time-varying Causal Inference Framework for Modeling Systemic Risk," *with Negar Kiyavash (EPFL) & Jalal Etesami (TUM).*

"Online Detection of Change in Correlation for Dynamic Asset Allocation," *with Arash Amini (UCLA) & Hassan Sadeghi (ETH).*

"AE-Prob(M): Uncertainty Quantification for Time Series via an Entropy-Based Autoencoder," *with Russell Hewett (VT) & Dawson Miller (VT).*

"Do Blockchain-Based Assets Contribute to financial systemic risk?," *with Gholamreza Jafari (CC-NSD) & Jamshid Ardalankia (VT).*

"Quantum Computing Solutions for Econometrics," *with Abolfazl Bayat (UESTC).*

"A Review Paper of Past, Present, and Future of Testing for Nonlinearity in Time Series".

"Testing for neglected nonlinearity in high-dimensional time series models: A deep neural network approach".

"Policy-driven Machine Learning Objective Functions for Predictive Analysis".

Book Chapters

2009 Book chapter, Financial Economics I, Ghadir Mahdavi, chapter 5 (Modern Portfolio Theory), Published by Iran University of Economic Science

Thesis

2017 "Essays in High-dimensional Nonlinear Time Series Analysis", PhD thesis, Available at etheses.lse.ac.uk/3485/

2012 "Forecasting Volatility in Financial Markets by Introducing a GA-Assisted SVR-Garch Model", Master thesis, Available at SSRN 2144922

2010 "Forecasting the World Gold Price Using Optimized Neuro-Fuzzy with Genetic Algorithm (Ga-Anfis) and Smooth Transition Regression with Long Memory (Fi-Star) Modelling", Master thesis, Available at SSRN 2010545

2018   Habibnia, A, Rahimikia, E. "Nonlinearity test for Principal Component Analysis", MathWorks
2017   Habibnia, A, Rahimikia, E."MATLAB Tutorial for Data Science", MathWorks

Referee

Journal of Business and Economic Statistics, Econometric Reviews, Econometrics, International Journal of Forecasting, Applied Economic Perspectives & Policy, Proceedings of the National Academy of Sciences (PNAS), Risks, Entropy, Economic Modelling, Journal of Economic Behavior and Organization.

Teaching

Virginia Tech (2019-)

(Adv) Big Data Economics (ECON 5314G - ECON 4314 - CMDA 4314)
Data Science for Quantitative Finance (ECON 4984 - CMDA 4984)
Machine Learning & Data Classifiers (C7 - Module for Program In Business Analytics)

NMIMS and IIT Kharagpour (2020-)

Machine & Deep Learning from Theory to Practice (Module for M.Tech Data Science)
Neural Networks, Deep Learning, and Decision Trees (Program in Business Analytics and AI)

London School of Economics (2012-2017)

Elementary Statistical Theory (ST102), Quantitative Methods (ST107), Time Series Forecasting (ST304), Applied Regression with R (ST211) Factor Models in Time Series (Summer Programme)

University of Tehran (2008-2012)

Econometrics (graduate), Macroeconomics I & II (undergradute), Machine Learning Applied to Finance (graduate)

Other Institutes

2022   Big Data & Machine Learning for Causal Inference and Treatment Effects with Python, *TeIAS, Iran*
2018   Linear Algebra & Probability for Machine Learning in Python, *Tehran Stock Exchange*
2018   Time Series Forecasting with Python, *Tehran Stock Exchange*
2017   Algorithmic Trading with Python, *Tehran Stock Exchange*
2017   Deep Learning & Machine Learning Applied to Trading, *Tehran Stock Exchange*
2015   Econometrics of Monetary Policy (postgraduate), *Khatam University*
2013   Global Business Environment (MBA Course), *London Business School*
2008-2016   Technical Analysis of Financial Markets, *More than 20 times in various universities and institutes*

Invited talks

2023   Quantum Computing Solutions for Econometrics, *Physics of Quantum Information Technology (PQIT) Lab in China*
2023   Perspectives on the Human AI, *ICAT, Virginia Tech*
2022   Quantum Computing & Quantum Machine Learning Solutions for Economics and Finance, *University of Electronic Science and Technology of China (UESTC)*
2021   Information Theory & Financial Network Analysis, *University of Tehran, Dept. of Economics*
2021   Shrinkage Estimation of Neural Networks, *41st international symposium on forecasting*
2020   Machine Learning for Econometricians, *North Carolina State University, Dept. of Economics*
2019   Adaptable and Automated Shrinkage Estimation of Neural Networks (AAShNet), *Stanford Institute for Theoretical Economics – Asset Pricing Theory and Computation Summer Workshop*
2019   Big Data and Machine Learning for Policymaking, *International Monetary Fund, SPR Department*

2018	Introduction and Overview of Applications of Artificial Intelligence and Machine Learning in Scientific Research, *Virginia Tech*
2018	Financial Time Series Analysis: Deep Learning Approach, *MathWorks Computational Finance*
2018	Text Mining & Sentiment Analysis in Trading, *Tehran Stock Exchange TSE*
2016	Machine Learning for Economic and Financial Forecasting, *The Technical Analyst*
2013	Foreign Exchange Rate Risk Measurement and Management, *IDB*
2012	Time Series Forecasting using Wavelet Kernel Support Vector Machine, *LSE*

Supervision

Virginia Tech (2019-)

Raseen Nirjhar (M.s. Advisor), Computer Science, Virginia Tech
Priyambada Bandyopadhyay (PH.D. advisor), Economics, Virginia Tech
Arin Shahbazyan (PH.D. committee), Economics, Virginia Tech
Brian D'Orazio (PH.D. committee), Economics, Virginia Tech
Mohammad Mahdi Banasaz (PhD committee), Economics, Virginia Tech
Dawson Miller (M.S. co-advisor), Department of Mathematics, Virginia Tech
He Jiang (PH.D. committee), Department of Economics, Virginia Tech
Austin Bradly (PH.D. committee), Department of Economics, Virginia Tech

Other Institutes

Farnam Shahba (PH.D. Advisor), Economics & Econometrics, University of Tehran
Mohsen Saffar (PH.D. committee 2023), Electrical and Computer Engineering, University of Tehran
Mahdi Bagheri (PH.D. committee 2023), Electrical and Computer Engineering, University of Tehran
Mahsa Rajabi (PH.D. committee 2017), Electrical Engineering, K.N.Toosi University of Technology
Raheleh Shahrokhi (PH.D. committee 2017), Electrical Engineering, K.N.Toosi University
Mahdi Soltanzadeh (M.S. Advisor 2023), Financial engineering, Khatam University
Emad Habibzadeh (M.S. Advisor 2016),Financial engineering, Khatam University
Fatemeh Ghasempour (M.S. Advisor 2016), Risk Management, Khatam University

Programming and Software

Languages: Python, R, MATLAB, C, PHP, HTML.

Econometric Packages: EViews, G@RCH, OX Metrics, Stata, JMulTi.

Financial Packages: Bloomberg Terminal, Thinkorswim, Binance, AmiBroker, MetaTrader.