Hanwool Jang

B022, Britannia Building, Glasgow Caledonian University
Cowcaddens Rd, Glasgow, G4 0BA, UK
Hanwool.Jang@gcu.ac.uk

Employment

Glasgow Caledonian University
Department of Finance, Accounting and Risk
Lecturer (Assistant Professor), 2022 - Present

Yonsei University
Center for Finance and Technology
Research Director, 2021
Department of Industrial Engineering
Postdoctoral Fellow, 2020 - 2021
Department of Investment Information Engineering
Instructor, 2020 - 2021

Education

KAIST Moon Soul Graduate School of Future Strategy
PhD in Engineering, 2018 - 2020
MA in Management Studies, 2016 - 2018

Tsinghua University, School of Mechanical Engineering
BE in Vehicle Engineering, 2006 - 2010

Research Interests

Asset Pricing, Real Estate, Quantum Applications

Key Publications

Impact of monetary policy on corporate defaults and associated welfare costs
with Ahn K, Lee D, Computational Economics, 2025

Impact of futures trade on the informational efficiency of US REIT market
with Jeong M, Ahn K, Sohn S, Financial Innovation 11(45), 2025

CEO turnover and financial policy transfer
with Kim D, Ahn K, Lee J, North American Journal of Economics and Finance, 77, 2025

Business cycle and herding behavior in stock returns: Theory and evidence
with Cong L, Kim D, Ahn K, Financial Innovation 10(6), 2024
Featured in Phys.org: Quantum mechanics model unveils hidden patterns in stock markets

The effect of rare events on information-leading role: Evidence from real estate investment trusts and overall stock markets
with An S, Choi G, Ahn K, Humanities and Social Sciences Communications 11, 1628, 2024

Fixed rate mortgages: The cost of interest rate risk aversion
with Forsyth J, Kim D, Ahn K, Finance Research Letters 44, 102158, 2022

Market efficiency of US REITs: Revisit
with Ryu I, Kim D, Ahn K, Chaos, Solitons & Fractals 150, 111070, 2021
Featured in University News: Academic Insight Dr Hanwool Jang on financial market efficiency

Other Publications

https://orcid.org/0000-0001-9531-4499

Working Papers

Toward transparent and accurate housing price appraisal: Hedonic price models versus machine learning algorithms (R&R)

Artificial intelligence model has been called a "black-box" due to the difficulty in interpretation. Therefore, we provide an approach for the interpretation of empirical analysis used to estimate housing prices. We compared the results from the traditional hedonic pricing models based on ordinary least squares and spatial lag regression with those from random forest and deep neural network. By comparing the accuracy of each model, random forest model generated robust results with outstanding accuracy compared to hedonic price models regardless of data preprocessing and has sufficient interpretability in appraising housing prices with Gini importance and Shapley additive explanation value.

Unequal effects of artificial intelligence in housing price appraisal (Under Review)

This study examines the potential unequal effects of employing artificial intelligence (AI) models to assess housing prices. Advances in the pricing instrument effectively tackle the inherent nonlinearity issue in relevant datasets, and AI technologies have demonstrated superior predictive power compared with traditional approaches. However, AI models may penalize minority groups against the majority in a social manner. In this study, we empirically explore the potential negative externalities, specifically the unequal effects that can arise across social groups when using machine learning technology to assess housing prices. Our findings highlight three notable observations. First, education levels are significantly and positively associated with housing prices. Second, AI models can appraise housing prices more precisely compared with conventional hedonic models. Finally, AI models tend to overestimate the housing prices of well-educated groups and underestimate those of less-educated groups. These results indicate that AI models improve the predictive power of price assessments; however, indiscriminate adoption and application of AI-based predictions may aggravate social inequality. Our findings provide insights into ways to alleviate inequality in urban areas; thus, policymakers can refer to our empirical evidence when designing initiatives to enhance social inclusion and coherence, and when considering strategies to realize balanced urban development.

Projects

Principal Investigator

Quantum Technologies Alliance for Research Challenge (£10,000)
Scotland-Korea collaboration on quantum simulation in asset pricing based on the quantum harmonic oscillator, 2025

Basic Science Research Program ($ 81,000)
Real estate pricing system: AI and Econometrics driven platform, 2020 - 2022

Global PhD Fellowship ($ 54,000)
FRM vs. ARM: The optimal choice, 2019 - 2020

Investigator

Future Strategy Research ($ 50,000)
Bubble observatory, 2018

Bridge Trust Asset Management Research Fund ($ 9,800)
Predicting the critical time of housing bubble, 2018

4th Industrial Revolution and Convergence Research ($ 26,400)
Predicting the critical time of financial bubble, 2017

Teaching Experience

AI and Machine Learning
Introduction To Quantitative Data Analysis
Corporate Finance & Financial Strategies

Fundamentals of Corporate Finance
Strategic Bank Management
Bank Management in Global Context
Financial Risk Modelling
Seminar in Investment Information Engineering 2
Principles of Financial Engineering

Seminar/ Conference Presentations

2024
Quantum x Finance workshop, University of Glasgow, UK
Risk Society & Governance Research Seminar (Online), Glasgow Caledonian University, UK

2023
AsRES-GCREC & AREUEA International Real Estate Joint Conference, Hsinchu, Taiwan
Risk Society & Governance Research Seminar (Online), Glasgow Caledonian University, UK
12th International Conference on Mathematical Modeling in Physical Sciences, Serbia
Chung-Ang University (Online), Korea
Chonnam National University, Korea

2022
Korean Operations Research and Management Science Society, Korea
Korean Physical Society: Spring Meeting (Online), Korea
Korean Institute of Industrial Engineering: Spring Meeting, Jeju, Korea

2021
Glasgow Caledonian University (Online), UK
University of Manchester (Online), UK
University of Aberdeen (Online), UK
National Taiwan Normal University (Online), Taiwan
Korean Institute of Industrial Engineering: Fall Meeting (Online), Dongguk University, Korea
Institute of Convergence Science Forum (Online), Yonsei University, Korea
Mathematical Finance Theory, (Online), Yonsei University, Korea
Reliability Engineering, (Online), Yonsei University, Korea
Technology Exchange, Wonkwang University, Korea

2020
Korean Association of Regional Geographers: Fall Meeting (Online), Korea
Korean Physical Society: Spring Meeting (Online), Korea

2019
AREUEA International conference, Bocconi University, Italy
Thredbo, Nanyang Technological University, Singapore
Asian Real Estate Society Annual Meeting, Shenzhen, China
Korean Association of Regional Geographers, Catholic University of Daegu, Daegu, Korea
Department of Investment Information Engineering, Yonsei University, Seoul, Korea
Reliability Engineering, Yonsei University, Seoul, Korea

2018
Association of American Geographers Annual Meeting, New Orleans, USA
International Conference on Computational Science, Wuxi, China
Asian Real Estate Society Annual Meeting, Incheon, Korea
The Economic Geographical Society of Korea, Gwangju, Korea
Annual Meeting of Korean Geographers, Seoul, Korea
Graduate School of Future Strategy, KAIST, Daejeon, Korea
Korea Research Institute for Human Settlements, Sejong, Korea

Graduate School of Future Strategy, KAIST, Daejeon, Korea

2017
Physics in Economic and Social System, KAIST, Daejeon, Korea

Honors and Awards

GCU Teaching Awards Nominee, 2024
AFA Annual Meeting Travel Grant, 2020
KAIST Scholarship, 2016 - 2020

Services

Reviewer
International Review of Financial Analysis, Computational Economics, Finance Research Letters, Long Range Planning, Financial Innovation, Chaos Solitons & Fractals, Research in Transportation Economics, Applied Economics Letters, Economies, Transportation, PLoS ONE

Other Employment

Sales Assistant Manager, Division of Power Distribution System, LS Electric, 2016
Mechanical Design Engineer, Division of Electric Vehicle Power Control System, LS Electric, 2013 - 2015
Serve in the Military, Korea Army, 2010 - 2012

Skills

Languages
Korean, Fluent in English and Chinese

Computer Languages and Statistical Packages
C, MATLAB, STATA, Python, R

References

Kwangwon Ahn
Yonsei University
k.ahn@yonsei.ac.kr
+82-2-2123-4017

Athanasios Tsekeris
Glasgow Caledonian University
Athanasios.Tsekeris@gcu.ac.uk
+44-1412731228

Daeyong Lee
Iowa State University
daelee@iastate.edu
+1-515-294-6120

Dongshin Kim
Pepperdine University
dongshin.kim@pepperdine.edu
+1-310-506-7406

Jooyoung Jeon
KAIST
j.jeon@kaist.ac.kr
+82-42-350-4032

Yena Song

Chonnam National University
y.song@jnu.ac.kr
+82-62-530-2682