

# Yingying Guo

Department of Finance  
Louisiana State University  
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My LSU Profile  
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## EDUCATION

### Louisiana State University, Baton Rouge, LA, US

|                                                                                     |               |
|-------------------------------------------------------------------------------------|---------------|
| Ph.D. in Finance, Minor in Economics                                                | Expected 2026 |
| Advisor: Professor R. Kelley Pace                                                   |               |
| M.S. in Finance                                                                     | 2021          |
| M.S. in Petroleum Engineering                                                       | 2020          |
| Advisor: Professor Andrew Wojtanowicz                                               |               |
| Thesis: <i>Well Testing of Fracture Corridors in Naturally-Fractured Reservoirs</i> |               |
| MAPST in Applied Statistics                                                         | 2020          |
| Advisor: Professor Brian D. Marx                                                    |               |

### New Mexico Institute of Mining and Technology, Socorro, NM, US

|                                                                              |      |
|------------------------------------------------------------------------------|------|
| B.S. in Petroleum and Natural Gas Engineering (Highest Honors, Tech Scholar) | 2015 |
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## RESEARCH INTERESTS

Household Finance, Asset Pricing, Energy Finance, Corporate Finance

## TEACHING INTERESTS

Corporate Finance, Investments, Real Estate Analytics, FinTech, Financial Data Analysis

## CITATIONS

Google Scholar (Nov 2025): 112 citations; h-index 4; i10-index 3.

## FINANCE REFEREEING

Journal of Derivatives  
The Journal of Real Estate Finance and Economics

## FINANCE PEER-REVIEWED PUBLICATIONS

1. Guo, Y., & Chance, D. (2025). Kernel-Based Machine Learning for Option Pricing. *Journal of Derivatives*, 32(4).

Traditional option pricing models such as the Black-Scholes-Merton model have certain limitations, which has given rise to research that asks the option price data itself to reveal which factors drive option prices. In this article, we explore the application of kernel-based learning methods, specifically the Kernel Support Vector Machine (KSVM) and Gaussian Process (GP) models. We illustrate the setup and examine the performance of these two models in explaining call option prices for the S&P 500 index between August 31, 2018 and August 31, 2023. The results for this dataset indicate that the Radial Basis KSVM model is superior to other KSVM models; the Radial Basis KSVM model has a slightly lower mean squared error than the GP model. We find that both models provide reasonably accurate predictions of option prices. This investigation contributes to the literature on machine learning techniques in finance by highlighting their potential in option pricing.

## FINANCE WORKING PAPERS

1. Guo, Y. and Pace, R. K. *Natural Language Interfaces for Empirical Finance: Evidence from FHFA Housing Price Index Data*

This study introduces a dual-mode framework that applies advances in Natural Language Processing (NLP) to empirical finance. Using the Federal Housing Finance Agency (FHFA) House Price Index, we demonstrate how large language models (LLMs) convert plain English queries into executable econometric routines. In Research Mode, an AI-sandbox enables unconstrained natural language execution, supporting rapid hypothesis generation and robustness checks but requiring careful user specification and tolerance for variance across providers. In Public Mode, queries are routed through the Model Context Protocol (MCP), which constrains outputs to deterministic analytic tools such as regressions, visualizations, and heatmaps. This design ensures reproducibility, governance, and accessibility for multi-user deployment. By integrating NLP with structured financial datasets, the framework lowers barriers to analysis while maintaining methodological rigor.

2. Guo, Y. and Pace, R. K. *How do Property and Neighborhood Characteristics Affect Appraisal Bias?*

Appraisal bias has been a persistent issue in the real estate market, but public data was previously unavailable. The release of the Uniform Appraisal Dataset (UAD) Appraisal-Level Public Use File (PUF) has changed this situation. This data set includes data on the contract price and the appraised value along with property characteristics, market conditions, demographic information, and temporal and regional data, allowing us to employ both the ordered probit model and the Tobit model to investigate the impact of property characteristics, market conditions, and demographic factors on the appraisal outcomes in 52 US regions, including 50 states, territories (like Puerto Rico), and federal districts (like the District of Columbia). Our analysis reveals several key findings. Broadly characterized, desirable property characteristics such as larger size, higher quality, and location in White and Asian neighborhoods seem to lead to positive bias. However, when more comparable properties exist the appraisal bias diminishes. Properties where the income approach is relevant also seem to show lower bias.

3. Guo, Y., Narayanan, R., Pace, R. K., and Ratnadiwakara, D. *Appraisal Accuracy and its Effect on Loan Collateral*

Human appraisals, automated valuation models, and other types of statistical procedures result in imprecise valuations (error). Although these methods provide good estimates of housing prices on average for particular types of properties, these estimates vary in accuracy as a function of housing age, neighborhood composition, owner characteristics, and geography. Because the collateral value of the loan equals the lesser of the market transaction and the estimated value, inaccurate estimates result in a lower expected value of the collateral and thus a lower principal value. This manuscript uses the Zillow ZTRAX data to examine heteroskedasticity in the models and the resulting implications for collateral reduction. We find that houses in minority areas with lower education and older housing have greater levels of inaccuracy. This can lead to collateral reduction with implications for financial inclusion.

## FINANCE CONFERENCE PRESENTATIONS

1. 2024 FSU-UF Critical Issues in Real Estate Symposium

## FINANCE TEACHING EXPERIENCE

### Department of Finance, Louisiana State University

#### Instructor

FIN 3826 – Fundamentals of Asset Management (Instructor rating: 4.0/4.0) Summer 2025

FIN 3351 – Principles of Real Estate (Instructor rating: 3.9/4.0) Summer 2024

#### Note:

Department teaching evaluation average: 3.4/4.0 (Summer 2024),

College teaching evaluation average: 3.5/4.0 (Summer 2024),

Department teaching evaluation average: 3.7/4.0 (Summer 2025),

College teaching evaluation average: 3.6/4.0 (Summer 2025)

#### Teaching Assistant

FIN 7720– Introduction to Financial Modeling with MATLAB Fall 2025

FIN 3716 – Principles of Finance Fall 2024, 2025

FIN 4820 & FIN 7709 – Financial Modeling and Analytics 2022–2024, Spring 2025

FIN 4910 – Real Estate Analytics 2022–2025

## OTHER REFEREEING

ACS Omega

Scientific Reports

Petroleum Research

Journal of Petroleum Science and Engineering

International Journal of Greenhouse Gas Control

Journal of Petroleum Exploration and Production Technology

Journal of Energy Resources Technology, Part B: Subsurface Energy and Carbon Capture

**OTHER PUBLICATIONS (PEER-REVIEWED, ENGINEERING & INTERDISCIPLINARY)**

1. You, F., Wu, Y., Guo, Y., & Zheng, Y. (2026). Green dissolution of waxy corn starch in water-rich deep eutectic solvents: Urea-mediated hydrogen bond disruption for non-derivatizing processing. *Food Hydrocolloids*, 172(Part 2), 111997.
2. Guo, Y., & Wojtanowicz, A. (2025). Well Testing of Fracture Corridors in Naturally Fractured Reservoirs for an Improved Recovery Strategy. *Energies*, 18(14), 3827.
3. You, F., Zheng, Y., Wu, Y., Guo, Y., Xu, Z., & Leng, L. (2025). Influence of corn starch acid hydrolysate on reservoir damage: The key role of molecular structure. *International Journal of Biological Macromolecules*, 308, 142358.
4. You, F., Wu, Y., Guo, Y., & Zheng, Y. (2025). Rheological aspects of xanthan gum: Governing factors and applications in water-based drilling fluids and enhanced oil recovery. *Carbohydrate Polymers*, 123579.
5. Yin, Q., Zhu, Q., Song, Z., Guo, Y., Yang, J., Xu, Z., ... & Tyagi, M. (2025). Deep learning based early warning methodology for gas kick of deepwater drilling using pilot-scale rig data. *Process Safety and Environmental Protection*, 196, 106844.
6. Tang, Y., Zhang, X., Lv, B., Lv, H., Zheng, L., Yang, H., ... & Xu, Z. (2025). Investigation of micro-nano fluid formulated from highly mineralized formation water and its oil displacement mechanisms. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 709, 136103.
7. Yin, Q., Xue, Q., Guo, Y., Gao, B., Li, X., & Zhu, H. (2025). Simulation and Optimization of Coupling Dynamic Response of Steel Catenary Riser for a Semi-Submersible Platform Under Harsh Conditions in the South China Sea. *China Ocean Engineering*, Advance online publication. <https://doi.org/10.1007/s13344-025-0071-0>.
8. Yin, Q., Yan, X., Zhu, H., Chen, K., Yang, J., Liu, L., Gao, B., Guo, Y., & Ma, Y. (2025). Strength and fatigue analysis of mudline wellhead and its tie-back system in offshore drilling. *Petroleum Science and Technology*, 1–28.
9. Cao, B., Yin, Q., Guo, Y., Yang, J., Zhang, L., Wang, Z., ... & Zhou, X. (2023). Field data analysis and risk assessment of shallow gas hazards based on neural networks during industrial deep-water drilling. *Reliability Engineering & System Safety*, 232, 109079.
10. Zhao, X., Yin, Q., Yang, J., Long, Y., Liu, H., & Guo, Y. (2022). Risk assessment of surface conductor jetting installation during deep-water drilling in sloping seabed. *Ocean Engineering*, 266, 113057.
11. Li, Z., Yin, Q., Guo, Y., Long, Y., Li, M., Zhou, X., ... & Meng, F. (2022, June). A Special Thread Design Based on TC4 Titanium Alloy and its Successful Application in Offshore Extended-Reach Drilling. In *International Conference on Offshore Mechanics and Arctic Engineering* (Vol. 85956, p. V010T11A091). American Society of Mechanical Engineers.
12. Wang, K., Liu, G., Guo, Y., Yang, H., Chen, Z., Su, G., ... & Yu, X. (2022). Preparation and properties of degradable hydrogels as a temporary plugging agent used for acidizing treatments to enhance oil recovery. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 637, 128218.

13. Guo, Y., & Wojtanowicz, A. (2021, June). Well Testing of Fracture Corridors in Naturally-Fractured Reservoirs (NFR). In *International Conference on Offshore Mechanics and Arctic Engineering* (Vol. 85208, p. V010T11A018). American Society of Mechanical Engineers.
14. Peng, Y., Yao, X., Guo, Y., Huang, L., & He, Y. (2012). Development of measuring instrument for evaluating volume stability of HTHP cement slurry. *Petroleum Drilling Techniques*, 40(4), 115–118.

## OTHER CONFERENCE PRESENTATIONS (ENGINEERING)

1. ASME 2022 41st International Conference on Ocean, Offshore and Arctic Engineering
2. ASME 2021 40th International Conference on Ocean, Offshore and Arctic Engineering

Note: I was the presenter at both conferences.

## OTHER TEACHING EXPERIENCE (ENGINEERING & INTERDISCIPLINARY)

### Department of Experimental Statistics, Louisiana State University

#### Teaching Assistant

EXST 7014 – Experimental Statistics II Fall 2020–2021

EXST 2201 – Introduction to Statistical Analysis Spring 2020–2021

### Craft & Hawkins Department of Petroleum Engineering, Louisiana State University

#### Teaching Assistant

PETE 4059 – Drilling Fluid Lab Fall 2017–2019

PETE 4086 – Well Design-Drilling Spring 2017–2019

Note: For EXST 7014, EXST 2201, and PETE 4059, my responsibilities included instructing students in laboratory sessions, which involved programming, data analysis, and conducting chemistry-related experiments.

## OTHER PROFESSIONAL EXPERIENCE

### Craft & Hawkins Department of Petroleum Engineering, Louisiana State University

#### Student Worker

Drilling Fluid Lab Summer 2020

#### Research Assistant

Reservoir Simulation 2018

### High Performance Computing, Louisiana State University

#### Graduate Assistant

Computer Lab 2015–2017

## ONLINE ACADEMIC PROFILES

- ORCID: 0000-0002-9615-9424
- Scopus Author ID: 57947678500
- Web of Science ResearcherID: MVX-9352-2025
- Google Scholar: s7qsEBsAAAAJ
- SSRN Author ID: 6388148
- ResearchGate: Yingying Guo

## PATENTS

**US11674887B2** – Apparatus and method for testing dynamic sealability of fluid in the downhole minor leaks June 2023

*Co-inventor. Developed a high-pressure, high-temperature apparatus to evaluate the dynamic sealing performance of wellbore fluids under simulated downhole leak conditions with real-time monitoring and visualization.*

**CN101825424B** – High-temperature and high-pressure small-size length measuring device June 2011

*First inventor. Designed a small high-pressure, high-temperature device to accurately measure cement slurry expansion and stability, enabling evaluation of gas-generating additives under realistic well conditions.*

## SERVICE AND OUTREACH

### SPE Chevron Mentorship Program Team

*Louisiana State University, Baton Rouge, LA, USA*

2018

Mentor: Advising freshman and first-year graduate students in the Petroleum Engineering Department

### Magdalena Ridge Observatory Volunteer Team

*Magdalena Ridge Observatory, Socorro, NM, USA*

2014–2015

Gave tours of the observatory to the public. Educated guests about instrumentation, the capabilities of the different telescopes and equipment, and the goals of the observatory as a whole.

## AWARDS AND FELLOWSHIPS

|                                                           |           |
|-----------------------------------------------------------|-----------|
| Startup LSU Competition, Second Place (Team Award)        | 2025      |
| Keith and Evie Katz Superior Graduate Student Scholarship | 2024–2025 |
| NMIMT Honor Roll                                          | 2013–2015 |
| Jereh Scholarship                                         | 2012–2013 |
| Drilling 821 Scholarship                                  | 2011–2012 |
| First-Class Academic Scholarship                          | 2011–2012 |

## PROFESSIONAL MEMBERSHIPS

Member of Pi Epsilon Tau  
Member of Institute of Mathematical Statistics  
Member of Society of Petroleum Engineers (Member ID: 5288111)  
Secretary of Graduate Students Association in Petroleum Engineering Department

## SKILLS

- **Programming and Data Analysis:** Python, R, Matlab, Stata, SAS, SQL
- **AI & Machine Learning:** Supervised/Unsupervised Learning, Ensemble Methods, Neural Networks (Deep Learning: DNN, LSTM, GRU), NLP, LLMs
- **Statistical and Financial Modeling:** Time Series, Panel, Bayesian Methods, Data Mining, Non-parametric Methods, Multivariate & Categorical Analysis
- **Mathematical Modeling:** Optimization, Numerical Methods, Stochastic Processes, Simulation
- **Technical Writing and Typesetting:**  $\LaTeX$ , Microsoft Office Suite
- **Visualization and Presentation:** ggplot2, matplotlib, Tableau, Excel
- **Additional:** Skilled in DSLR photography, image editing, and video production, used in academic presentations, educational content, and social events

## LANGUAGES

Native Chinese speaker; Fluent in spoken and written English.

## REFERENCES

**Professor R. Kelley Pace (Dissertation Advisor)**

Boyd Professor, Department of Finance  
Director, Real Estate Research Institute  
Louisiana State University  
2937 Business Education Complex North  
*Email: kpace@lsu.edu*

**Professor Don Chance**

Professor, Department of Finance  
Norman V. Kinsey Distinguished Chair in Finance  
Louisiana State University  
2909 Business Education Complex North  
*Email: dchance@lsu.edu*

**Professor V. Carlos Slawson Jr.**

Professor, Department of Finance  
Associate Director, Real Estate Research Institute  
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