XINDE (CINDER) ZHANG, Ph.D.

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RESEARCH FOCUS

Human-AI Partnership in Professional Cognition

My research investigates how professionals develop expertise when AI systems can perform expert-level tasks. This work sits at the intersection of finance, cognitive science, and AI systems design.

Core Research Questions:

- How do humans develop systematic thinking when AI can provide answers instantly?
- What cognitive capabilities remain distinctively valuable in AI-augmented environments?
- How should professional education transform when the knowledge it transmits becomes freely available through AI?

Methodology: Design science research — engineering interventions, deploying at scale, studying outcomes empirically. The DRIVER Framework represents the first systematically engineered learning system for human-AI partnership in professional domains, currently deployed with 280+ participants generating longitudinal qualitative data.

ACADEMIC APPOINTMENTS

Purdue University, Mitch Daniels School of Business
AI Finance Faculty, Finance Department, 2025–Present

University of Arkansas, Sam M. Walton College of Business
Teaching Associate Professor, Finance, 2022–2025
Visiting Professor, 2020–2022

Valdosta State University, Assistant Professor of Finance, 2019–2020

Our Lady of the Lake University, School of Business
Assistant Professor & Program Lead, Finance, 2016–2019

Shanghai University of Finance and Economics
Assistant Professor, Finance, 2010–2016

Tsinghua University, PBC School of Finance
Associate Research Professor, 2014–2015

Columbia University, Columbia Business School
Chazen Visiting Scholar, 2013–2014

PUBLICATIONS

Peer-Reviewed Journals

Zhang, H., Wang, Z., & **Zhang, X.** (2020). Fire sales and liquidity. ***Journal of Financial and Quantitative Analysis (JFQA)***

Tan, Y., Tian, X., **Zhang, X.**, & Zhao, H. (2020). Privatization and innovation. ***Journal of Corporate Finance (JCF)***

Zhang, X. & Zhou, S. (2018). Bond covenants and institutional blockholding. ***Journal of Banking and Finance (JBF)***

King, T.H., Piao, T., & **Zhang, X.** (2022). Putable bonds and information asymmetry. ***Journal of Fixed Income***

Zhang, X. (2024). Overcoming barriers to teaching machine learning in finance. ***Advances in Financial Education***

Lee, K., Mirchandani, D., & **Zhang, X.** (2010). An investigation of industry impacts on the institutionalization of corporate websites. ***The Data Base for Advances in Information Systems***

Citation Impact

Google Scholar: 649 citations | 496 since 2020 | h-index: 10

RESEARCH IN PROGRESS

AI and Financial Analysis

"The Rise of Generative AI in Financial Analysis: Evidence from Equity Research"
with Austin Francis
Status: Revise and Resubmit, Finance Research Letters

We demonstrate that AI agentic research teams can match or exceed human equity analysts in comprehensive investment research. Analysis of 50 matched-pair company reports shows AI-generated reports significantly outperform human reports in quality scores (mean difference = 0.272, t-stat = 3.17, $p < 0.01$). This documents a fundamental transformation: cognitive computing systems can now replicate core intellectual tasks previously exclusive to human professionals.

Implication: If AI can do what we trained professionals to do, how to reinvent professional education with human-AI partnership?

The DRIVER Framework: Human Cognition in AI-Augmented Environments

"Systematic Human-AI Partnership in Professional Learning"
Status: Active research program with ongoing data collection

DRIVER (Discover & Design, Represent, Implement, Validate, Evolve, Reflect) is the first engineered system for developing systematic thinkers in AI-augmented professional environments. Unlike theoretical proposals, DRIVER is deployed and generating empirical data.

Current Implementation Scale:

- 280+ participants across multiple cohorts
- AI in Finance, AI Leadership in Finance, Financial Modeling, Financial Data Analytics, Financial Management courses
- Following semesters: Expansion to more students

Research Design:

- Three-point longitudinal survey capturing cognitive development trajectory
- Survey 1 (Week 3-4): Baseline state and initial responses to AI integration
- Survey 2 (Week 8-9): Emerging cognitive shifts and mindset changes
- Survey 3 (Week 16): Full-semester reflection on transformation

Preliminary Findings:

Documented cognitive shift: Students move from treating AI as "answer machine" to describing it as "thinking partner requiring skill."

Representative trajectory from participant data:

> Survey 1: "I was very confused on what the class is even about, why we are coding" Survey 2: "I've learned that effectively using AI isn't about seeking answers, but about using it to think"

Emerging research questions from data:

- Does AI-augmented learning build or erode foundational cognitive capacity?
- Who transforms under DRIVER and who resists? What predicts the difference?
- How do "productive struggle" levels affect cognitive development with AI support?
- Do cognitive shifts persist beyond the intervention?

Validation Evidence:

- Teaching evaluations: 73rd-82nd percentile rankings
- Student testimonials in anonymous teaching evaluation: "This class should be the gold standard for all of Purdue"
- Career outcomes: Graduates placed at Goldman Sachs, JPMorgan, State Street, MasterCard, EY, Walmart Global Tech

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Other Working Papers

"Loan Syndication and Bond Mutual Fund Information Flow"
with Xiaonan Ma and Hanjiang Zhang
Status: First draft, updating data

"Cross-Asset Return Predictability: Machine Learning and Corporate Bond-Equity Information Transfer"
Status: First draft, additional robustness tests

Documents predictability in corporate bond markets using equity-based signals through machine learning methods. Gradient boosting models achieve out-of-sample R^2 of 5.14% for one-month bond returns.

BOOKS UNDER CONTRACT

World Scientific Publishing — Signed October 2025

Three-volume series codifying the DRIVER methodology for replication across institutions and multi-site research.

1. **Finance with AI: Financial Management**
   DRIVER Series
   Manuscript due: January 2026

2. **Finance with AI: Financial Modeling**
   DRIVER Series
   Manuscript due: February 2026

3. **Finance with AI: Investment**
   DRIVER Series
   Manuscript due: December 2026

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PRESENTATIONS

"Transforming Finance Education with Generative AI"
Financial Education Association Annual Meeting, 2024

"Fostering Visual Learning and Problem Solving in Finance"
Invited Workshop, San Antonio, 2024

"The Rise of Generative AI in Financial Analysis"
In preparation for submission to FMA 2025

RESEARCH AND TEACHING RECOGNITION

University of Arkansas Teaching Innovation Award, 2025
For AI-augmented finance curriculum (early DRIVER deployment)

FMA Innovation in Teaching Award, Runner-Up, 2022
For integrating machine learning and AI into finance education

FMA Best Paper Award, Semi-Finalist, 2018, 2015

RESEARCH IMPLEMENTATION SITES

Courses serve as field sites for DRIVER research program

Current Deployments (2025-2026)

Purdue University

- MGMT 310: Financial Management (180+ students) — Full DRIVER implementation with three-point survey
- MGMT 413: Financial Modeling (45+ students) — Advanced DRIVER with technical focus
- MSF Program: AI Finance Track (Spring 2026) — Graduate-level deployment

Historical Deployments (2020-2025)

University of Arkansas

- Financial Data Analytics I & II — Initial DRIVER development and iteration
- Financial Programming with Python — Technical implementation track
- Advanced Financial Modeling — Professional-level validation
- Built Financial Analytics concentration from 0 to 130+ students

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DOCTORAL TRAINING

Dissertation Committee Member

- Ph.D. candidates at University of Arkansas (finance)
- Ph.D. graduates at Shanghai University of Finance and Economics

Research Mentorship

- Supervised undergraduate and graduate research projects applying machine learning to financial analysis
- Guided student implementations of DRIVER methodology

TECHNICAL EXPERTISE

Programming: Python, Machine Learning (scikit-learn, XGBoost), LLM integration (OpenAI API, Anthropic API)
Financial Data: WRDS, Bloomberg, SEC EDGAR, Earnings Calls, Web Crawling
Research Methods: Qualitative analysis, longitudinal survey design, design science methodology

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INDUSTRY CONNECTIONS

Industry relationships inform research questions and provide professional contexts for validating DRIVER outcomes.

Student Career Outcomes

- Goldman Sachs
- JPMorgan Chase
- State Street
- MasterCard

- Ernst & Young
- Walmart Global Tech

Professional Network

- Connections with executives at major corporations including Walmart and Tyson Foods
- Industry advisory relationships informing curriculum-as-research design
- Industry-University early career immersive partnership

SERVICE

Journal Reviewing

- *Journal of Banking and Finance*
- *Journal of Corporate Finance*
- *Financial Management*

Program Development

- Founder: Financial Analytics Concentration, University of Arkansas
- Founder: MSF AI Track, Purdue University
- Co-founder: MSF program, University of Arkansas

Committees

- Search Committee
- Data Analytics Steering Committee
- MSF Committee
- General Education Committee

REFERENCES

Available upon request

Last updated: November 2025