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# Huilin Zhang

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## Education

**Purdue University**, PhD, MS in Economics 2019 - 2025
- GPA: 3.7/4. Course: Causal Inference, Machine Learning, Deep Learning, Mathematical Analysis, Statistics

**Sun Yat-sen University**, MA in Economics 2017 - 2019
- First Prize Scholarship for Graduate Students, Outstanding Master's Thesis (Top 1.6%)

**Wuhan University**, BA in Economics 2013 - 2017
- Outstanding Student Scholarship (2013-2014, 2014-2015), Outstanding Freshman Scholarship

## Project Experiences

**Forecasting the Green Bond Index** (Github)
- Built an automated ETL data pipeline to extract financial and macroeconomic data from LSEG via API and integrate S&P Green Bond Index, reducing data processing time by 20% and improving data accuracy for financial analysis.
- Leveraged Python and SQL for data pre-processing (missing values, duplicates, and outliers) and feature engineering to enhance model stability and predictive performance.
- Developed LSTM neural networks and random forest models to forecast the Green Bond Index, outperforming ARIMA in capturing market patterns and temporal dependencies.
- Enhanced model performance by optimizing hyperparameters using grid search, improving prediction accuracy by 10% and reducing model variance for more reliable forecasts.

**The Productivity Externality of Working From Home: Welfare and Policy Implication** (PDF) Doctoral Thesis
- Conducted deep-dive analysis based on 24M+ household survey data to extract insights on the relationship between remote work wages and employment across different cities and industries; set the foundation for the quantitative model.
- Applied econometric techniques (e.g., generalized method of moments, regression analysis, instrumental variables) using Stata to estimate productivity spillover effects among onsite and remote workers, providing data-driven insights for workforce optimization.
- Developed a quantitative spatial economic model and computed the socially optimal balance of remote and onsite work in Matlab. Identified that subsidizing onsite work could increase social welfare by 2%, while advancements in remote technology reduced subsidy costs by 4 percentage points, providing actionable policy insights.
- Presented research findings quantifying the correlation between social welfare improvement and onsite employment size & workload, providing data-driven insights for optimizing workforce policies at conferences (NABE TEC, MEA).

**How Globalization Changes the Level and Structure of Executive Compensation** with David Hummels, Jakob R. Munch
- Enhanced the principal-agent model by incorporating a diverse range of CEOs and firms, analyzing how trade shocks, CEO ability, and firm characteristics impact executive compensation.
- Conducted an in-depth analysis of matched worker-firm panel data (1,000+ firms, 12,000+ observations) using instrumental variable regression to quantify the causal effects of globalization on CEO compensation.

## Work Experiences

**Research/Teaching Assistant, Instructor**, Purdue University 08/2019 - Present
- Developed Python scripts to automate bulk data processing, created presentation slides to effectively communicate findings, and collaborated with faculty members in weekly meetings to drive research progress.
- Taught over 600 students across 15 courses, with class sizes ranging from 10+ to 80+. Recognized with the Krannert Outstanding Teaching Certificate for maintaining an average course evaluation score of 4/5.

**Assistant Manager**, China Merchants Bank 12/2016 - 02/2017
- Guided clients through personal credit loan applications, conducted financial assessments, approved 70+ loans totaling $1.4M, mentored a team member, and marketed financial products through client outreach.

**Team leader, Student Loan Project**, China Development Bank 10/2016 - 12/2016
- Utilized advanced Excel skills (e.g., VLOOKUP, PivotTables, and data analysis functions) to efficiently manage and organize contracts for quick retrieval, improving workflow efficiency by 25%.

## Technical Skills

**Programming:** Python (Pandas, Numpy, Matplotlib, Tensorflow, Sk-Learn), SQL, R, Matlab, Stata

**Analytics Skills**: Causal Inference, Machine Learning, Economic Modeling, A/B Test, Predictive Analytics, Data Analysis, Data Pipeline, Data Visualization (Tableau, Power BI), Clustering