

MIN (MIA) SHI

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Education

The University of Texas at Dallas Ph.D. in Political Science – Quantitative Statistical Modeling Focused	Aug. 2019 – Dec. 2024 <i>GPA: 3.95/4.0</i>
The University of Texas at Dallas M.S. in Social Data Analytics and Research	Aug. 2021 – Aug. 2024 <i>GPA: 3.95/4.0</i>
The University of Texas at Dallas M.S. in Business Analytics (Data Science & Data Engineer Track)	Aug. 2022 – May 2024 <i>GPA: 4.0/4.0</i>
The University of Texas at Dallas Graduate Certificate in Applied Machine Learning	Aug. 2022 – May 2023 <i>GPA: 4.0/4.0</i>
The University of Texas at Dallas M.A. in Political Science	Aug. 2019 – May 2022 <i>GPA: 3.95/4.0</i>
Shandong University M.L. in International Politics	Sept. 2016 – Jun. 2019 <i>GPA: 88.78/100</i>
Daito Bunka University Exchange Student in Political Science	Sept. 2017 – Aug. 2018
Shandong University B.A. in Japanese	Sept. 2012 – Jun. 2016 <i>GPA: 87.37/100</i>

Scholarships

Keith Lankford Tayer Fellowship	2024
John Forrest Kain Scholarship	2023
Government and Political Science Scholarship	2022

Teaching Experience

School of Economic, Political and Policy Sciences, UTD <i>Teaching Assistant</i> Graduate Teaching Assistant for: GOVT 2305 American National Government GOVT 2306 State and Local Government EPPS 2302 Methods of Quantitative Analysis in the Social and Policy Sciences PSCI 3301 Political Theory PSCI 3325 American Public Policy PSCI 3328 International Relations PSCI 3350 Comparative Politics PSCI 4348 Terrorism, PPOL 4396 Topics in Public Policy PPPE 6302 Conflict in Cyberspace PPPE 6304 Open-Source Intelligence for Cyber Security and Policy EPPS 6313 Introduction to Quantitative Methods	Aug. 2019 – May 2024
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Responsibilities as followed:

- Assisted in course preparation and delivered lectures for multiple courses across political science and policy studies.
- Managed and conducted seminars to disseminate research findings and facilitate knowledge sharing among students.
- Stepped in to cover lectures for professors during their absence, ensuring seamless course continuity.
- Played a key role in organizing and executing various academic events and workshops aimed at enhancing student engagement and learning in topics like public policy.
- Contributed to the development and grading of course assessments, providing timely and constructive feedback to students.
- Oversaw class attendance and participated in departmental meetings to contribute to curriculum development and

course planning.

- Provided individualized assistance to students, addressing queries and guiding them in Methods of Quantitative Analysis and Introduction to Quantitative Methods.
- Coordinated with faculty members to streamline course content and materials for complex subjects like Open-Source Intelligence for Cyber Security and Policy.
- Actively involved in academic mentoring, guiding students through complex policy and political concepts, and helping them apply these in real-world contexts.
- Assisted in research activities, enhancing the course content for Topics in Public Policy and Comparative Politics with updated, relevant information.

Research Experience

School of Economic, Political and Policy Sciences, UTD *Research Assistant*

May 2022 – May 2024

↔ Prof. Jessi Hanson-Defusco

Took responsibility for data analysis for 10+ global health/policy projects using advanced statistical models.

- Managed data collection in diverse methods including Qualtrics surveys and web scraping using R and Python.
- Developed 20+ robust statistical models (multi-variable and fixed-effect regression, difference-in-difference, time-series) combined ML models and NLP skills to support correlation and causal inference in research.
- Led a team of five junior assistants, ensuring collaboration and timely project completion, underscoring strong communication, teamwork, leadership, and project management skills.

School of Economic, Political and Policy Sciences, UTD *Research Assistant*

May – Aug. 2021

↔ Prof. Thomas Gray, Prof. Banks Miller

- Conducted data collection of 1291 Supreme Court cases using both manual and web-scripting techniques, ensuring accurate and comprehensive data capture.
- Utilized time-series models to analyze and assess the time gaps among the schedules of the court cases, providing insights into the temporal dynamics of the legal proceedings.

School of Economic, Political and Policy Sciences, UTD *Research Assistant*

May – Aug. 2020

↔ Prof. Jonas Bunte

- Conducted data collection of 1291 Supreme Court cases using both manual and web-scripting techniques, ensuring accurate and comprehensive data capture.
- Utilized time-series models to analyze and assess the time gaps among the schedules of the court cases, providing insights into the temporal dynamics of the legal proceedings.

Conferences

2024 MPSA Annual Conference — Chicago, IL

Apr. 4 - 7, 2024

The Waves of US-China Technology Decoupling and Its Implication on MNCs: Using VAR Time Series Approach

2024 SPSA Annual Conference — New Orleans, LA

Jan. 10 - 14, 2024

Navigating the Waves of US-China Decoupling: A Comparative Analysis of Trade and Investment in Technology and Non-Technology Sectors

2023 ISDSA Meeting — Shanghai, China

Jul. 4 - 6, 2023

China's COVID Lockdown Policy and Trade with US: A Deep Learning Time Series Approach

2022 APSA Annual Meeting & Exhibition — Montreal, Quebec, Canada

Sept., 2022

Framing 2018 US-China Trade War during the Trump and Biden Eras (Accepted)

2022 ISDSA Meeting — Notre Dame, IN, USA.

May 31 - Jun. 1, 2022

Modeling US-China Trade Relations: A Time Series Machine Learning Approach Using MNC Stock Data

Publications

Hanson-DeFusco, J., Shi, M., Du, Z. et al. Systems analysis of the effects of the 2014-16 Ebola crisis on WHO-reporting nations' policy adaptations and 2020-21 COVID-19 response: a systematized review. *Global Health* 19, 96 (2023). <https://doi.org/10.1186/s12992-023-00997-8/>

Luhui Yang, Min Shi. 2023. An Analysis of the Motivation of the Abe Cabinet's Policy Evolution and Adjustment towards China. *Journal of China's Neighboring Diplomacy*. Vol.6, No.2, 43-68.

Luhui Yang, Min Shi. 2019. China Policy Adjustment or Changes by the Abe Administrations and Its Impacts. *Peace and Development*. No.3, pp.66-84.

Work Experiences

The Sunwater Institute *Data Scientist & Data Engineer* **Jun. 2024 – Oct. 2024**
↔ North Bethesda, MD / Remote

- **Summary:** Developed scalable ETL pipelines and real-time data workflows, implemented speech-to-text and speaker identification with 99% accuracy, and optimized AI/ML models for speech processing and big data using AWS.
- Developed real-time data processing workflows using AWS S3, Glue, and Lambda, optimizing performance and ensuring high efficiency. *Tools: AWS S3, Glue, Lambda, Python (Boto3)*
- Automated the speech-to-text and speaker identification process using AWS Transcribe, Computer Vision, and Deep Learning Models using PyTorch, achieving an accuracy rate above 90%, and contributing to speech processing initiatives. *Tools: PyTorch, CNN, Transfer Learning, AWS Transcribe & Teextract*
- Engineered and maintained scalable data applications, incorporating data quality checks and implementing automated CI/CD pipelines for seamless deployments. *Tools: Streamlit, Python, GitHub, AWS EC2, Jenkins*
- Collaborated with cross-functional teams, including engineers, researchers, and stakeholders, to design and implement AI-based data models for projects such as speech identification.
- Authored documentation for data models and workflows, fostering better collaboration and transparency.

The University of Texas at Dallas *Data Analyst & Research Assistant* **May 2020 – May 2024**
↔ Richardson, TX / Part-time

- **Summary:** Took responsibility for data manipulation and model building for 10+ global health and policy analytics projects.
- Managed data collection in diverse methods including Qualtrics surveys and web scraping using R and Python.
- Developed 20+ robust statistical models (multi-variable and fixed-effect regression, difference-in-difference, time-series) combined ML models and NLP skills to support correlation and causal inference in research.
- Led a team of five junior assistants, ensuring collaboration and timely project completion and publication.

Lucion Technology Corp., Ltd. *Marketing Data Analyst* **July 2017 – Aug. 2017**
↔ Jinan, CN / Intern

- **Summary:** Served as a Data Analyst Intern responsible for data management, data visualization, and business analysis.
- Improved the efficiency of data extraction by 40% through data optimization in MySQL.
- Employed Microsoft Visio to visualize intricate network structures and aided in product comprehension.
- Produced Business Intelligence (BI) reports, offering insights based on user structures and competitor analysis.

Data Science & ML & Backend Projects

Strategic Analytics and Planning Report on University-Level Trends **May 2024 - Jun. 2024**

- **Summary:** Conducted a five-year enrollment and graduation trend analysis and provided strategic planning for one Public University.
- Analyzed 17,000+ undergraduate records to identify trends in enrollment and graduation rates by demographics, specifically gender, ethnicity, first generation status, and Pell recipient, supporting strategic decision-making.

- Leveraged multiple data sources to fill gaps, ensuring a thorough report for institutional research and reporting.
- Presented to stakeholders, highlighting key insights to guide strategic planning and continuous improvement.

Cross-Cultural Study of University-Level Survey Data

May 2024 - May 2024

- **Summary:** Collaborated on a cross-cultural study examining the link between corruption perceptions and academic integrity among university students in Mexico and the U.S., focusing on data collection, statistical modeling, and reporting.
- Collected and cleaned survey data from 535 students across two countries, ensuring accuracy for analysis.
- Developed statistical models to examine the impact of corruption perceptions on academic dishonesty.
- Authored detailed reports, presenting findings and contributing to the study's insights.

US Top 4 Airlines Financial Performance Analytics

Jan. 2024 - May 2024

- **Summary:** Analyzed 20 years of airline data, identified strategic trends and turning points, and recommended business models.
- Analyzed financial data from a 20-year dataset of over 10,000 rows, covering net income, revenue, and expenses across the US airline industry. This deep dive provided insights into long-term financial trends and shifts.
- Conducted financial performance analytics for the top 4 airlines, identifying key turning points related to major events, alliances, and partnerships over the period.
- Assessed operational trends and competitive positioning of each airline, deriving specific business model recommendations based on a two-decade comparison with competitors.

AI-Powered Payment Service Chatbot for Enhanced Customer Engagement

Aug. 2023 - Dec. 2023

- **Summary:** Led the development of an AI-driven chatbot for Onyx CenterSource, improving customer engagement through advanced NLP techniques.
- Leveraged NLP and MySQL for analyzing and querying an extensive database containing over 10 million entries.
- Improved response efficiency by 25% and achieved 99% accuracy using the XGBoost model.
- Enhanced user engagement, boosting customer satisfaction and strengthening the company's brand image.

Kaggle Plant Pathology Competition: Leveraging Deep Learning CNNs

Nov. 2023 - Dec. 2023

- **Summary:** Implemented deep learning models using Python and PyTorch to enhance disease identification accuracy in crops.
- Utilized transfer learning on CNNs with 13042 images in 12 categories, enhancing disease identification accuracy.
- Conducted image transformation, including rotation, flipping, zooming, and noise injections to augment data.
- Fine-tuned ConvNext DL CNN models and achieve 86.8% accuracy, securing a Top 3 ranking in the competition.

Forecasting Stock Prices Through NLP Examination of Newspaper Articles

May 2023 - Dec. 2023

- **Summary:** Developed automated web scraping, applied NLP techniques to analyze WSJ articles, and improved S&P 500 prediction accuracy.
- Developed automated web scraping for 7,000+ WSJ articles, increasing data acquisition efficiency by 30%.
- Employed various vectorizers for WSJ article analysis, such as Tfidf Vectorizer, n-grams Count Vectorizer, etc.
- Utilized Naïve Bayes and Random Forest models, enhancing S&P 500 prediction accuracy by 12%.

Analysis of the Effect of COVID-19 on US Trade and US Firms

May 2023 - Jul. 2023

- **Summary:** Built regression and machine learning models for causal analysis, and presented findings at the 2023 Applied Data Science International Conference, earning recognition.
- Synthesized data and created fixed-effect regression models to identify correlations and causal mechanisms.
- Developed and Implemented machine learning and deep learning models to conduct counterfactual analysis.
- Presented research at the 2023 Applied Data Science International Conference to 200 professionals, receiving recognition for clarity and actionable insights.

Analytical Insights and Marketing Strategy Guidance for a Food Company

Feb. 2023 - May 2023

- **Summary:** Cleaned 1.3 million data records, built interactive Tableau dashboards, and improved forecasting accuracy by 15%.
- Handled data cleaning over 1.3 million raw data records using Python, ensuring data quality and accuracy.
- Developed interactive dashboards in Tableau, enhancing data accessibility and supporting business analytics.

- Employed SAS to construct regression and time series models, leading to a 15% increase in forecasting accuracy.

Big Data Risk Analysis and Data Visualization for one Corporation **Aug. 2022 - Nov. 2022**

- **Summary:** Engineered data visualization dashboards using Tableau, linked to Hadoop, for business risk analysis.
- Processed and analyzed geospatial data with Hadoop, Hive, Impala and Spark, reducing processing time by 40%.
- Developed Tableau visualizations linked to Hadoop and built interactive dashboards for business matrix analysis.
- Conducted linear regression and multivariate analysis, contributing to predictive accuracy by 15%.

Payroll Management System Database Design via MySQL **Jun. 2022 - Aug. 2022**

- **Summary:** Designed and implemented a payroll management database in MySQL, leading a team of five; developed automated functions, procedures, and triggers, and optimized ETL processes and queries.
- Led a group of five in conducting business requirements analysis and designing a payroll management database with MySQL consisting of 13 tables.
- Created stored functions, procedures, and triggers to calculate employees' payroll per two weeks, fill in new employee information, and send PTO reminders automatically.
- Performed extract-transform-load, data cleaning, and query optimization.

Modeling U.S.-China Trade War's Effect on US Firms using ML and Time Series **Jan. 2022 - May 2022**

- **Summary:** Analyzed the impact of the US-China trade war on MNCs using ML, sentiment analysis, and GARCH time series models.
- A project aimed at exploring how the US-China trade war affects Multinational Corporations (MNCs) through an ML content analysis of policy changes and a time series GARCH modeling approach using stock data.
- Utilized Pandas, NumPy, Matplotlib & Seaborn in data cleaning, visualization, and transformation.
- Leveraged sentiment analysis to explore how the US frame 2018 US-China trade war
- Applied regression analysis in exploring the causal mechanism between trade war and S&P 500 revenues.
- Built machine learning (ML) models in predicting the profound influence of the trade war on US firms.
- Used time-series GRACH models to evaluate MNCs' revenue & volatility quantified via stock data in Stata.
- Presented at 2022 International Society for Data Science and Analytics Conference.

Content Analysis of News Coverage about US-China Trade War **Aug. 2022 - May 2022**

- **Summary:** Analyzed how news organizations framed the 2018 US-China trade war, using machine learning and time-series analysis on over 500 articles to model sentiment trends.
- Led an analysis on how news organizations frame the 2018 US-China trade war during the 2018-2022 period.
- Leveraged machine learning skills such as top modeling and sentiment analysis to explore a collection of over 500 news articles.
- Implemented time-series analysis and chi-squared test in modeling sentiments change tendencies among news coverage.

COVID-19 Worldwide Cases Synchronous Dashboard using Tableau **Dec. 2021 - Jan. 2022**

- **Summary:** Designed and developed an interactive Tableau dashboard to analyze COVID-19 severity worldwide, uncovering key factors influencing the pandemic's impact across countries.
- Designed a synchronous Tableau dashboard with advanced interactive functions to explore the COVID-19 severity.
- Built a Tableau story to dig into the factors affecting the severity of COVID-19 by country and found out the deep connection between multiple aspects of factors with COVID-19 severity.

Selected Course Work

Data Science

Deep Learning
 Natural Language Processing
 Causal Analytics and A/B Testing
 Programming for Data Science
 ML for Socio-Eco and Geo Data
 Content Analysis using ML
 OOP in Python
 Data Structure & Algorithm

Data Management

Big Data
 Cloud Computing Fundamentals
 Database Foundations for BA
 Information Management
 Data Collection
 Data Visualization
 Digital Consulting Project
 Practical Practicum Project

Data Modeling

Predictive Analytics for Data Science
 Modeling for Business Analytics
 Regression and Multivariate Analysis
 Applied Data Analytics with Python
 Applied Regression
 Introduction to Quantitative Methods
 Social Science Research Methodology
 Prescriptive Analytics

Technical Skills

Programming	Python, R, SQL, Java, Stata, SAS
Tools	Amazon Web Services, Streamlit, Tableau, Power BI, R Shiny, L ^A T _E X & T _E X
AI & ML Modeling	PyTorch, Deep Learning, Machine Learning, NLP, Speech-to-Text, Speaker Identification
Database & Big Data	SQL Server, MySQL, PostgreSQL, AWS RDS, Hadoop, Spark, Hive, Impala, Sqoop, Pig
Automation	Alteryx, Appian, Accelq, Uipath
Certificates	Graduate Certificate in Applied Machine Learning at UTD, Google Data Analytics, AWS Certified Cloud Practitioner, Alteryx Designer Core Certificate, Appian Certified Associate Developer, ACCELQ Automation Engineer
Languages	English, Chinese, Japanese