XINYU (CINDY) ZHANG

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EDUCATION

Boston University — Boston, MA
Master of Computing & Data Science, GPA 3.80/4 — Sep 2023 - Dec 2024

University of International Business and Economics — Beijing, China
Bachelor of Engineering, Department of Data Science — Sep 2019 - Jun 2023
Bachelor of Finance, Department of Economics (Double Major)

PUBLICATIONS

AI-driven review systems: Evaluating LLMs in scalable and bias-aware academic reviews
Keith Tyser, Ben Segev, Gaston Longhitano, **Xin-Yu Zhang**, Zachary Meeks, Jason Lee, Uday Garg, Nicholas Belsten, Avi Shporer, Madeleine Udell, Dov Te'eni, Iddo Drori
Submitted, 2024, arxiv:2408.10365

Diverse inference and verification for advanced reasoning
Iddo Drori, Gaston Longhitano, Mao Mao, Seunghwan Hyun, Yuke Zhang, Sungjun Park, Zachary Meeks, **Xin-Yu Zhang**, Ben Segev, Howard Yong, Nakul Verma, Avi Shporer, Alon Amit, Madeleine Udell
Submitted, 2024, arxiv:2502.09955

Contributor, Humanity's Last Exam https://agi.safe.ai/
Collaborated with an international team (500+ institutions, 1,000+ experts) to design and refine a cutting-edge, multi-modal benchmark featuring 3,000 rigorous academic questions aimed at testing AI's expert-level reasoning.

WORKING EXPERIENCES

ViiRaa — Palo Alto, Apr 2025 – Present
Data Science Analyst

- **Patient Stratification and Glycemic Pattern Analysis**: Achieved 93.75% accuracy in patient stratification for 200+ individuals using K-Means Clustering and Dynamic Time Warping (DTW) to analyze glycemic patterns.
- **Clinical Data Visualization Dashboard**: Built an interactive JavaScript data visualization dashboard to help clinicians efficiently visualize patient trends and identify high-risk individuals.
- **NLP-Driven Customer Insights**: Drove product roadmap decisions by developing user personas using NLP, sentiment analysis, and PCA on over 1,000 customer reviews scraped with Scrapy.
- **Cross-Brand Data Standardization**: Engineered a data standardization pipeline using wavelet transforms and ridge regression, improving cross-brand data correlation from 0.73 to 0.80 and enabling large-scale comparative studies.

SIEMENS - Digital Industries Group — Beijing, Jun 2023 – Aug 2023
Data Science Intern

- **Data Warehouse Construction and Maintenance:** Cleaned supply chain data: Extracted approximately 1.5 million supply chain records spanning 20 years from 30 tables in SQL databases using Python.
- **Collected data via web scraping:** Used Selenium to acquire 20 years of macroeconomic, industry, and stock time series data, totaling about 700,000 records.
- **Time Series Business Forecasting:** Built time series models to predict future order opportunities, applying machine learning methods for interpretability and effectiveness analysis.
- **Business Query Chatbot:** Utilized LLMs to process internal textual data through few-shot learning, generating and optimizing answers to predefined questions to enhance the chatbot's response quality for internal business inquiries.

RESEARCH EXPERIENCE

Research Assistant @ WUSTL Medical School — May 2025 – Present
Supervisor: Prof. Nan Lin

- Contributed to an unsupervised learning framework to analyze post-hurricane human mobility, successfully clustering sparse cellphone trajectories from the 144 hours following Hurricane Ian's landfall.

- Engineered a dual-embedding feature representation by generating graph embeddings from spatial networks using Node2Vec and deriving semantic embeddings from Points of Interest (POI) with a Large Language Model.
- Developed and trained an attention-based Transformer autoencoder to learn compact latent representations from highly sparse time-series data, effectively handling irregular sampling without data imputation.
- Analyzed the learned representations using k-Means clustering to identify 5 distinct, interpretable behavioral archetypes, providing valuable insights for disaster response.

Research Assistant @ BU Faculty of Computing & Data Science Feb 2024 – Dec 2024
Supervisor: Prof. Dokyun Lee, Dr. Zhaoqi Cheng
Project Focus: How Big Tech Companies Influenced AI Area

- Analyzed citation relationships within the AI field, including crawling 190k paper datasets, 200k author datasets and 30k institution datasets.
- Built a citation network to map the influence of major companies on AI research and innovation.
- Conducted network analysis to understand how prominent companies shape AI development and research trends.

Bronze Medalist – ARC Prize 2024 (Kaggle)

- Built a high-performing multi-model system for abstract reasoning tasks using quantized and fine-tuned LLaMA 3.1 8B and Gemma models.
- Optimized token sampling strategies (temperature, max tokens, top-p) and implemented condition-aware prompting for dynamic response control.
- Designed fallback and ensemble logic, improving robustness across low-confidence scenarios.
- Applied lateral-thinking prompt engineering and parameter tuning to drive generalization across varied task formats with minimal overfitting.

TEACHING EXPERIENCE

Technical Project Manager for DS701 Intro to Data Science Sep 2024 – Dec 2024

- Oversee 2 impactful research projects from Boston Councilor and BU faculty, provide technical support and project analyzing insight to 15 master students.
- Conduct code reviews, answer technical questions, and escalate issues to leadership as needed.
- Ensure client satisfaction by proactively addressing requirements and maintaining high quality deliverables.

ACADEMIC PROJECTS

AI-powered Patent Translation System Jul 2025 – Present

- Designed and implemented an automated workflow composed of multiple AI agents, leveraging advanced prompt engineering as the core technology:
  - Glossary Agent: Automatically extracts and creates domain-specific glossaries from patent documents to ensure the accuracy of technical terminology.
  - Translation Agent: Executes high-quality translation, optimized for the specialized language of legal and technical fields.
  - Review Agent: Checks the translated text for accuracy, consistency, and fluency.
- Built an interactive web user interface using Streamlit and deployed the service on Replit, providing users with a stable and easily accessible online tool. Currently adopted by lawyers and law firms in China.
- Integrated the Okapi Framework to handle complex document structures, ensuring that the translated DOCX files retain the original paragraphs, tables, and styling.

Deep Learning for Precise Subtitle Segmentation Mar 2024 - May 2024

- Developed a deep learning solution using PyTorch, Sentence Transformers, and attention-based neural text segmentation for precise subtitle generation.
- Created an automated video-to-text pipeline, integrating NLTK, spaCy, and token labeling for effective subtitle segmentation based on syntactic and semantic cues.
- Fine-tuned hierarchical LSTM models on the MuST-Cinema dataset, supporting multilingual subtitle generation with optimized readability and timing accuracy.
- Benchmarked model performance against proprietary tools like CapCut, demonstrating improved synchronization and viewer experience.