Kehang Zhu

Harvard University
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EDUCATION

Ph.D., Harvard University *Sept. 2021 – 2026 (Exp)*
- Physics
- Secondary field in Computer science and engineering

Advisors: David Parkes (Harvard Computer Science), John Horton (MIT Sloan)

M.S., Harvard University *Sept. 2021 – May 2024*
- Computer Science

B.A., University of Science and Technology of China (USTC) *Sept. 2017 – July 2021*
- Physics

WORKING PAPER

- Manning, Benjamin S*., **Kehang Zhu***, and John J. Horton. "Automated Social Science: Language Models as Scientist and Subjects." (Revise & Resubmit at QJE)
- **Kehang Zhu***, Anand Shah*, Yanchen Jiang, Jeffrey Wang, Kerem Dayi, John J. Horton, David Parkes, THE SYNTHETIC LABORATORY: Conducting Auction Experiments with Large Language Model Agents, ACM conference on Economics and Computation 2024 (accepted as poster)
- Bae, Henry, Aghyad Deeb, Alex Fleury, and **Kehang Zhu***. "ComplexityNet: Increasing LLM Inference Efficiency by Learning Task Complexity." arXiv preprint arXiv:2312.11511 (2023).

SELECTED PUBLICATION

- **Kehang Zhu***, Benjamin Manning*, John Horton. Silica Scientist: A Tool for Automated Causal Hypothesis Generation and Simulated Experimental Validation (2023 CODE)
- Carolina Nobre*, **Kehang Zhu***, Eric Morth, Hanspeter Pfister, Johanna Beyer. Reading Between the Pixels: Investigating the Conceptual Hurdles to Visualization Literacy (2024 CHI)

CONFERENCE PRESENTATIONS

- NBER SI 2024 Digital Economics and Artificial Intelligence workshop, Paper Presentation July 2024
- ACM Conference on Economics and Computation, Poster & Workshop July 2024
- International Conference on Computational Social Science (IC2S2), UPenn, Oral July 2024
- ACM Collective Intelligence, Boston, Oral June 2024
- AI, Cognition, and the Economy (AICE) 2024 Workshop, Microsoft Research May 2024
- AI and the Future of Work Conference ,Wharton, Paper Presentation (co-author) May 2024
- MeasureDev2024, World Bank, Paper Presentation May 2024
- Econometric Society Interdisciplinary Frontiers conference on Economics and AI+ML May 2024
- 2024 American Causal Inference Conference (ACIC), poster presentation May 2024
- ACM Computer-Human Interaction (CHI), Paper Presentation (co-author) May 2024
- Interactive Causal Learning Conference, Florida Atlantic University, Paper Presentation (co-author) Dec 2023

INVITED TALKS

- International Conference of the French Association of Experimental Economics (ASFEE), Grenoble Aug 2024
- Data Science Summit 2024, DataFun, Online May 2024
- AI Institute for Artificial Intelligence and Fundamental Interactions, MIT Feb 2024

ACADEMIC EXPERIENCE

Since 2023 ***Mechanism* design with LLM-agents** MA, USA

Supervisor: Prof. John Horton (MIT Sloan School of Management) & Prof. David Parkes (Harvard EconCS)
- Benchmark LLM behaviors with Human subject data
- Use Large Language Models (LLMs) as simulated agents — **Homo Silicus** — in traditional economic lab experiments
- simplify mechanisms with the involvement of LLM proxies.

May 2023 – SEPT. *2023* ***Human-computer Interaction and Visualization*** MA, USA

Supervisor: Prof. Hanspeter Pfister (Harvard CS) & Prof. Carolina Nobre (CS department, University of Toronto)
- Employed 300 Qualtrics workers for an empirical study that investigates the rationale behind mistakes in the visualization literacy assessment test.

- Applied eye-tracking technology to track the user's gaze when taking the visualization literacy assessment test.
- Proposed a mental model for conceptual barriers in interpreting data visualizations

WORK EXPERIENCE

TeachGPT.us (Harvard FAS) **Cambridge, MA, U.S.**
AI course development, Harvard Faculty of Arts and Sciences Aug 2024 – Present

- Developed TeachGPT.us, an LLM-based digital TA platform, improving study efficiency and concept understanding for over 1,000 Harvard undergraduates.
- Integrated Retrieval-Augmented Generation (RAG) and LLM API, transforming homework sets and quizzes into interactive formats powered by an LLM assistant, offering precise, course-specific guidance.

Applify.ai **Cambridge, MA, U.S.**
Natural Language Processing (NLP) Researcher SUMMER 2023

- Led the development of AI-driven features, including Essay Brainstorm and Essay Polish, utilizing LLM to create personalized, interactive writing assistance tools for underprivileged high students applying to U.S. colleges.
- Expanded the platform by developing the Essay Coach feature based on user feedback, iterating NLP techniques to provide tailored writing support, scaling from 10 to over 30,000 active users within 3 months.

GRANT

- 2024.09 - 2025, DeepMind People+AI Seed Grants, Google (with John Horton)
- 2023 - 2024, AI and Future work funding, Microsoft Research (Pending)
- 2023.06 - 2024.04, Artificial Intelligence for Augmentation and Productivity Seed Grants, Dropbox (with John Horton, Benjamin Manning)

REVIEW ACTIVITIES

ICML, ICLR, NeuRIPs, ACM CHI / Vis / Pacific Vis/ EuroVis, International Conference on Computational Social Science (IC2S2) / ACM Collective Intelligence/ International Conference on Neural Information Processing (ICONIP), ICWSM.

AWARDS & HONORS

◇ *2024 Introduction to Technical AI Safety Fellowship, Harvard*
◇ *2023 Sky9 AI Innovation Fellowship*
◇ *2021 Purcell Fellowship, Harvard*
◇ *2020 Guo Moruo Scholarship (Highest honor for USTC undergrad students)*
◇ *2020 Yan Jici Scholarship (Highest honor for Physics department undergrad students)*
◇ *2019&2018 National Scholarship (top 1%)*

SKILLS

- Analysis: Python/ R/ C++
- Full-stack: REACT/ Flask/ FastAPI/ MySQL/ SQLite/ Vector Database (Pinecone)
- Visualization: D3.JS, R
- Cloud computing: Azure, Google Cloud
- Machine learning: Pytorch,Tensorflow, JAX, NLP.
- User Study: Qualtrics

LEADERSHIP EXPERIENCE

Harvard GSAS Entrepreneurship Community **Cambridge, MA, U.S.**
President *2021.12 – 2022.12*

Harvard GSAS Web3 Demo Day **Cambridge, MA, U.S.**
Co-organizer *2022.10 – 2022.11*

ACADEMIC REFERENCE

John Horton (Ph.D. advisor)
Associate Professor, Information Technology
Email: jjhorton@mit.edu

David Parkes (Ph.D. co-advisor)
John A. Paulson Dean
George F. Colony Professor of Computer Science
Email: parkes@eecs.harvard.edu