SBMT4000 SBM Undergraduate Honors Research Project

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Project Summary

Topic: Algorithmic Inequality: Assessing the Unintended Impacts of Generative AI on Minority in Online Labor Markets

Description:

This research investigates the unintended socioeconomic consequences of Generative Artificial Intelligence (GAI) on minority freelancers operating within online labor markets. While GAI has revolutionized content creation and communication, streamlining workflows and increasing proposal volume, it may also be exacerbating pre-existing disparities in digital employment ecosystems.

Leveraging large-scale longitudinal data from a leading freelancing platform, the study examines how the rollout of GAI-powered tools affects job acquisition rates, client evaluations, and income levels for freelancers from minority groups.

As the project progresses, it will propose concrete mitigation strategies for platforms, employers, and freelancers, ranging from signal verification mechanisms to prompt engineering education, to foster a more inclusive and equitable AI-integrated labor market.

<u>Student Learning and Development Opportunities from This Project</u>

1. Systematic Training in Econometrics and Causal Inference
   - Students will gain hands-on experience with difference-in-differences (DiD) estimation, fixed effects modeling, and falsification tests, using real-world data from online labor markets.
   - Learn how to manage panel data, control for endogeneity, and perform robustness checks in applied labor economics.
2. Deep Understanding of Large Language Models (LLMs) and Generative AI
   - Study the transformative impact of LLMs (like ChatGPT, DALL·E, Codex) on labor markets, focusing on productivity dynamics, signal distortion, and bias amplification.
   - Understand prompt engineering, AI-assisted writing tools, and their implications on reputation-building and economic opportunity.
   - Analyze real implications of algorithmic mediation in human decision-making (e.g., hiring via AI-generated proposals).
3. Advanced Data Handling and Research Design

- Work with large-scale datasets (88,000+ observations), requiring skills in data cleaning, merging, and transformation.
- Build familiarity with Python for econometric modeling, visualization, and inference.

4. Integration of Machine Learning in Economic Research
   - Apply zero-shot time-series forecasting with LLMs for modeling counterfactual outcomes, an emerging frontier in AI and social science.
   - Use techniques like dynamic time warping, sequence clustering, and self-attention-based modeling to predict economic behavior.
5. Critical Engagement with DEI (Diversity, Equity & Inclusion) in Technology
   - Gain insight into how digital tools can reinforce or mitigate structural inequities in the gig economy.
   - Develop recommendations for inclusive AI practices, from both policy and technical perspectives.
6. Research Communication and Impact
   - Contribute to drafting high-impact academic papers or policy briefs for institutions, think tanks, or international labor organizations.
   - Participate in interdisciplinary research discussions, blending economics, AI, and business.
7. Career Readiness in Quantitative and AI-Driven Fields
   - Build a strong research portfolio in econometrics, causal inference, and applied machine learning.
   - Prepare for roles in policy research, data science, labor economics, or AI ethics, with evidence-based training.
   - Enhance critical thinking, technical proficiency, and interdisciplinary collaboration—skills highly valued across sectors.

Remarks