# Postdoc Opportunity in LLM Applications in Healthcare

We are seeking a postdoctoral researcher to focus on leveraging large language models (LLMs) and other advanced AI techniques to address critical challenges in healthcare analytics. The successful candidate will collaborate with **Michael Lingzhi Li** at Harvard University and **Pengyi Shi** at Purdue University to develop generic methods that are able to utilize multi-modal healthcare data to reliably and continuously improve patient outcomes. The postdoc duration is expected to be one year with time spent both at Harvard and Purdue.

This role emphasizes applying LLMs to complex healthcare datasets, including MIMIC and live EHR databases from hospitals to infer insights, and advance decision-making. The postdoc will have the opportunity to lead or collaborate on projects in areas such as:

- **LLMs for Multi-Modal Data Integration**: Develop frameworks to extract and synthesize information from diverse data modalities (e.g., clinical notes, lab results, and demographic data) using LLMs. These efforts aim to uncover latent patterns and contextual factors that are critical for predictive modeling and decision support.
- **Patient Outcome Predictions and Decision Support**: Use LLMs to enhance predictions of patient outcomes, such as length of stay, post-surgical outcomes, readmissions, discharge destinations, or post-discharge care needs. These models will seek to incorporate socio-economic, behavioral, and environmental factors inferred from multi-modal data.
- **Human-AI Collaboration**: Create interpretable AI tools to assist healthcare providers by embedding LLM-derived features into decision workflows. These tools aim to improve both fairness and explainability, ensuring ethical deployment in high-stakes healthcare environments.

The successful candidate will take a lead role in developing and analyzing novel algorithms, collaborating with healthcare practitioners, and conducting research to publish in top-tier journals and conferences. Additionally, they will have the flexibility to pursue their own research agenda within related areas of healthcare AI, and have access to the related resources provided by Harvard and Purdue University.

**Preferred Qualifications**:

- Ph.D. (or expected completion by Fall 2025) in computer science, operations research, statistics, or a related field
- Expertise in machine learning, particularly in LLMs, natural language processing, and multi-modal data analysis
- Experience working with large-scale healthcare datasets, such as MIMIC
- Strong programming skills in Python, with experience in developing and deploying AI models
- Excellent communication and collaboration skills, with the ability to work across interdisciplinary teams

Interested applicants please email their **CV**, **cover letter**, **research statement**, **1-2 representative publication/working papers**, and **contact information for two references** to Michael Lingzhi Li mili@hbs.edu and Pengyi Shi shi178@purdue.edu (start the email subject with “Postdoc in LLM – your name”).