Project Title:

Physician-Centered Clinical Assistance System using Large Language Model (NLP field)

Supervisor: Prof. Mark Chignell

Application: Please submit CV, unofficial transcript, and a single paragraph describing your interest in the project in one file in a single email to Prof. Mark Chignell at chignel@mie.utoronto.ca and Dr. Lu Wang at lwang71@central.uh.edu. We will decide the acceptance based on your interest and completion in doing a small real data work within our projects instead of your interview performance.

Project Background and Description: Effective physician-patient communication is essential for quality healthcare, impacting patient understanding, satisfaction, and adherence to treatment plans. However, the growing complexity of medical information and time constraints in clinical settings make it challenging for physicians to provide clear, empathetic, and personalized communication during consultations.

This project seeks to develop a Physician-Centered Clinical Assistance System that leverages the power of Large Language Models (LLMs) to enhance real-time physician-patient interactions. By utilizing advanced Natural Language Processing (NLP) techniques, this system will support physicians in delivering clear, personalized, and emotionally intelligent communication, thereby improving patient engagement and outcomes.

The Physician-Centered Clinical Assistance System is designed with a focus on enhancing the quality and effectiveness of physician-patient communication. The system will include the following key features: **Clinical notes generation, Real-Time Conversational Support**, **Personalized Communication Strategies**, **Interactive Explanation Tools**, **Seamless Integration with EHR Systems**, **Continuous Learning and Adaptation**.

By enhancing physician-patient communication, the Physician-Centered Clinical Assistance System aims to improve patient outcomes, satisfaction, and the overall healthcare experience. This system will empower physicians to communicate more effectively, ensuring that patients leave consultations with a clear understanding of their health and the confidence to take an active role in their care.

In this project, you will have opportunities working with real healthcare and medical data including EHRs/EMRs for multiple cognitive disorders and chronic diseases collaborating with physicians, clinicians and psychiatrists, etc.

Start date: Summer/Fall 2025

Research area: Data science, machine learning, artificial intelligence, healthcare, medical research.