

# A Large Language Model (LLM) of Clinical Events in the Intensive Care Unit (ICU)

## Project Description:

The Society for Critical Care Medicine (SCCM) estimates that 55,000 patients per day are treated in intensive care units (ICUs) throughout the United States. These patients have an average length of stay of 3.8 days with a mortality rate of 10-29%. One of many significant challenges faced by physicians managing these patients is the need to deal with a tremendous amount of real-time information. It is important to prevent information overload to ensure safe and efficient delivery of patient care. Reducing information overload is associated with more rapid care with fewer errors. To aid in clinical care and provide high level supportive analytics, numerous attempts have been made to develop and implement predictive models to predict important clinical outcomes. It is common for such clinical algorithms to yield suboptimal results because they are usually trained on one outcome. In addition, such models may not be able to learn the non-linear relationships that frequently exist in medicine and biology. With the advent of large language models (LLMs) and existence of critical care database, we hypothesized that it would be possible to predict a variety of clinical endpoints in the ICU such as myocardial ischemia.

## Duties/Activities:

The Intern will review related works in order to understand the scope of the project. Also, he/she will work on a large ICU dataset. Then, each intern will work on a specific task such as prompting LLM.

## Required Skills:

Python and R programming skills are required. Understand the basics of deep learning models is a plus.

## Learning Opportunities:

The intern will have opportunity to work with scientists and software engineers on promising research problems. In addition, it is great opportunity to participate in solving real-world healthcare problems.

**Expected Team Size:** 2-3

## Mentors

Name: Mohamed Elshrif

email: [melshrif@hbku.edu.qa](mailto:melshrif@hbku.edu.qa)