**ABSTRACT FOR PARTICIPATION IN KAPS/ INTER-UNIVERSITY 2023 HACKATHON**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

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**TITLE: Flu Shot Learning: Predict H1N1 (Swine Flu) and Seasonal (Regular Flu) Vaccines**

**PROBLEM STATEMENT**

The goal of this study will be to predict the likelihood of individuals receiving both H1N1 (Swine Flu) and seasonal flu vaccines (Regular Cold) based on a National 2009 H1N1 Flu Survey conducted in the USA.

The study is motivated by the COVID-19 pandemic, but there is no data available on COVID-19 vaccination yet due to stigma and little to no research on this pandemic.

The flu pandemic occurred in 2010 (it was the last pandemic before COVID) and caused approximately 12,469 deaths in the US alone. It still circulates to this date during cold and flu seasons.

**OBJECTIVES**

The objectives of building this model include:

1. To understand how individuals view vaccines with relation to pandemics and factors that influence vaccine taking.
2. To encourage better approaches when spreading information concerning vaccines in case another pandemic were to occur.
3. To enable better public health planning and interventions. It is possible create enough vaccines preventing shortages and outbreaks.

**METHODOLOGY**

Performance evaluation of the model will be based on the area under the receiver operating characteristic curve (ROC AUC) for both 'h1n1\_vaccine' and 'seasonal\_vaccine.'. The overall prediction score of our model will be determined by the mean of these two ROC AUC scores.

The dataset contains 36 columns, with 'respondent\_id' as the unique identifier and 35 features. These features encompass various aspects such as the level of knowledge about H1N1, behavioral factors, demographics, socio-economic factors etc.

We will score our model using Python's **sklearn.metrics.roc\_auc\_score** as it is the most suitable tool to calculate these scores. A higher ROC AUC value will indicated a better model.