**Understanding Public Sentiments During the Recent Ebola Outbreak in Uganda**

Uganda faced a significant health crisis with the outbreak of Ebola Virus Disease (EVD) declared on 20th September 2022. There were 164 cases (142 confirmed and 22 probable), 55 confirmed deaths, and 87 recovered patients. This outbreak generated considerable attention and discussion on various social media platforms, particularly on X (Twitter). METS embarked on a research study utilizing advanced artificial intelligence (AI) deep learning models to analyze the sentiments expressed in these online discussions to understand the public's emotions towards the outbreak.

The study focused on classifying the sentiments in 8,395 Ebola-related tweets into three categories: positive, neutral, or negative. Negative sentiments were tweets expressing concerns, fear, or distress related to the outbreak. Neutral sentiments conveyed factual information, updates, or statistics without any emotional tone, while positive sentiments expressed optimism, relief, or praise for efforts such as healthcare workers' successful containment measures or supportive international aid.

The researchers developed three advanced deep learning techniques for this analysis: a 6-layer convolutional neural network (CNN), a 6-layer long short-term memory (LSTM) model, and an 8-layer Bidirectional Encoder Representations from Transformers (BERT) model. Among these, the BERT model stood out, achieving a remarkable accuracy of 95% in classifying the sentiments. This highlights the effectiveness of AI models in natural language processing tasks, such as understanding public discourse on critical subjects.

These findings emphasize the value of AI-driven sentiment analysis in guiding government agencies, healthcare organizations, and other stakeholders. By accurately interpreting public sentiment, these entities can create targeted messages that address public concerns, provide reassurance, and counter misinformation, thereby improving communication and policy implementation during outbreaks. The study also demonstrates the transformative potential of AI-driven sentiment analysis in enhancing public health service delivery by enabling more effective, timely, and compassionate responses to health crises.

The sentiment distribution in the analyzed tweets was as follows:

**Neutral**

**Positive**

Tweets expressed optimism, relief, or praise, often applauding efforts towards controlling the outbreak

**Negative**

Tweets reflected fear, concern, or distress related to the Ebola outbreak

**22.4%**

**33.6%**

**44.0%**

The majority of the tweets shared factual information, updates, or statistics about the outbreak without any emotional bias

For further details, a research article was published in the MDPI Life journal under the special issue "*AI and Precision Medicine: Using Machine Learning for Disease Diagnosis and Prediction*." The full study is accessible [here](https://doi.org/10.3390/life14060708).