

# **“Comparative Evaluation of Deep Learning Models for Multiple Combination Emotion Detection in Text Data”**

## **Rationale**

This research topic focuses on comparing the performance of different deep learning models for emotion detection in text data. With this study the researchers can have a better understanding of the strengths and weaknesses of different deep learning models. Emotion detection has become an important research topic in natural language processing, and it has several practical applications in the real world, such as sentiment analysis, chatbots, and virtual assistants and with the conclusion of the study, it can improve performance to more accurate and effective applications that can better meet the needs of users and identify the most effective models and approaches that can be applied to a wide range of tasks beyond emotion detection.

## **Field of Study**

- Machine Learning
- Natural Language Processing
- Text

## **Research Theme**

- Education
- Human Resource
- Business

## **Data Gathering Method**

The research can involve collecting a dataset of text data that contains emotional content and testing it on different deep learning models.

## **Deep Learning Models to Compare**

- Recurrent Neural Networks
- Convolutional Neural Networks
- Transformer-based Model
- Others (TBD)

## **Originality**

There has been research on this but most of the experimentation on the studies we found was performed with most of the five emotions categories, namely *joy, fear, sadness, shame, and guilt*. To obtain more robust results, further experimentation is required with a different combination of emotions, such as *fear\_disgust, anger\_disgust, and shame\_guilt* and so on. The researchers can include a combination of recent deep neural network systems to determine if there is an improvement in emotion classification which can be used in the near future. Some limitations of the recent approach is that their training and test data were

annotated on sentence level, and the classification models work on the same level. By doing so, they might have missed emotional appeals caused by the context of the complete text (e.g., the entire speech). The researchers could address this by moving from sentence level to paragraph level or document level.

### **Measurement of Success**

The study can compare the accuracy, precision, recall, and F1 score of each model to determine which one performs better. Basically, to determine which Deep Learning Model is superior among the others in emotion detection and what areas of improvement can these deep learning models work on.

The study can provide insights into the strengths and weaknesses of different deep learning models for emotion detection in text data, which can be useful for future research and practical applications.