**A Combined CNN and LSTM Model for Arabic Sentiment Analysis**

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**Project schedule:**

At the beginning we decided to learn the article and study the research field, tasks have been given in individual and as a team task with a deadline.

By the time we studied the research we gained a theoretical background on algorithms that are implemented in the project. Through the internet we managed to get a resource that studded the field from another perspective and we used there model and implemented it within ours, most of the work we did was from the knowledge we gained during the course of machine learning.

**Project explaining :**

Before we could start coding we had to set up an environment to work with, the data was collected as a team work we had a resource for the dataset from the GENSIM that has provided us with the word to vector model and the data set was collected from AraVec package.

The project was modalized with 3 phases which we all took parts in it and shared a team task,

Pre-progressing the data: we found out that we had to build a certain type of data from our dataset so it can be implemented in the algorithm (converting from just words to a matrix of indexes and a vocabulary.

We studied the TensorFlow and the Keras so we can be able to understand how does (text\_to\_integer\_sequence).

All the group members were helpful and we have managed to get the phase done so quickly.

Then we started adding layers to the project and making sure every layer is being placed in the right way as explained in the articles,

second phase was the most challenging one, the **Training phase**.

based on the article. We chose many parameters and arguments that are crucial in the loss.   
Keras library understanding in order to effectively use it in the code, we had the help of Kera documentation, to know what is the parameters we use and why we need them then choosing a parameter and appling the addition to the code, we trained the model many times to check its training and we ended up with the best parameters like loss function, sentence length, optimizer, and so on.

Last but not least

The testing phase, here we have tested the project classification solution and analysis accuracy by making a roc curve to explain the difference between the true and predicted.

Conclusion :

1)CNN LSTM are a good technique that can be useful in so many fields.

2) the importunacy of the induvial work and also the group work.

3)NLP algorithms are built in different stages for the same cause.

4) accuracy and loss will be included in the presentation.