Helwan University

تعرفهم على الأنماط حائر

Learning meters of Arabic and English poems

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May 22, 2018

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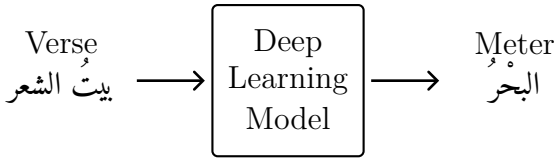
1 Introduction and Problem Statement

Detecting the meter of poems is not an easy task for ordinary people, but how computers will perform? Our task is to train a model so that it can detect the meter of the input verse/text. We have worked on Arabic and English in parallel, everything thing is applied to Arabic is applied also in English, as possible as we can.

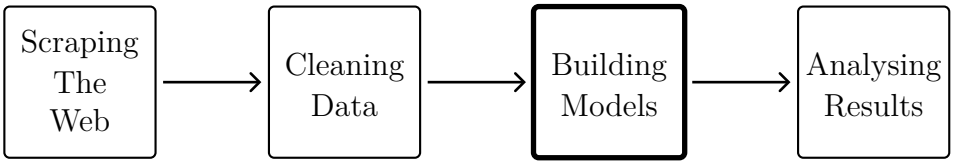
To be clearer, the model's input is a verse/text بيت شعر and the output is a class which is the verse's meter البحر, as shown in the figure below.



The output variable is a class/categorical, then our problem can be described as *supervised learning classification*. We have trained some deep learning models such as LSTM, Bi-LSTM and GRU. Those models are chosen because of the nature of our problem. We were trying to detect the verse's meter, which is a sequence of characters and *recurrent neural network* are suitable to learn that pattern, thanks to its cell's share-memory and its recursive structure.

2 The Project Road Map

The following figure show the project flow; there are four main stages.



3 Scraping The Web

4 Cleaning Data

5 Building the models

5.1 Analysing Results

6 Tools

Python is pseudo-code like programming language, it is so easy and high-level that we can describe complex structures in a few lines of code, the main second reason is that python recently has been so papular in the Artificial Intelligence community. Its library is so rich with packages for Machine Learning, Deep Learning, data manipulation, even for web-scraping; we don't need to parse HTML by you hands.

We have used: Two columns:

- *Python* 3.6.5
- *Tensorflow* x.x as back-end of Keras.
- *Keras* x.x for deep learning.
- *BeautifulSoup* for web scraping.

7 Gathering data