

On musical notes and their relations to socio-political events

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Abstract:

Historians and Scientists alike agree that sounds and music (musical notes) impact the way different cultures organise society. However, empirical data to support that claim is sparse. Previous research using Supervised Machine Learning algorithms, i.e. ANFIS (Adaptive Neuro-Fuzzy Inference System) has successfully predicted the outcome of the United Kingdom's election results using popular music released in that period by feeding sound wave features (Energy, Spectral Centroid, Spectral Flux, Zero-Crossing Rate, Spectral Rolloff, Entropy) to the ANFIS algorithm. This study aims to reproduce the previous research using two different Supervised Machine Learning Algorithms namely, K-Nearest Neighbours and Support Vector Machines, to predict the Moroccan election results. A dataset of 700 songs from 7 different genres were used to extract the previously described features (Energy, Spectral Centroid, Spectral Flux, Zero-Crossing Rate, Spectral Rolloff, Entropy) in addition to manually collected election results spanning from 1926 to 2022 as an input for the k-NN and Support Vector Machines algorithms. K-Nearest Neighbours was able to accurately predict the outcome of the Moroccan election at a rate of 54.62%, and the different flavours of SVM, i.e. Linear SVM, Polynomial SVM, Radial Basis Function SVM and Sigmoid SVM at the respective rates of 69.62%, 40.74%, 59.25%, 40.74%. The subjective nature of socio-political events, specifically elections, make the prediction process more complex. In addition to that the election results were analysed against songs released in the same election year. The introduction of a delay by matching the elections to songs released the previous year, is expected to greatly improve the accuracy of the algorithms. Finally, further research with a more substantial dataset and more culturally appropriate (Moroccan music) might make the algorithms more accurate.