

# **Automatic analysis of the political discourse change on Facebook during four election campaigns in Israel / Gal Oz**

## **Abstract**

Politicians are able to express their views on Facebook, which has evolved into an online political arena that enables political discussions with Facebook users including the ability to send and receive messages at any time. As a result, social media helps politicians to increase their power and contributes to the development of a trusting relationship between them and potential voters. After the four Israeli elections between 2019 and 2021, a significant research challenge was presented as well as a unique opportunity to examine in a comparative manner the characteristics of political discourse on Facebook (has the discourse become toxic or negative), without having to wait four years between elections.

The idea for this research was born out of a desire to examine differences in the changes in the levels of discourse among politicians caused by the consecutive election seasons that were held in Israel one after the other and to better understand the differences that existed in each election period. Specifically, this study aims to identify new patterns, trends, and characteristics of political discourse on the Facebook social network, reflect the visibility of various politicians on Facebook (whether coalition partners or opposition members), and reflect to the citizens of Israel the discourse occurring on the Facebook network during such a period characterized by multiple elections.

The quantitative data-driven approach was used in this study to examine the trend changes occurring throughout four consecutive election systems. This study was based upon data gathered from the social network Facebook, whose original corpus was approximately 25 thousand posts. Following harvesting the information, it was cleaned and organized - divided into columns, cleaned of empty characters, and removed of tags. The final corpus comprised of over 8000 posts written by 9 prominent politicians and over 7 million comments and 30 million emojis corresponding to these posts.

The initial analysis of the data, as well as an understanding of the number of politicians who have contested the various electoral systems, was followed by focusing on politicians who have participated in all of the electoral systems in Israel, thereby enabling a fair comparison between the various electoral systems as well as among the groups (coalition, opposition).

The significant changes have been observed based on the following research variables: the number of posts, the sentiment analysis classification of the posts (positive, negative, neutral), the number of responses, the number of words in the posts, the number of mandates, the politician's position on the list of the party to which he or she belonged, affiliation to the coalition/opposition group, and the number and classification of emoji. The analysis of the information and the application of the algorithm to identify the sentiment was carried out with the assistance of the Python programming language in combination with machine learning models.

It appears, based on the findings of the study, that discourse as a whole becomes less negative over time. As a consequence, over time there is a decrease in the proportion of negative posts, the proportion of words in the negative posts, as well as the proportion of negative responses in relation to positivity and neutrality. Furthermore, the regression model indicates that an increase in positive

posts by politicians is a significant predictor of being elected to a coalition. However, a consistent increase in the number of negative posts from most politicians and a moderate increase in the percentage of negative emojis throughout the study indicates a certain level of toxic discourse. There are also certain politicians whose discourse becomes more negative over time, meaning that the number and rate of negative posts increases and the number of positive posts decreases as a result. Another indication of the increase in the toxicity of the discourse is the increase in the proportion of negative emojis to the neutral posts. For the majority of politicians studied in this study, however, the gap between negative and positive posts narrows over time and the ratio of positive to negative posts increases and the ratio of negative posts decreases.

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