Interactive Dashboard on Automatic Trend Detection: Time Based Clustering

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Abstract

Automatically identifying leading trends within a data set helps gaining valuable insights. We build an automatic trend detection dashboard that is a useful, efficient, and a precision to examine top trending topics of any given time dependent textual datasets with any content.

Objective

To build an interactive dashboard that includes:

1) A drop down menu for interpretable trends over a wide range of temporal bias values.

2) An interactive bar to analyse the resulting clusters with respect to different time bias amounts and trend score metric.

Tools

CSS, HTML, Flask, Python, plotly | Dash

Framework and Results

1. Automatic time biased trend detection model

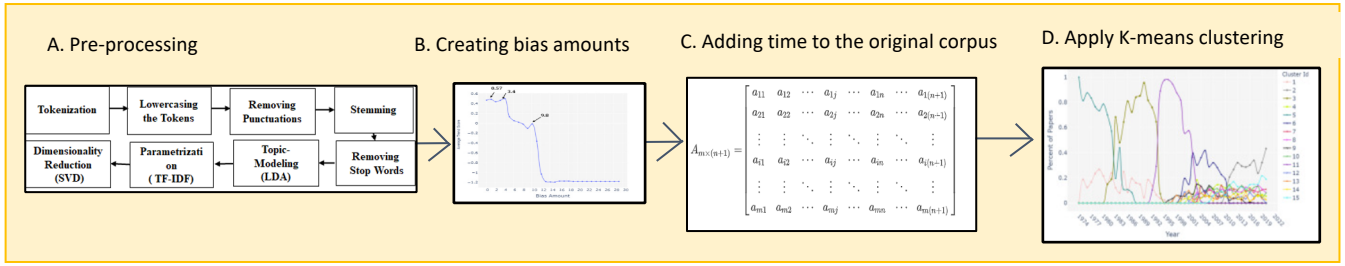

Figure 1. A layout for creating an interactive dashboard on automatic time biased trend detection system

2. Loading the result of part 1 into a dataframe

Title	Row #	Bias amount	Extracted trending terms	Year	Trend Score	Cluster number
e.g.	1	3.9	Evidence, govern, effect,	2006-2008	4.6	7

3. Loading of dataframe into flask app templates and execution of app server

4. Creating interactive visualizations

Figure 2. Terms in different clusters

Figure 3. Trending keywords

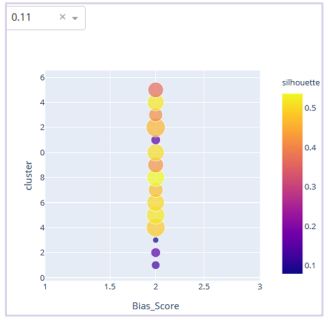

Figure 4. Keywords with bias score

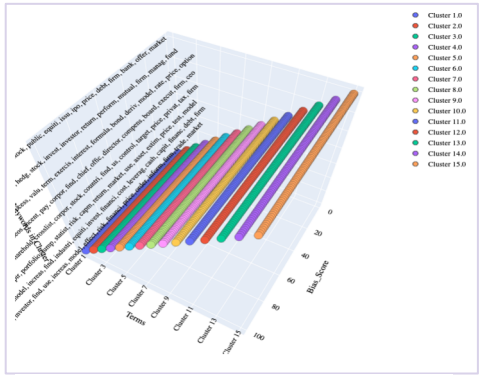

Figure 5. 3D Representation of the Keywords

Conclusion

The automatic trend detection dashboard is a practical and precise tool that enables end-users to interact with extracted terms, different time intervals, bias amounts and a trend score metric from the model, without prior knowledge of the domain. This tool can be used to analyze ups and downs of trending topics of any type of textual datasets with a dependency to the time.

References

Behpour, S., Mohammadi, M., Albert, M. V., Alam, Z. S., Wang, L., & Xiao, T. (2021). Automatic trend detection: Time-biased document clustering. *Knowledge-Based Systems*, *220*, 106907.