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An Online Adaptive Thresholding Method to Classify Google Trends Data Anomalies for Investor Sentiment Analysis

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Abstract : Google Trends data has gained increasing popularity in the applications of behavioral finance, decision science and risk management. Because of Google's wide range of use, the Trends statistics provide significant information about the investor sentiment and intention, which can be used as decisive factors for corporate and risk management fields. However, an anomaly, a significant increase or decrease, in a certain query cannot be detected by the state of the art applications of computation due to the random baseline noise of the Trends data, which is modelled as an Additive white Gaussian noise (AWGN). Since through time, the baseline noise power shows a gradual change an adaptive thresholding method is required to track and learn the baseline noise for a correct classification. To this end, we introduce an online method to classify meaningful deviations in Google Trends data. Through extensive experiments, we demonstrate that our method can successfully classify various anomalies for plenty of different data.

Keywords : adaptive data processing, behavioral finance , convex optimization, online learning, soft minimum thresholding
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