E-cigarette use and perception among Malaysian: findings from text-mining analytics

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ABSTRACT

Introduction: E-cigarette use among adults are steadily increasing over the past few years. It is highlighted by the significant increases in online search queries and sharing of information through social media, such as Twitter. However, little attention has been given on understanding the reasons that led to e-cigarette use among Malaysian. In particular, study that leverage the opportunity to extract critical information from textual data in social media by using text mining technique. It is the aim of this paper to share the potential use of such technique by providing overview of processes and examples of the insights derived from the analysis. **Methods:** In this study, the textual analytics was used to identify topics and extract meanings from social media posts, in this case Twitter. The messages posted by Malaysian users from 2012 to early 2017 containing any of the selected keywords or phrase (i.e., #vape, #ecig, #vaping, #ejuice, #vapemalaysia) were collected using its search application programming interface (API). A total of 4211 messages containing original tweets were retrieved. **Results:** The result from the text mining analytics show that mainly there were three themes emerged on the reasons of e-cigarette use, namely: the sense of being part of a bigger community, e-cigarette is perceived more fun as compared to smoking conventional cigarette, and flavour of e-liquid. The result also shows that there was a spike on Twitter activity in 2015, where the topic on vape community were mostly posted. **Discussion:** The three themes identified in this study reveal initial reactions of public to Malaysian Government initiatives to regulate e-cigarette. It is believed that such findings would allow the government and medical practitioners to better understand public knowledge levels and identify current misunderstandings.

Edge detection of MRI images using artificial neural network

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ABSTRACT

Introduction: Many methods have been proposed for MRI tissue segmentation. It has been identified that MRI image of human tissue is homogeneous and the structure of each is tissue connected, but it is rather difficult to separate the adjacent tissue due to the small intensity changes or smooth boundaries observed. Current traditional edge detection performance could be further improved using artificial neural network (ANN) based edge segmentation. **Methods:** In this study, various existing edge detectors techniques based on spatial domain were evaluated. The best algorithm was selected subjectively, i.e., Canny edge detector, and is used as the training data for the proposed ANN. For each pixel of grayscale image, we obtain three features, i.e., horizontal (dx), vertical (dy), and diagonal (dz). The feedforward neural network was configured to have one input, one hidden, and one output. To determine the final pixel edge value (0 or 1), an optimum threshold was utilized. **Results:** To obtain the best parameters which produce optimum edge of MRI images, we varied the number of neurons in the hidden layer, as well as the threshold. We found that the optimum parameter could be achieved by setting the number of neurons in the hidden layer to be 180, and the threshold to be 0.1 for various MRI images tested. We also found that the proposed ANN based edge detection has faster computation by almost three times compared to traditional Canny edge detector. **Discussion:** The proposed ANN based edge detection produce better image segmentation for MRI images compared to other traditional edge detection algorithms. Moreover, the computational cost is smaller by almost three times compared to Canny edge detector. It is believed that such findings would allow medical practitioners to better obtain information that could be extracted from MRI images, for example to differentiate between cancer and non-cancer tissue.