Creating efficient and resource-conscious image-based hashtag recommendations with the help of Machine Learning

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Abstract

Hashtag-based image descriptions are a popular approach for labeling images on social media platforms. On social media platforms, content can be traced using hashtags, therefore making hashtags like a key-pair value in a dictionary. Hashtags are generated by users and different users might come up with different tags for similar posts, due to their different preference and/or community effect. Therefore, it is highly desirable to characterize the users' tagging habits. Machine learning is a method of finding patterns in the data, and using it, we tend to find and predict relevant hashtags for images in order to have better engagement on social media platforms. Two main points are studied in this thesis; evaluating the relativity of social media images to hashtag for both objective and subjective features of an image and the effect of sentiment on said relativity. But, however, manual annotations for images, additionally for figuring out training sets for the machine learning algorithms, requires enormous effort, work and might also incorporate human judgmental blunders or subjectivity. Hence, alternate methods to routinely generate training sets, like pairs of pictures and also tags are grasped. Choosing or wondering about a realistic hashtag for a photograph is an unwielded procedure. Machine learning helps in making this method easier. In this paper we are exploring the possible better solutions through various approaches and expect this study to accelerate the advancement of hashtag recommendation.

Research Questions

Here are some research questions reflecting the objectives and scope of the image-based hashtag recommendation system using machine learning:

- How can advanced image recognition algorithms be used to extract relevant information from visual content and improve the precision of image-based hashtag recommendations?
- How does the use of machine learning in hashtag recommendations align with the current and emerging trends in social media platforms?
- Can the developed recommendation system adapt to dynamic changes in user behavior and content types over time, and what strategies are reserved there in order to keep pace with the ever changing social media trends?
- How can machine learning models be optimized without compromising the accuracy of image-based hashtag recommendations?
- How does the proposed recommendation system perform across diverse datasets including various types of contents and what insights can be gained from these evaluations?
- What ethical issues can arise in the development and deployment of image-based hashtag recommendation systems, and what steps might be adopted to deal with these?