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A METHOD FOR AUTOMATIC SUGGESTION OF PICTURE EDITING ITEMS BY USING IMAGE ANALYSIS TECHNIQUES

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A method for automatic suggestion of picture editing items by using image analysis techniques

This disclosure aims to specify an automated way for photos to be more engaging by automatically selecting and suggesting stickers to them, based on a weighted ranked list of similarities. The ranked lists of similarities could be ordered by visual aspects, including shapes and color or by a social their colours, objects, facially recognisable expressions and events being depicted in them.

Problems solved

Stickers can be seen as an evolution of emojis, as they can be customized and are more expressive. They may be used to create moods, such as a sunset saunter or a tender moment. That explains the rapid adoption of stickers by users and products like Instagram. Stickers may be used together with photo filters and creative cropping to evoke mystery, space or grit.

The number of customization options may jeopardize the user's experience, as users might spend hours going through filters and stickers in order to find the ideal combination for their pictures.

Description

By using image analysis solutions, it's possible to find out a lot more about what is going on in the picture. For example, information such as actions, objects and emotions may be extracted. With said information, and based on how people use stickers in similar situations, the application is able to find and suggest the visual elements most likely to be used in that kind of picture, as well as their positioning. Using a picture of a wedding as an example, the suggested stickers would probably be "love" and "party" related (such as hearts and balloons). Figure 1 shows a diagram with the proposed solution.
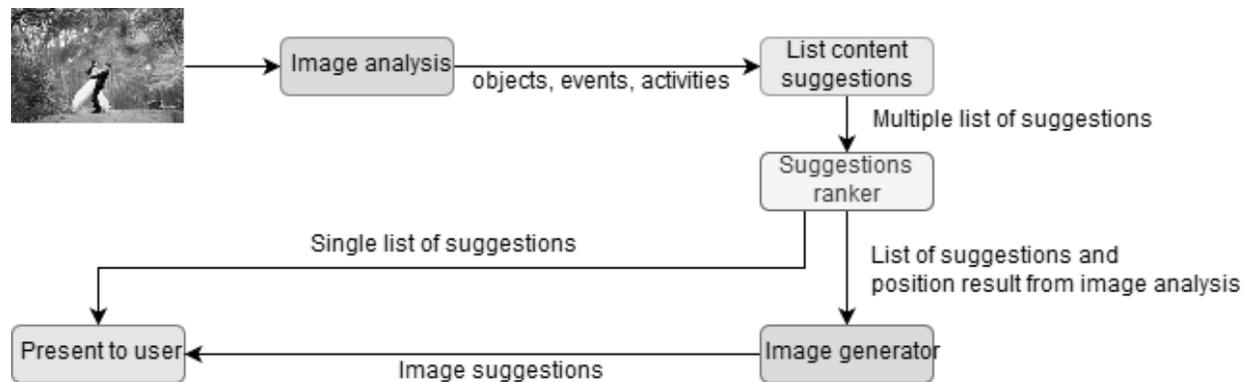

Figure 1 - Content suggestion system.

How is this achievable?
- Using the device's camera (mobile phone, tablet…) or photo gallery to retrieve photos.
- Using a Convolutional Neural Network to detect people and objects.

- Using Sentiment Analysis techniques to extract more information from text in the picture itself, or by analysis additional metadata, such as the description of a photo that was uploaded to Instagram.
- Through more automated, higher-level solutions, such as Amazon Rekognition[1].
- Extracting location metadata from the image file itself. The location could then be used as additional data to add stickers or text. This feature is already well established on the SnapChat application. [2] Check [3] for more technical details.
- Object collision analysis could be done by applying OpenCV algorithms in order to avoid placing stickers on top of meaningful picture contents. For an example of how this could be done, check [4].

Content suggestion lists

In order to build the picture content suggestion for a user, the first step is to generate the ranked lists of stickers for the picture. The lists could be based on the picture's contents, social media, and location, for example. Those lists are then combined into a final list of stickers, by calculating weighted rank aggregation, as is shown on Figure 2.
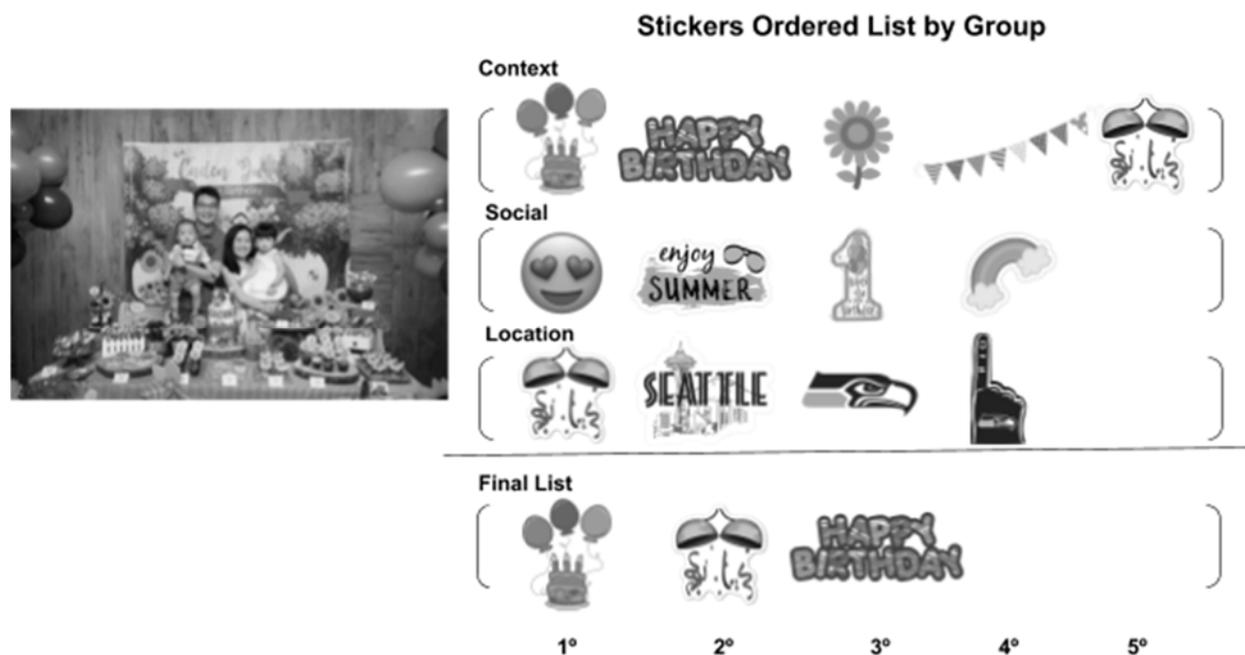

Figure 2 - Content suggestion ranking.

- Content-based sticker list: The first step for generating a content based list is to analyse the image provided by the user with a tool that identifies keywords related to or objects contained in the scene portrayed on the image. Such a tool could be, but is not limited to, AWS Rekognition. The system retrieves a set of tags for each individual sticker. Both the image's keywords and these tags are fed to an algorithm that calculates a similarity score between those inputs. The similarity score is used to rank the stickers into a list.
- Social sticker list: The system retrieves a set of popular tags or trending tags from the user's social media, which may be the most popular overall discussed on that platform,

or the subjects that have grown the most in popularity. Using the trending tags from social media, the system generates a ranked list of ordered stickers by the sum of popularity of each sticker's tag.

- Location-based sticker list: The trending stickers by social media is filtered according to region, such as country, city. The weight is higher if is more specific, like the same city or neighborhood. The location sticker list is then ordered by popularity, trending and weight.

Image generator

By using both the sticker lists and the OpenCV-based object collision algorithms, it's possible to generate multiple possible outputs to the users.

Figure 3 shows an example of how the practical application of this disclosure might have worked out.
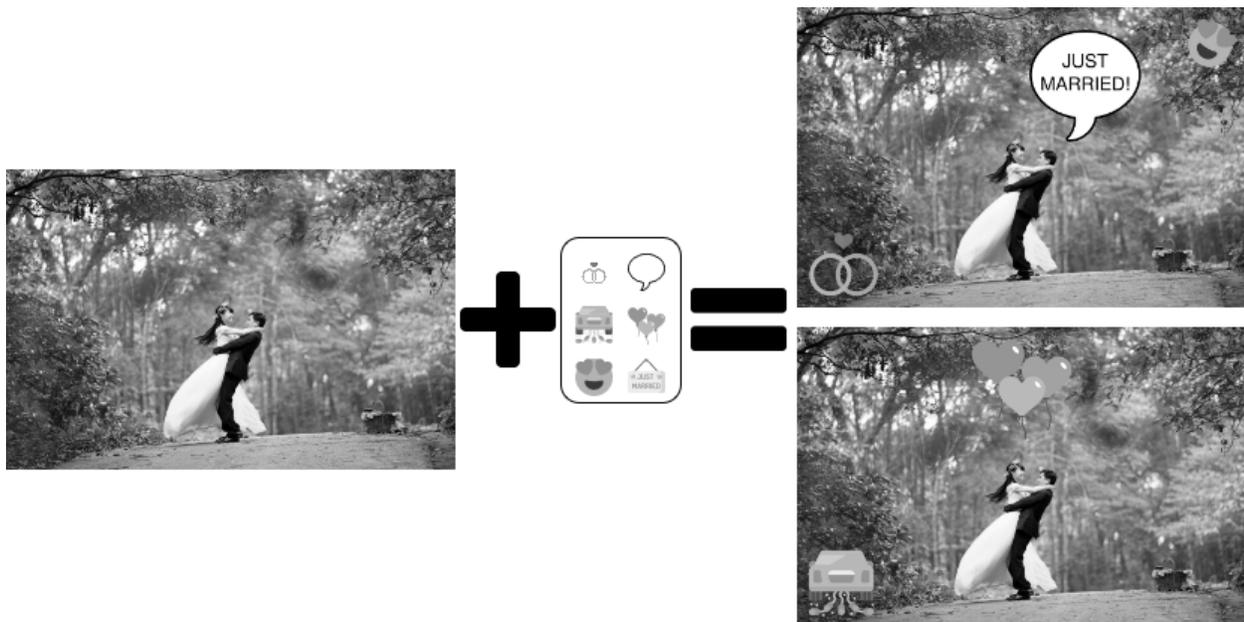

Figure 3 - Possible outputs to be presented to the user.

Advantages

The main advantage made possible by this disclosure is automating the user's task of choosing appropriate visual elements (such as stickers) that would strengthen the picture's meaning and engagement towards its particular audience.

When comparing the proposed solution to [5], the main difference is that it's assumed their solution uses a pre-populated database relating pictures to the filters that were applied to them. How content recognition works is also not specified.

In contrast to [6], this solution is recommending stickers instead of filters, and also provides intelligent object collision detection and smart positioning.

References

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