e-GRIESHMA - RBCDSAI, IIT Madras

Knowledge augmented real-estate description generation

PID: 2021\DSAI\011

This proposal describes a problem of real-estate description generation for a given set of images of a house including indoor and outdoor images. The multi-sentenced descriptions for real estate data in natural language caters the current day requirement of online real-estate business. It provides the potential customer with a holistic description along with external knowledge about the house.

In modern times, finding the required property by visiting door to door has become a thing of the past. Hence, online rental portals are gaining popularity, since required properties can be searched with a click of the mouse. The web-based real estate business is not only useful for the potential buyers, but also for the sellers who are looking for buyers for renting or selling their properties. These web-based portals not only have pictures of the house but there are categorical details for the same. However, given the bulk posting of ads for housing rentals, it's a difficult task for website administrators to observe all the details through images and manually write a comprehensive detailed description which covers all the images connecting them with each other. Hence, the proposed problem targets this requirement to automatically generate a holistic description of a property, given a few indoor and outdoor scene images. The proposed problem caters the requirement of the web-based real-estate business, where administrators would not have to manually look-up bulk of ad postings and write a description for them, saving their time and efforts.

Figure 1: Proposed problem

The proposed problem (as shown in Figure 1) of real-estate description generation is posed towards, describing a real estate scene having indoor and outdoor images with multi-sentenced description. Description should be generated such that it describes all the images of a house taken together which may contain images of outdoor scene, indoor scene, such as bedroom, bathrooms, balcony etc in a holistic manner taking the coherence between the images into consideration.

The proposed problem differs from the problems and solutions proposed in literature, in the way house images are described. These descriptions also include the extra knowledge about the location, type of the house and other construction related information, making them different from the existing solutions.

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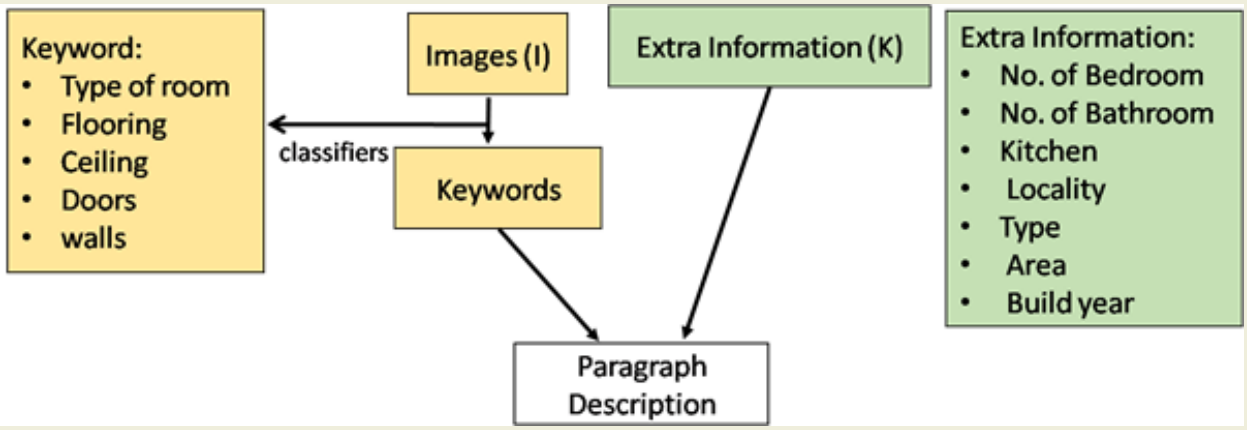

Figure 2: Flow diagram of the proposed problem

Figure 2 shows the flow diagram of the proposed problem. A set of images of the house will be used for extracting the visual information about the house in the form of keywords. An AI agent will be trained to learn these keywords along with the available extra knowledge, further generating a knowledge augmented description about the house.

Tasks to be assigned to intern:

- Data analysis and survey of state of the art methods.
- Implementation of the required model and baselines.
- Evaluation and comparative analysis of the model.

Learning outcome: Intern would be able to learn to work in two modalities, computer vision and natural language processing, while connecting both of them. He/She would learn to work with advanced deep neural networks while also working with tools such as Tensorflow, Keras, NLTK.

Skills Required:

- NLTK
- Tensorflow/Keras
- OpenCV

Duration: 3 Months

No. of interns required: 1