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A Computer Vision Based System for Camel Dangerous Prevention in Saharian Roads

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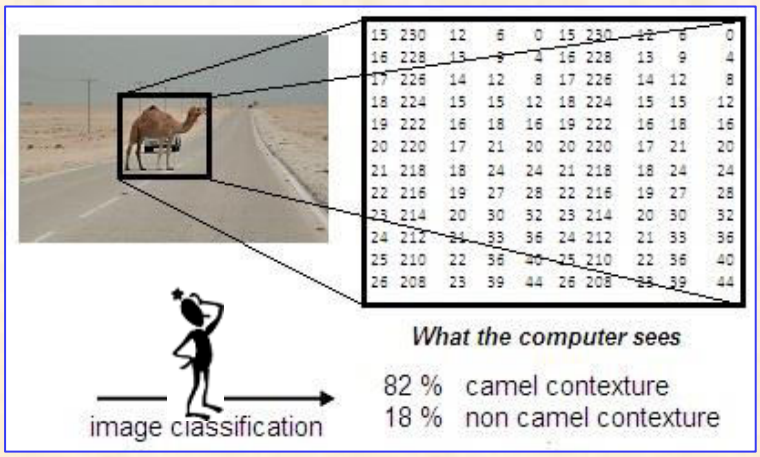
- **V**ehicular accidents caused by animals is growing phenomenon, particularly in Saharian countries, as they registers hundreds of accidents caused by camels each year, resulting in the loss of countless lives, as well as propery worth millions of money.The concerned authorities spends billions trying to curb this issue through the building of fences alongside highways.
- A recent study has shown that 97 percent of all car accidents involving animals were with camels, and that more than 90 percent of these accidents occur at night.
- Many studies were considered, as well the use of GPS technology to identify the treats and risks, or the technology of emitting of warning sound to drivers when they are near camels on the roadways.

Abstract



•Camels, Classification, Computer vision, Classification algorithms, images,...etc.

Key Words

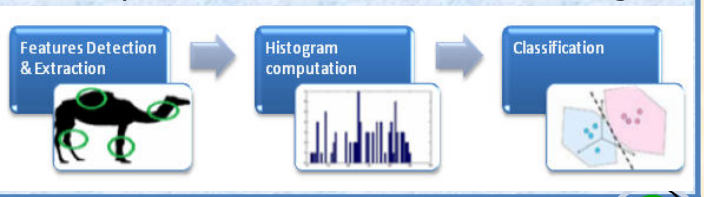
- **Motivation**. In this section we will introduce the Image Classification problem, which is the task of assigning an input image one label from a fixed set of categories. This is one of the core problems in Computer Vision that, despite its simplicity, has a large variety of practical applications. Moreover, as we will see later, many other seemingly distinct Computer Vision tasks (such as object detection, segmentation) can be reduced to image classification.
- **Example:** For example, in the image below an image classification model takes a single image and assigns probabilities to 4 labels, *{camel, dog, giraf, stone}*. As shown in the image, keep in mind that to a computer an image is represented as one large 3-dimensional array of numbers. In this example, the camel image is 248 pixels wide, 400 pixels tall, and has three color channels Red,Green,Blue (or RGB for short). Therefore, the image consists of 248 x 400 x 3 numbers, or a total of 297,600 numbers. Each number is an integer that ranges from 0 (black) to 255 (white). Our task is to turn this quarter of a million numbers into a single label, such as *"camel"*.

Image Classification:

- **We've** seen that the task in Image Classification is to take an array of pixels that represents a single image and assign a label to it. Our complete pipeline can be formalized as follows:
- **Input:** Our input consists of a set of ***N*** images, each labeled with one of ***K*** different classes. We refer to this data as the ***training set***.
- **Learning:** Our task is to use the training set to learn what every one of the classes looks like. We refer to this step as ***training a classifier***, or ***learning a model***.
- **Evaluation:** In the end, we evaluate the quality of the classifier by asking it to predict labels for a new set of images that it has never seen before. We will then compare the true labels of these images to the ones predicted by the classifier. Intuitively, we're hoping that a lot of the predictions match up with the true answers (which we call the *ground truth*).

The Approach Pipeline

- **T**he human ability to analyze and classify objects and scenes accurately is something that everybody finds highly useful in everyday. In order to understand a complex scene, the first step is to recognize the objects and then the category of the scene. To do this in computer vision, we use various classifiers that all have different characteristics and features. In last, many classifiers have been developed by various researchers. These classifiers are used in algorithms that involve object recognition.
- Applications for classification in computer vision include computational photography, security, surveillance, and assistive driving.



The Conclusion