

Survey paper for parking slot identification based on CNN (Convolutional Neural Network).

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Abstract

The aim of this paper is to review for gratis Parking Spot Identification and steering, it's a possible to scale back the congestion in thronged areas by providing time period indications of occupancy of parking areas. To date, such systems ar principally enforced for indoor environments victimisation pricey sensor-based techniques. Consequently, with the increasing demand for Parking free spot detection systems in out of doors environments, cheap image-based detection ways became attention of analysis and development recently. intended by the outstanding performance of Convolutional Neural Networks (CNNs) in numerous alternative image recognition tasks, this study presents a strong parking occupancy noticeion framework by victimisation CNN to detect the occupancy of out of doors parking areas from pictures. The classifier was trained and tested by the options learned by the deep CNN from datasets having completely different shapes light-weight conditions.

Keywords: OpenCV, CNN(Convolutional Neural Network),Machine Learning, Canny Edge Detection.

I. INTRODUCTION

The aim of this paper is to study the smart car parking by using image processing. How many times has it happened to you that you are searching for a parking spot by driving around and around the parking lot. How convenient wouldn't it be if your phone could tell you exactly where the closest parking spot is! It seems that this is often a comparatively easy problem to unravel using deep learning and OpenCV. All that is needed is an aerial shot of the parking lot. So techniques for car parking occupancy detection are of great importance for an effective management of car parking lots. The proposed solution for parking detection follows the trend of applying deep learning techniques, especially CNN, to problems that require high level abstraction.

II. METHODS

A. “Open CV”

Xu et al., [1] during this paper the author has delineated four algorithms that area unit introduced through the employment of Open CV programming, the programming will visually show the detection results below totally different thresholds, that is convenient for image edge detection.

Raghav Bansal et al., [2] during this paper author describe lapacian operator supported the sting kind and sharpness analysis victimization laplacian operator, a good illustration of blur image detection theme is projected throughout this paper, which can verify that whether or not the image is blurred or not, and what is the extent of blur through Variance of laplacian. during this project a simple , reliable and quick algorithmic rule for image noise estimation is given. pictures taken for the testing is assumed to be corrupted by additive zero mean mathematician noise. To exclude structures or details from contributively to the noise variance estimation, an easy edge detection algorithmic rule inculcating 1st-order gradients is applied first.

Yue Yaru et al., [3] during this paper the author uses the OpenCV functions to attain a fingerprint extraction algorithmic rule. The algorithmic rule uses the Otsu algorithmic rule improved to urge the best threshold that it will phase image. Simulation experiment is applied and it proves that the fingerprint extraction algorithmic rule supported OpenCV perform library is effective.Gra

B. “CNN”

Chenxing Xue et al., [4] in this paper author describe about deep learning concept namely CNN. (CNN) is a deep learning model that has been widely studied and applied. Since CNN can automatically detect the multi-directionality of image features, it's widely utilized in image classification and recognition. The algorithm is as follows: Firstly, because the convolutional network can automatically extract image features. In this paper, CNN is made under the framework of tensorflow to get the sting detection operator after training. The prepared data set is input into the network for training, and therefore the training result's saved on matlab for verification.

Xueying Wang et al., [5] provides BGSNet-D (BackGround Subtraction neural Networks for Depth videos) method The method can be used in color unavailable scenarios like poor lighting situations, and can also be applied to mix with existing RGB background subtraction methods. A preprocessing strategy is meant to scale back the influences incurred by noise from depth sensors.

C. “Canny Edge Detection”

Yunseok Jang et al., [6] tells about HT hardware architecture. The Canny edge detector is employed as a preprocessing operator in various high-level image processing techniques utilized in consumer electronics. Many researchers have implemented the Canny edge detector on a field-programmable gate array, which has the same hysteresis thresholding (HT) architecture.

Cuneyt Akinlar et al., [7] explained about Canny Smart Routing (CannySR), runs Canny to obtain a binary edge map, and uses the Canny edgels as anchors for SR to convert them to edge segments. The produced edge segments can then be utilized in many applications like line, arc, circle, ellipse, corner detection and other similar higher level object detection applications. We qualitatively evaluate the effectiveness of the proposed algorithm on some sample images and conclude that CannySR visibly improves the modal quality of Canny’s binary edge maps although ED seems to produce the best results. To clean up Canny’s binary edge maps, refill one pixel-wide gaps between the edgels, and to return the map as a group of edge segments, each of which is a one-pixel wide, contiguous chain of pixels, we employ the Smart Routing (SR) algorithm from our recently proposed Edge Segment Detection Algorithm, the sting Drawing (ED).

Qianli D.Y et al., [8]. Ma proposed Canny algorithm is used for artificial object edge detection, in order to suppress the influence of noise on image edge detection and edges from extraneous objects. The algorithm first uses adaptive smoothing filtering to filter salt-and-pepper noise, which may better protect the small print of the image. Then, the geometric characteristics of edge is used to distinguish between edges from artificial apparatus and extraneous objects. Experiments on images obtained in highspeed railway filed survey show edge of that the enhanced algorithm can accurately locate the apparatus, and can effectively suppress the edges caused by noise, ballast and texture on the surface of objects, compared with the traditional Canny edge detection algorithm.

D. “Machine Learning”

Kiran Pai et al., [9] in this paper the author proposes a model that uses Convolutional Neural Networks to predict and classify seven different types of skin lesions. A website is developed for the real time usage of the model, which can predict the three most probable types of skin lesions for a given image. The observations and results are based on the experiment conducted using the dataset which consists of 10000 labelled images.

Busra Rumeysa Mete et al., [10] in this paper the author presents a classification system for flower images by using Deep CNN and Data Augmentation and evaluated their classification system using two datasets and divid each dataset into the training and test sets.

Yusi Yang et al., [11] during this paper the author presents a completely unique pipeline framework for automatic pedestrian detection and segmentation by combining machine learning with traditional computer visual methods. In particular, the Histogram of Oriented Gradient (HOG) and Support Vector Machine (SVM) are employed for pedestrian detection, and then the frame difference method is adopted for the tracking of the pedestrian. GrabCut and Mask R-CNN methods are used in the segmentation of pedestrians

III. CONCLUSION

In this paper, we have studied different uses of convolutional Neural Network(CNN) and canny edge detection using OpenCV for maching learning. Image processing plays a vital role in calculating an in time and out time of vehicle to deduct a parking charge. By using this proposed system, the availability of free slots is updated on a website in S real time. The main advantage of this system is to reduce time in a search of free slots, the user can access the website effectively, and reduce traffic congestion. So we conclude that this system can be seen as an intelligent and scalable solution for active cooperative monitoring, based on wireless smart cameras and to study and experiment its applicability to a real urban environment.

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