

UNIVERSITY COLLEGE OF ENGINEERING RAMANATHAPURAM



INTERNET OF THINGS SMART PARKING PROJECT PHASE 2 INNOVATION



A.WAZIL	913021104042
A.REVATHI	913021104025
R.THIRUMAGAL	913021104036
R.NIVETHITHA	913021104018



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The image shows a table of contents with five entries. Each entry consists of a blue rounded rectangle containing the title, followed by a white rounded rectangle for the page number. A thin blue line connects the left side of the blue rectangle to the white one. The entries are: INTRODUCTION, ABSTRACT, BLOCK DIAGRAM, WORKING PRINCIPLE, and FLOWCHART.

INTRODUCTION

ABSTRACT

BLOCK DIAGRAM

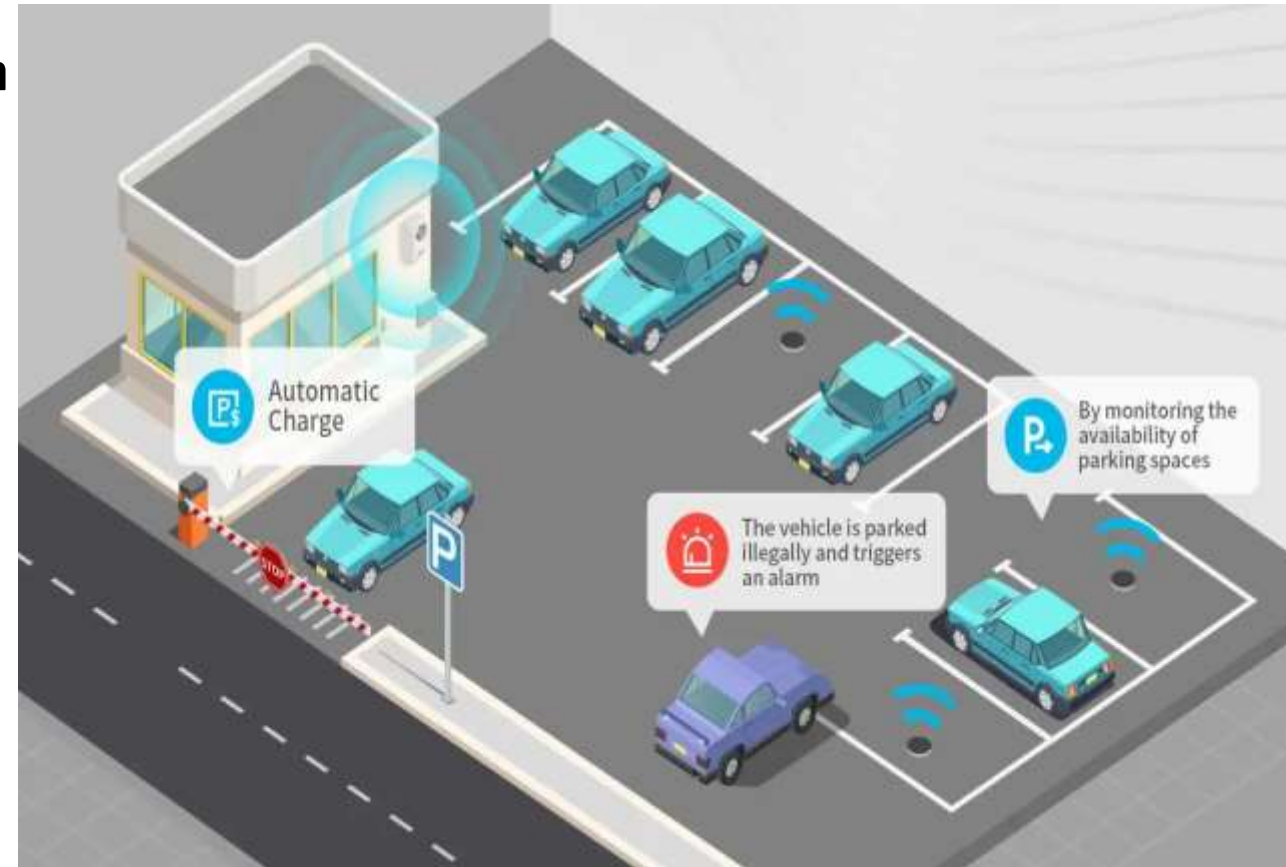
WORKING PRINCIPLE

FLOWCHART

INTRODUCTION

Image Processing for Parking Space Detection describes an image processing method that can be used to capture the brown circle painted on the parking spot and determine whether or not that space is free or reserved.

Parking space detection system that uses image processing. The system employs **Deep Neural Network (DNN)** algorithm and image processing techniques to locate open parking slots.

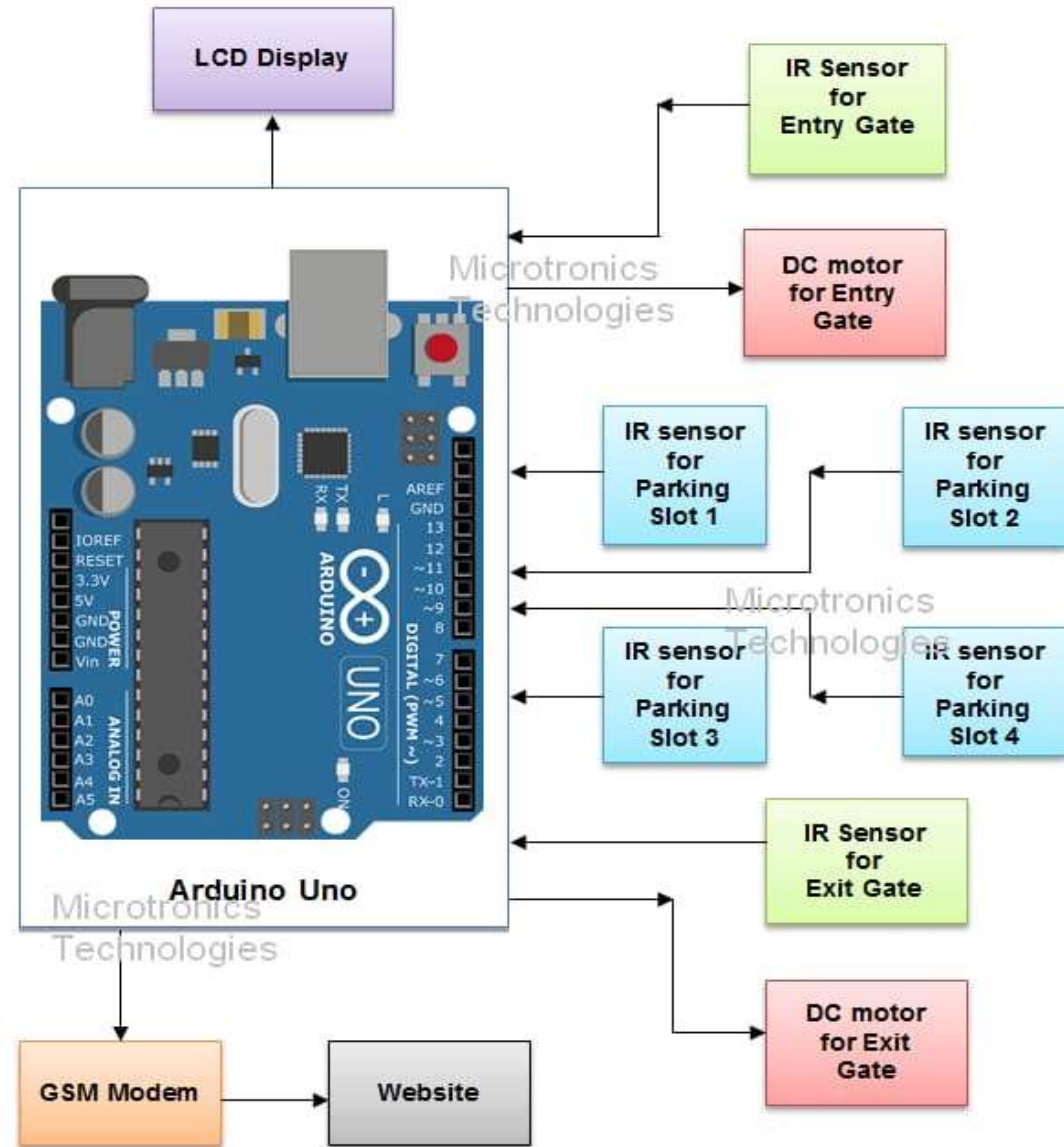




ABSTRACT

- With the ever-increasing urbanization and the proliferation of vehicles, efficient management of parking spaces has become a critical challenge in modern cities. This paper presents a novel approach to address this issue through the use of image processing techniques for real-time detection of available parking spaces in parking lots and on-street parking areas.

BLOCK DIAGRAM



WORKING PRINCIPLE



1. Image Acquisition:

Use cameras or other image-capturing devices to capture images or video streams of the parking area. These cameras can be stationary, mounted on poles or walls, or even integrated into vehicles for mobile applications.

2. Image Preprocessing:

Enhance the quality of the acquired images through preprocessing techniques such as noise reduction, contrast adjustment, and image stabilization. This step ensures that the subsequent processing steps are more accurate and reliable.

3. Object Detection:

Apply object detection algorithms to identify vehicles within the images. Common object detection methods include Convolutional Neural Networks (CNNs), YOLO (You Only Look Once), and Faster R-CNN. These algorithms can detect and locate vehicles in the image.

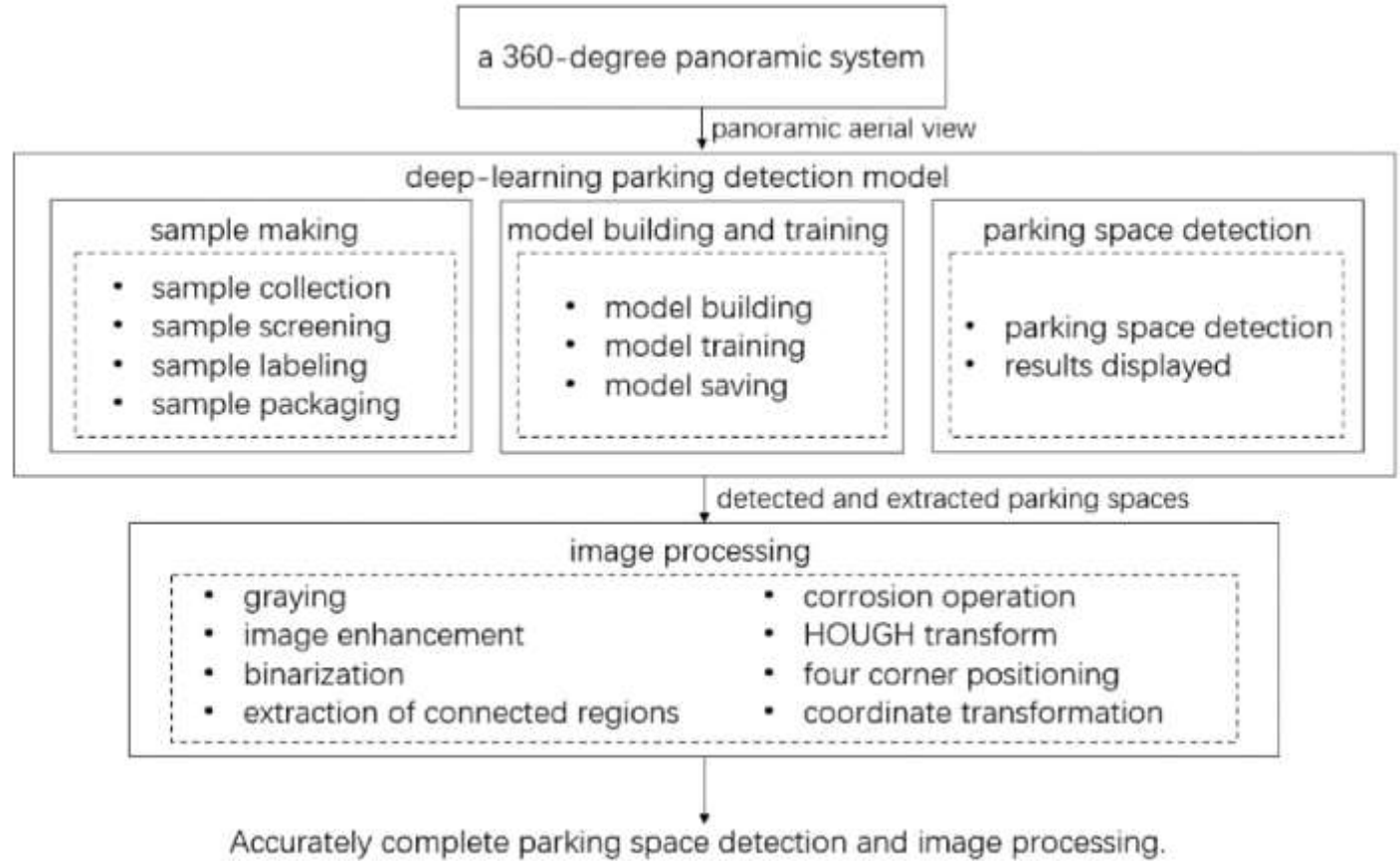
4. Region of Interest (ROI) Selection:

Define regions of interest within the parking area where parking spaces need to be monitored. Exclude areas like driveways or lanes where vehicles should not be parked.

5. Parking Space Segmentation:

Divide the ROI into individual parking spaces. This can be done manually by marking parking space boundaries in a reference image or automatically using image segmentation techniques. Common methods include thresholding, contour detection,

FLOWCHART



A large, dark gray, curved shape, resembling a quarter-circle or a thick arc, occupies the left side of the image. It has a smooth, solid appearance.

THANK YOU