

Digital Image Processing Based Autonomous Locomotive System for Object Identification and Relocation

Abstract:

Digital Image Processing is a rapidly evolving field with growing applications in Science and Engineering. Modern digital technology has made it possible to manipulate multi-dimensional signals. Digital Image Processing has a broad spectrum of applications. They include remote sensing data via satellite, medical image processing, radar, sonar and acoustic image processing and robotics and in intelligent transportation systems, such as automatic number plate recognition and traffic sign recognition.

This project involves design and construction of a digital image processing system that completes the specified task autonomously. Hardware of the system involves computer (PC/Laptop) that uses an overhead camera for image acquisition and a robot interfaced to it (computer). The computer processes the acquired images from camera and identifies the position of both robot and objects. Based on the results of those computations computer guides the robot for arranging the coloured objects at the destination specified as the task without human intervention.

If the date of project submission permits, we would like to evolve the implementation by introducing frame processing or soft colour classification increasing the accuracy or reducing the computational delay respectively

Software Requirement:

Image Processing

‘MATLAB supplemented with image acquisition toolbox and image processing toolbox’ or
‘OPEN CV supplemented with VISUAL STUDIO’

Programming Microcontroller and simulation

‘Proteus 8’ or ‘Proteus 7 with Atmel Studio 6’

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