"INDUSTRIAL AUTOMATION USING IMAGE PROCESSING AND ROBOTICS"

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ABSTRACT

The objective of the project is to design and develop the system which can read the address and transport the parcels from source to different destinations using GPS mapping technique. The image processing techniques are used to recognize the label on the parcel. Depending on the address the Robot delivers the parcel to respective destination.

The parcel with the destination label is carried on the conveyor belt. The conveying system is programmed with appropriate delay so that the image acquisition unit which is a camera can capture the destination label on the parcel. The digital image processing is done on a personal computer using matlab.

In the captured image label occupies only 10% of the image area. In order to identify a destination by reading its label successfully, it is necessary to locate the parcel (label) in the scene and segment the label region. Further the individual characters are segmented from the label region. The Connected Component Analysis approach is used for character segmentation. Each extracted character is compared with the data base by using correlation method. After recognizing the characters, a code is generated and it is used to guide the robot to respective destination. The destination code is transmitted to the transportation robot through RF transmission.

The RF transceiver is interfaced to micro computing unit using serial communication. After obtaining the destination the object sensor is checked for the presence or absence of parcel on robot. If parcel is present, then robot starts tracking the path towards the corresponding destination. If parcel is displaced anywhere on the way, then the robot stops and continues only after parcel is placed again on it. The robot reaches the destination and remains there till the parcel is removed from it. After delivering the parcel retraces the path and returns to the source to carry the next parcel.