Imageprocessing Based Pincode Recognizing and Sectionwise Courier Sorting System

Piyush Kiran Redgaonkar[#1], Ajinkya Prakash Sonar[#2], Amit Sunil Tatar[#3]
Guided by R. Bhambhare
[#]*B.E. Department of Electronics and Telecommunication)*
PRES Sir Vishveshwaraya Institute Of Technology, Nahik 422102, Maharahtra, India.
Savitri Bai Phule Pune University

Abstract :

In India, post and courier system are one of the most commonly used communication portals. The Indian postal system is the biggest network among whole world. In India the people living in the rural area are more as compared to the metropolitan region. Due to such circumstances a system should be developed which is efficient to handle large number of posts and parcels at post courier stations. For such purpose, we are designing a system which will eliminate all possibilities of the errors produced by traditional sorting methodologies.

We are implementing the system with the help of LabVIEW software which uses the Optical Character Recognition (OCR) technique to recognize the address. On the input side camera is used as a detector to capture images of the envelope. While using the Optical Character Recognition technique the detection of the address can be done without compulsion of pin code. LabVIEW will compare the input image with the stored database and as it matches with stored database, a moving arm will take the parcel to its appropriate locations. This, all process will minimize human errors and the number of other error probabilities caused due to conventional system.

Keywords: - *OCR, LabVIEW*

I. INTRODUCTION

The Indian postal network is the largest postal distribution network in the world. It plays the crucial role in peoples life as it has serviced for more than 150 million. Due to this, the posts and couriers are the most commonly used services. According to records the number of posts and courier exchanged every day in our country is in lakhs. While handling such a huge number of envelopes, the system ought to be efficient. The system should be error free in the delivery process.

At sorting stage system faces some errors like misplacing of envelop is due to misreading of the address given on envelope by the employee. Also achieving 0% human error probability is practically next to impossible. On time delivery of the posts or couriers is the one of important parameter which should achieved. Our traditional sorting methods are lot of time consuming due to which system gives failure at on time delivery status. These are the points or parameters which degrades system while using traditional sorting methodologies.

To build the system immune to above errors we are designing a mechanism which sorts the envelops according to the sectors automatically without any human intervention. In our project we are designing system which is based on the OCR technique i.e. Optical Character Recognition technique. However, OCR technology has an edge over the QR (Quick Response) coding procedure. OCR can sort the mails without a pincode so this is very advantageous and is gaining momentum for system. While system is being implemented by using this kind of sorting mechanism it minimize all error probabilities and also it is very less time consuming.

II. LITRETURE SURVEY

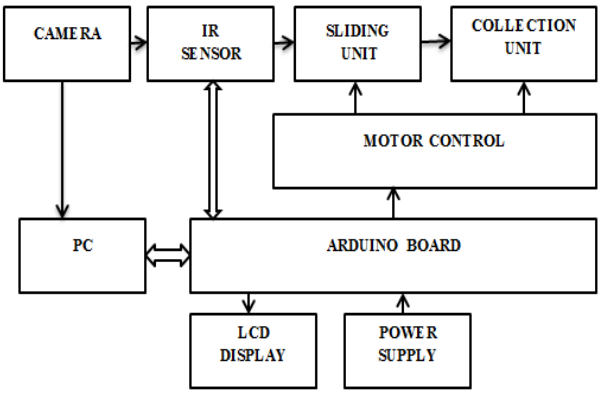
Mani, et.al [1] proposed many artificial neural network models have been proposed to mimic the human brain in solving problems involving human-like intelligence.An application of an artificial neural network approach for optical character recognition (OCR) is discussed in this paper.We examine a simple pattern- recognition system using an artificial neural network to simulatecharacter recognition. Young-Mo Kim, et.al [2] proposed an algorithmic architecture for a high-performance OCR system for hand-printed and handwritten addresses is proposed. The architecture integrates syntactic and contextual post processing with character recognition to optimize postcode recognition performance and verifies the postcode against simple features extracted from the remainder of the address to ensure a low error rate. An initial implementation of all parts of the proposed system is reported. Kavallieratou, et.al [3] proposed this paper deals with the discrimination between machine-printed and handwritten text, a prerequisite for many OCR applications. An easy-tofollow approach is proposed based on an integrated system able to localize text areas and split them in text-lines. A set of simple structural characteristics that capture the differences between machine-printed and handwritten text-lines is presented and preliminary experiments on document images taken from databases of different languages and

characteristics show a remarkable performance. Hidayatullah, et.al

III.OBJECTIVE

- To recognize handwritten address from envelope then sort and collect them into them appropriate section.
- Our aim is to build system in error free environment and least time consuming.

IV.BLOCK DIAGRAM



A. Camera

Camera is the basic component of the address recognition and envelope sorting management system. It captures image of the envelope and transfers that image to the computer. In computer it has LabVIEW software which will then compare that image with the stored database.

B. Sliding Unit

Sliding unit is used to move envelope according to the requirement towards the collection unit. Sliding unit driven by the DC motor. Also it has proximity sensor which detects whether envelope is present or not. It only runs when the envelope is kept on it otherwise it is in off state

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C. PC (LabVIWE)

Computer is the main fundamental block which drives the all system it has LabVIEW in it. In computer there is a stored database with which it is being compared with the image captured by the camera. By OCR technique address is decoded and all the process is done by the LabVIEW. Computer is connected to camera and the controller where camera is input device and the controller is an output device.

D. Arduino Board

Arduino board is nothing but a controller. Controller is responsible for each and every action taken by the motor and pusher circuitry. It requires the 5 volt of the supply and it also has LCD to display present state on. Controller has an input from computer by means of which it can take appropriate actions.

E. Collection Unit

Collection unit is last block of the system in which sorted envelopes are being stored. It has different sections there is a pusher or arm used to pushes envelope into its destination sector.

F. Motor control

Motor drive circuit is assembly use to move sliding unit, conveyor belt and pusher also. Motors used are DC motor driven on 15v dc supply.

G. Power Supply

Power supply provides 5 volt purely DC supply. Controller requires a 5 volt supply as well relay is driven on six volt purely DC supply.

H. LCD Display

LCD display is used to display output from controller. It only connected to the controller due to which it is easy to detect if any fault is generated in controller's actions.

I. IR Sensor

IR Sensor is used to detect whether the parcel is present or not at the sliding unit. If parcel is present at the sliding unit then only conveyour belt is get started otherwise it is in off state. Power supply provides 5 volt purely DC supply.

V. ADDRESS RECOGNITION TECHNIQUE

OCR (Optical Character Recognition) Technique

Optical character recognition is the technique of digitizing printed or hand-written document. It is implemented in our project along with the LabVIEW software platform. The OCR not only enhances performance of system at great extant but also reduces the error possibilities in recognition of given handwritten address on envelopes. The OCR is most advanced detection methodology as compare to any other platforms.

Unlike Quick Response recognition method OCR also can be implemented without necessity of pincode. QR technique is worth only for pincode or barcode based sorting system. handwritten address from envelope then sort and collect them into them appropriate section.

VI. WHY LABVIWE

LabVIEW stands for Laboratory Virtual Instrument Engineering Workbench. All engineering works are more smoothly runs on LabVIEW as well as it is very optimized software platform as compare to any other. It also works smooth for all graphic data like graphs etc. Building any kind of project using LabVIEW is very easy and less complex.

VII.ADVANTAGES

- This sorting mechanism is least time consuming as compare other.
- Project is implemented by using OCR due to which it can easily recognize handwritten address without any necessity of barcode.

VIII. FUTURE SCOPE

- This project can be implemented further for small station which can collects and distribute also.
- We can add one memory unit which can use further to keep record of the sorted mail.

IX. CONCLUSION

"Imageprocessing based pincode recognizing and sectionwise courier sorting system." takes sorting mechanism to ultimate step which technologically very advanced as compare to the traditional sorting methodologies. The biggest benefit of this project is that it does not require any kind of barcode which is required for other sorting mechanism.

Due to LabVIEW it is easy and very less time consuming process to sort mails or envelopes and separate collecting them into different sections.

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