MECHATRONICS BOOK SERIES SYSTEM DESIGN AND SIGNAL PROCESSING

VOLUME 1

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Asan G. A. Muthalif
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Tel: +603-6188 1542 / 44 / 45 Fax: +603-6188 1543
EMAIL: iiumprinting@yahoo.com

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Intelligent Postal Mails Sorter

Mohd Arif Faiz Bin Omar, MohdZain Bin Ismail, M. J. E. Salami, A. M. Aibinu

Intelligent Mechatronics System Research Group

Department of Mechatronics Engineering, International Islamic University Malaysia.

P.O. Box 10. 50728, Kuala Lumpur, Malaysia.

maibinu@iium.edu.my

28.1 Introduction

Postal system, invented many centuries ago for the delivery of physical mails, has evolved from the use of crude means of information transfer to more sophisticated and advanced technologies. This system makes it possible to transmit (or convey) information from one person (or organization) to another via letter, packet or parcel [1]-[2].The exchange of information (mails) could be via either short or long distances, hence efficient transportation and, if possible efficient tracking mechanisms are usually put in place in order to havean e+fficient and effective postal system.Mails delivery process involves materials (mails)collection (distribution), transportation, and sorting.Though mails come from several individuals, they are usually gathered for mass processing so as to make postal system economical[3]. Consequently, depending on the population and activities of the people, large volumes of mails are usually processed in the post offices. Sorting of both incoming and outgoing mails is adjudged to be the most arduous tasks in the post offices and postal system[4]. The intensity of work depends on the volume of mails, which is related to the population or human activities or organization that is being served by the post office. The main advantage of the sorting process is the economic use of personnel and transportation as all mail items which are going to the same place or in the same direction are combined or packed together [2]-[5].

By and large, postal services should be carried out with high efficiency, reliability and quite effective with high speed of operation. High postal performance is needed since important documents such as credit cards and their statements, bills on services, etc are nowadays sent through post offices. Extensive manpower is therefore required especially in large cities where there are large agglomerations of population and varied organisational activities in order to meet the expectation of the people.The sorting process holds the key to the success of the postal system. Manual sorting is very laborious, tedious and prone to errors and mistakes. What is needed is a robust sorting system which should be able to accurately decode all the labels on the mail materials, process mails of different sizes, weights, and shapes as well as to identify and properly distribute the mails into their various assigned compartments.

This chapter discusses the development of an intelligent automated mails sorting system that would possess required attributes so as to alleviate some of the aforementioned problems. Since mail sorting is a repetitive process which could take long time to complete, depending on the volume of mails, it implies that well designed devices could be developed for this task.

For example, it is noted that the central post office in Kuala Lumpur, Malaysia has automated machine for sorting mails according to their destinations. However, this is an old outdated machine in which its performance depends on the manner of typewritten addresses and some other constraints such as mail size, font size of the typed letters, address format, thickness and weight. Consequently, the performance of the postal system can be enhanced if an intelligent automated machine that is capable of sorting mails based on combination of the address postcode and image character recognition using relevant control operations is developed. It is noteworthy that such