

MECHATRONICS

BOOK SERIES

SYSTEM DESIGN AND SIGNAL PROCESSING

VOLUME 2

Editors

Md. Raisuddin Khan

Md. Mozasser Rahman

Muhammad Mahbubur Rashid

Shahrul Na'im Sidek



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CHAPTER 23

DESIGN AND DEVELOPMENT OF AN AUTOMATED CAFÉ SYSTEM

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23.1 Introduction

With a rapid increase in robot technology, designing and developing the new system in the café will simplify the human task and also reduce the cost of hiring people in order to serve customers. It consists of an electronic menu for ordering food and also a conveyor for delivering the food to the appropriate table. It is a very helpful technology for the community in saving the operation cost and also the labor cost. Running a café consume lots of manpower in order to serve customers and also require high expenses. This is the main problem that exists in order to run a cafe. Some cafés are open 24-hour daily, thus needed people to work during night time and over the limit, therefore the management need to pay them double for overtime. Nowadays, it is hard to find people who want to work as a waiter or waitress in Malaysia, people under grade the work since the pay is not high and they are looking for the job which can pay higher. This is because the current café systems have inherent weaknesses. There are also some café which consists of conveyor such as Sushi King, Genki Sushi, but still the system is not complete yet because waiter or waitress needs to come to take order from customer. They do not have a system which can take order without having waiter or waitress. Therefore, it requires man power also to serve the customers.

Nowadays, the most popular restaurant that runs their business using an automated system is sushi restaurant. The concept is used of the conveyor belt to transfer the food. The primitive conveyor belt was used since 19th century. It started when Sandvik, in 1901 was invented and started the production of the Steel Conveyor belts. In 1913, Henry Ford introduced Conveyor belt-based assembly-line in Ford Motor Company's Rouge factory in Dearborne Michigan. The Conveyor belt sushi was invented by Yoshiaki Shiraishi (1914-2001), who had problems staffing his small sushi restaurant and had difficulties managing the restaurant by him. He got the idea of a conveyor belt sushi after watching beer bottles on a conveyor belt in an Asahi brewery [1-2]. After 5 years of development, including the design of the conveyor belt and the speed of operations, Mr. Shiraishi opened the first conveyor belt sushi Mawaru Genroku Sushi in Osaka in 1958, quickly creating a chain of 240 restaurants all over Japan. A conveyor belt sushi boom started in 1970 after a conveyor belt sushi restaurant served sushi on the Osaka World Expo. Another boom started in 1980, when eating out became more popular, and finally in the late 1990s, when inexpensive restaurants became popular after the burst of the economic bubble [3]. This technology was then being followed by Kuru Kuru Sushi restaurant, which among the earlier established sushi restaurant and Japan. The idea of it operation was that the plates with the sushi are placed on a rotating conveyor belt that winds