MECHATRONICS BOOK SERIES SYSTEM DESIGN AND SIGNAL PROCESSING

VOLUME 1

Editors
Asan G. A. Muthalif
Amir Akramin Shafie
Siti Fauziah Toha
Iskandar Al-Thani Mahmood

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CHAPTER 22

Development of Automatic Rocking Baby Cradle

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22.1 Introduction

The recognition system based on voice plays important rules nowadays, since the excess of the voice as such natural signal to produce and quite unique in each of every human. There are two approaches in voice recognition system, they are preprocessing process and feature extraction. The preprocessing process is a process where a raw signal is modified in order to improve the performance of the recognition system[1-2]. The objective of the preprocessing is to reduce the amount of data to be processed by the rest of the system. Feature extraction is extracting the feature vectors from the voice signal that will be used as input to the identification system. The voice feature extraction data is then used as an input of the pattern matching technique to control the hardware part of the system [3].

The main objective of this work is to operate a rocking cradle whenever a crying voice of the baby is detected. Therefore, the implementation of the pattern matching technique of a continuous speech is significant. In addition, it is also the simplest technique and has accurate result to develop the system.

This chapter is organized as follows: In section 22.2, review of the proposed voice based recognition system for automatic rocking baby cradle. The application of the methodology proposed system is obtain in section 22.3. Section 22.4 is the result and discussion and section 22.5 is the conclusion of the chapter.

22.2 Review of the Automatic Rocking Baby Cradle

This work mainly based on development of automatic baby cradle [4-7] and voice recognition [4]. In this section, each of the system and examples understudied will be elaborated. The explanation of automatic baby cradle system and voice recognition system are obtained on this section.

A rocking motion is basically a motion to cause something swing backwards and forwards or from side to side. Meanwhile, a rocker is one of the curved pieces of wood that attached to the bottom of leg. Rocking is also defined as a universal soothing technique that spans across every culture from being rocked as a baby and child. Humans seem to never loose their sensitivity to rocking motion whether by the gentle lapping of waves on a boat, a swing in a playground, or hammock in the garden. Rocking motion will make most people find relaxation and comfort. Presently, there are a few of furniture that implement this motion including a baby cradle. A research was conducted in order to get some ideas how to design the Automatic Baby Cradle. The research was focused on the mechanical aspects of the desired design.

The use of voice to identify people is known as speaker recognition. Unlike other forms of access control method; such as password or keys, a person voice cannot be stolen, forgotten or lost. In this application, the ability of ASR as a communication aid will be relevant [6]. The ultimate application of ASR for aiding communication would be the ability to transcribe the speech of any person at any time. Some of the examples of ASR as a communication aid are classroom