

**HANDWRITTEN ALPHABETS RECOGNITION SYSTEM
USING RADIAL BASIS FUNCTION NETWORKS**

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ABSTRACT

This thesis presents how to recognize handwritten alphabets using Radial Basis Function (RBF) Network. This Radial Basis Function is an information processing paradigm that is inspired by the way biological nervous systems, such as the brain and process information. RBF Networks has the learning process that contains training and testing processes to obtain the outputs. The learning process involves additional delta weights that include RBF Networks parameters. This process is important to find the optimum weights of the RBF Networks. Handwritten alphabets were taken from 10 sets of samples that contain 260 different types of characters. These handwritten alphabets were used to be as inputs of Radial Basis Functions (RBF) for training and testing process. Using MATLAB programming, these data was trained for the RBF Networks through training process that include finding the center of RBF, hidden layer, delta weights and finally to get optimum weights. From optimum weights, the output was obtained. During testing process, other handwritten alphabets were tested. Three samples of handwritten alphabets are tested using Graphical User Interface (GUI). Using the same center as training process, RBF Networks calculate the input data and recognize them as an alphabets. Using programming in MATLAB software, the outputs of Neural Network system was successfully obtained programmatically. This system is important for recognizing different types of handwritten alphabets. As conclusion, this system handwritten alphabet can be recognized successfully

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CHAPTER 1

INTRODUCTION

1.0 AN OVERVIEW

Classical methods in pattern recognition do not as such enough for the recognition of characters due to the following reasons. First, the problem is the same characters differ in sizes, shapes and styles between one to other person. Second, characters are subjected to spoilage due to noise.

As such, the human system of vision is excellent in the sense of qualities. These qualities such as the human brain that is adaptive to minor changes and errors in visual patterns. Thus we able to read the handwriting of many people though different styles of writing. The human vision is also immune to most variation of sizes, colour, location and orientation of characters.

In contrast to limitations of classical computing, Artificial Neural Networks (ANNs), that were first developed in 1943 by the neurophysiologist Warren McCulloch and the logician Walter Pitts serve for the technique of human thinking. Of the several fields where in they have been applied pattern recognition.

In this thesis, details about handwritten alphabets using Radial Basis Function which is one type of Artificial Neural Networks will be described.

1.2 OBJECTIVES

The objective of this project is to design handwritten alphabets recognition system using Radial Basis Function Networks. The developed system will be able to read string of characters.