

Handwritten Character Recognition Using Learning Vector Quantization

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Abstract

Optical Character recognition is a very futile area of research in the field of image processing. Handwritten character recognition is the most challenging domain of OCR because every person tends to have his/her writing style. As a result, there is variance in every sample input taken from different users. Due to the presence of no standalone handwriting template and huge diversity of people's writing styles, an adaptive and effective character recognition module is required for efficiently identifying handwritten characters. On the other hand, Learning Vector Quantization or LVQ is a kind of supervised neural network which can learn and remember if proper training is provided. This paper focuses on constructing a Learning Vector Quantization based handwritten character recognition module which will be able to effectively identify different handwriting styles and recognize them with a significantly high degree of accuracy.

Keywords: Character Recognition, LVQ, Artificial Neural Network, Handwriting, Image Preprocessing, OCR

1. Introduction

In several sectors today, physical forms are used in which the user has to write something important or relevant by himself. In these cases, verification or validation of the content needs to be done manually as handwritten characters are not generally perceivable by computer. OCR or Optical Character Recognition is a similar field which focuses on distinguishing optical alphabets that is digitally imprinted. Those genre of characters exhibit a specific format, size and are generally are not versatile with respect to different users. But Handwritten Characters are a bit more difficult in that manner because they are user-dependent. For each user, handwriting style can be vastly different. The size, brush stroke, thickness, pressure, font style – everything is variable. So template based systems are not the suitable choice for recognition in this field. An adaptive system is more apt solution for this problem statement. This is the reason Learning Vector Quantization, a variant of neural networks is selected for this project to