

## **PROBLEM STATEMENT**

The **handwritten digit recognition** is the capability of computer applications to recognize the human handwritten digits. It is the hard task for the machine because handwritten digits are not perfect and can made many different shapes and sizes. The handwritten digit recognition is a way to tackle this problem which cause the images of digit and recognizes the digit present in the image.

Following are the constraints faced when computers approach to recognize handwritten digits:

- The Handwritten digits are not always of the same size, width, orientation and justified to margins as they differ from writing of person to person.
- The similarity between digits such as 1 and 7, 5 and 6, 3 and 8, 2 and 7 etc. So, classifying between these numbers is also a major problem for computers.
- The uniqueness and variety in the handwriting of different individuals also influence the formation and appearance of the digits.

<b>Who would face this kind of problem?</b>	People using Handwritten Digit Recognition in postal mail sorting, bank check processing, form data entry etc.
<b>What are the boundaries of the problem?</b>	Recognition of handwritten digits using Slope Detail (SD) features based on the shape analysis of the digit image and extract slant or slope information.  Original documents may have poor quality ad paper deteriorates easily.

<b>What is this issue?</b>	Failure of Handwritten Digit Recognition would lead to financial losses in case of bank check processing, location misidentification in case of postal mail sorting etc.
<b>When does this issue occur?</b>	The handwritten digits are not always of the same size, width, orientation and justified to margins as they differ from writing of person to person, so the general issue would be while <b>classifying the digits</b> due to the similarity between digits such as 1 and 7, 5 and 6, 3 and 8, 2 and 5, 2 and 7, etc.
<b>Where is this issue manifesting?</b>	The main problem lies within the ability on developing an efficient algorithm that can recognize handwritten digits, which is submitted by users by the way of a scanner, tablet, and other digital devices.
<b>Why is it necessary to fix the problem?</b>	It becomes very essential to fix this problem to prevent huge losses incurred in various domains which makes use of Handwritten Digit Recognition System.