OPTICAL NUMBER RECOGNITION

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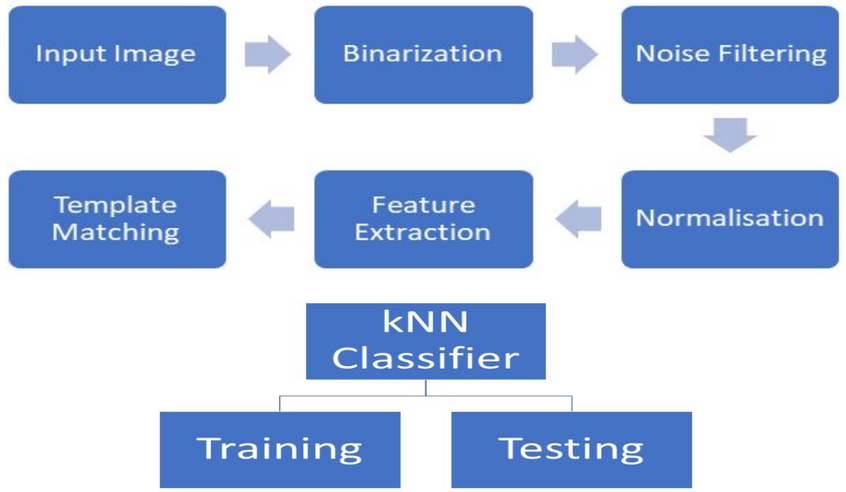
1. Objective

We intend to recognize a handwritten number on an unruled piece of paper and store it into a file with maximum possible efficiency. The aim of this project is to create a telephone directory using handwritten telephone numbers

2. Problem Formulation

The system will be designed to recognize the handwritten number on a fragment of paper and store them. The input would be from a handheld device like a mobile camera, normalizing aspect ratio and scale, Feature Extraction and recognizing the number using kNN testing module

3. Flowchart



4. Approach

1. We used kNN, which is a method of machine learning where all data is represented as points on a plane. A test data point is plotted in space, and the distance to all points is calculated. Of the k nearest points,we assign the test data the value of the majority of these k points.
2. We detected the objects by Histogram analysis, a method of taking the sum of bool values along a row or column, to gauge the presence of an object. If there are more than 30% points, we consider that row or column for object detection.

5. Conclusions

Therefore after implementation of KNN using various features, it is found that template matching performs the best with an accuracy of 94.6%. The combination of more than one feature is beyond the scope of the experiment. It can be considered as an extension of this work. We would even look upon recognising characters at a later stage.

6. References

(1) Ayushi Dalmia's Handwritten Digit Recognition using K Nearest Neighbour:: https://researchweb.iiit.ac.in/~ayushi.dalmia/reports/Hand%20Digit%20Recognition.pdf