Handwriting is one of the persistent means for communication used by human even today for recording data and handling information. Having a good handwriting skill is considered one of the most important aspects for a human in society. Handwriting skills not only allow people to record but narrate their ideas to the audiences.

Handwriting recognition and detection is considered one of the important applications of Neural network. Detecting and recognizing characters and numbers allows handwritten data to be digitalised. Newer technologies like PDA (Personal Digital Assistants) allows day-to-day life of humans to be easier. Many industries have developed neural engines and methods to evaluate different patterns in many different languages.

There are two different types of handwriting detection available one is in off-line and on-line. On-line detection systems are mainly used on the real time interactive systems like touch screen devices personal assistants and keyboard of touch screen mobiles. Different techniques are used for finding the character entered in an on-line mode. Analysing the patterns in the data and finding the strokes are the way for recognizing the character. When using a touch pen, the x and y axis of the point where the pen is touch and moved are analysed to find the characters. Cursive way of writing one of the handwriting methods that people use for quality writing. The data requirements for an average cursively written word are typically sampled at 100 samples per second and in the off-line case, a few-hundred kilo-bytes, typically sampled at 300 dots per-inch. Recognition methods analyse the key points that the pen moved faster and where the pen moves slower are identified and plotted to get the exact characters in the parts. Amount of time required to recognize a character when the number strokes increase. Post hoc editing, slips of pen and letter omission can greatly complicate the task of recognition. Three statistical approaches are used for recognition in off-line mode explicit, implicit and Markov method.

Off-line processing of data is the spatial issue of locating and registering the appropriate text. Converting the image in to a greyscale image, then removing the extra noise in the image to the additional details in the image allows the recognition process easier and much smoother.

OCR is the recognition process used to recognises characters in digital images. ICR (Intelligent Character Recognition) is the process for recognizing handprint data. De-skew, Despeckle, Binarization, Line removal, Layout analysis or “zoning”, Line and word detection, Script recognition, Character isolation or “segmentation” and Normalization are steps involved in the pre-processing state of OCR.

REFERENCES

[1]. R. Plamondon, S.N. Srihari (IEEE Transactions on Pattern Analysis and Machine Intelligence (Volume: 22, Issue: 1, January 2000)

Online and off-line handwriting recognition: a comprehensive survey, Available at

[Online and off-line handwriting recognition: a comprehensive survey | IEEE Journals & Magazine | IEEE Xplore](https://ieeexplore.ieee.org/abstract/document/824821)

[2]. Hanen Akouaydi, Sourour Njah, Adel M. Alimi (Proceedings Volume 10341, Ninth International Conference on Machine Vision (ICMV 2016))

Android application for handwriting segmentation using PerTOHS theory, Available at

[Android application for handwriting segmentation using PerTOHS theory (spiedigitallibrary.org)](https://www.spiedigitallibrary.org/conference-proceedings-of-spie/10341/103410F/Android-application-for-handwriting-segmentation-using-PerTOHS-theory/10.1117/12.2269059.short?SSO=1)

[3]. T.R. Indhu; V. Vidya; V.K. Bhadran (2015 Fifth International Conference on Advances in Computing and Communications (ICACC))

Multilingual Online Handwriting Recognition System: An Android App, Available at

[Multilingual Online Handwriting Recognition System: An Android App | IEEE Conference Publication | IEEE Xplore](https://ieeexplore.ieee.org/abstract/document/7433770)