Project : An Optical Character Recognition of Hand written English letters using Artificial Neural Network (OCR) .

Project idea

Humans can understand the contents of an image simply by looking. We perceive the text on the image as text and can read it.

Computers don't work the same way. They need something more concrete, organized in a way they can understand.

This is where Optical Character Recognition (OCR) kicks in. Whether it's recognition of car plates from a camera, or hand-written documents that should be converted into a digital copy, this technique is very useful. While it's not always perfect, it's very convenient and makes it a lot easier and faster for some people to do their jobs.

In this article, we will delve into the depth of Optical Character Recognition and its application areas. We will also build a simple script in Python that will help us detect characters from images and expose this through a Flask application for a more convenient interaction medium .

OCR :

Optical Character Recognition involves the detection of text content on images and translation of the images to encoded text that the computer can easily understand. An image containing text is scanned and analyzed in order to identify the characters in it. Upon identification, the character is converted to machine-encoded text.

How is it really achieved? To us, text on an image is easily discernible and we are able to detect characters and read the text, but to a computer, it is all a series of dots.

The image is first scanned and the text and graphics elements are converted into a bitmap, which is essentially a matrix of black and white dots. The image is then pre-processed where the brightness and contrast are adjusted to enhance the accuracy of the process.

The image is now split into zones identifying the areas of interest such as where the images or text are and this helps kickoff the extraction process. The areas containing text can now be broken down further into lines and words and characters and now the software is able to match the characters through comparison and various detection algorithms. The final result is the text in the image that we're given.

The process may not be 100% accurate and might need human intervention to correct some elements that were not scanned correctly. Error correction can also be achieved using a dictionary or even Natural Language Processing (NLP).

The output can now be converted to other mediums such as word documents, PDFs, or even audio content through text-to-speech technologies.

Previously, digitization of documents was achieved by manually typing the text on the computer. Through OCR, this process is made easier as the document can be scanned, processed and the text extracted and stored in an editable form such as a word document.

If you have a document scanner on your phone, such as Adobe Scan, you have probably encountered OCR technology in use.

Airports can also use OCR to automate the process of passport recognition and extraction of information from them.

Other uses of OCR include automation of data entry processes, detection, and recognition of car number plates.

Similar Applications :

Microsoft oneNote OCR-

Simple OCR-

-Photo scan

(a9t9) freeOCR windows app-

Capture2 Text-

Easy screen OCR-