

ABSTRACT

a. Understanding of the problem.

The issue of manual data entry in the majority of NGO's is burdensome, inefficient and unmanageable. Therefore, we intend to build an OCR software for handwriting recognition. OCR is Optical Character Recognition and is the electronic translation of handwritten text into machine-editable text. We are inclined to develop a software which will allow to set up different types of forms in the system. The OCR software should be competent enough to recognise the handwritten-text.

c.Reason for choosing this problem.

As the saying goes, "A Perfectionist Always Tries To Improve Things." So, are we. We, the team, "Endeavourers" are passionate, energetic and looking forward to accept such an active & fascinating challenge. We want to expand our horizons by inculcating new skills within us. The OCR Problem Statement is distinctive and unique from others in terms of processing efficiency. OCR encompasses a wide variety of applications in different organizations.

a. Previous projects undertaken:

- Transform Maharashtra.....

- Developed a website for Highway Help.

- Developed a website("eKISAN") for farmers for selling things without any middleman

- Developing a website Online Grocery Shopping.

b. Strengths of team:

"I Can't, but We Can" is the famous quote. The strength of our team lies in our hard work, endurance, our honesty and perseverance to achieve our target. Our goals are crystal-clear with each member assigned a defined role. Our team possess qualities such as open & clear communication, effective decision making, balanced participation and positive atmosphere. Our team is multifaceted. Each individual is well-versed in their respective domain. Our team members holds excellent technical skills like Harsha is good at object oriented programming and MS-SQL, Aarti is a top-notch at C programming language coding & java, Girisha is well-versed at python, graphics in python, Aishwarya is best at scripting languages, database(MySQL) and WordPress.

c. Achievements of team:

Aarti: 2nd runner up in Intra College Poster Making Competition

Girisha: 2nd runner up in Inter College Poster Making Competition

Aishwarya:

Internship at ADUERA as an SEO Specialist.

Recipient of "Dhirubhai Ambani Reliance Foundation Scholarship" after HSC.

Interschool Elocution and Essay Writing Competition

Recipient of "Best Student Award from secondary section" in school

Harsha: Advance Java Application Development Certification

Internship at API

1st in "One Act Play"

d. Personal Motivation

We often get to know OCR related problems from some or the other. For example: Bank employees face this problem everyday as they need to manually enter the data/information written on Pay In Slips, Deposit slips, cheques, etc. Even the employees at Courier Services and Postal Services have to enter the handwritten data of the sender and receiver in database. So, the common struggle of manually entering the data is troublesome for both and many more such organizations because the difficulty lies in understanding the handwriting as the handwriting differs from person to person. Therefore, it becomes a tedious task for the employees as it is time consuming.

How do you think u can benefit by solving this problem

NGO's manually need not add these data entries into data systems.

Everything will be stored physically so there is no worry of misplacing any record or data

Also if a particular record NGO's want then they can easily find that in the database

Preprocessing -

Grey scale conversion

Filtering.

Binarizing.

Noise - gaussian.

Brightness.

Geometric Transformation.

<https://www.leadtools.com/help/leadtools/v19m/dh/to/fo-topics-preprocessingimagesforocr.html>

We can use leadtools (but supported by winRT and java and not sure about python).

Scanned vs picture.

APPROACH:

We have planned to divide our **proposed** solution for given problem statement into 6 parts :

1. Scanning of form.
2. Pre-processing of scanned image.
3. Segmentation of image using opencv.
4. Recognition of handwritten character using Tensor Flow.
5. Feeding the recognized text back into form.

Description :

The handwritten form is scanned.

The next step is Pre-processing of image which includes:

- Gray conversion.
- Filtering.
- Noise Removal.
- Binarizing.
- Brightness.
- Geometric Transformation.

It would be done by using **Leadtools**(an open source toolkit).

The third step is Segmentation. Segmentation subdivides an image into its constituent regions or objects. Thus, it is used for retrieval of specific information from the entire image which can be line, word or character.

It would be done by using **OpenCV** library in **python**.

The next step is Optical Character recognition. It is used to convert handwritten text into digitized / searchable text by using **Tensor Flow** which using MNIST dataset for training.

The last step is to feed the recognized text back into form here, the characters recognized above are fed into exact form fields.

Representation -

Platform - PyCharm for python.

Language - python.

Libraries - OpenCV, Tensor Flow.

Database - MySQL, ,MNIST dataset.

External Tools - leadtools.