**Mini project Synopsis on**

**Optical Character Recognition (OCR)**

Under taken by

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**Objective:**

* To convert a handwritten image to machine-editable text.

**Problem statement:**

* Optical recognition of a handwritten document and converting it into text. We choose this problem statement because many people face problem in understanding a handwritten document due to different ways of the handwriting of people.
* In this fastmoving world where the markets are getting larger and world is getting smaller, fast access to their information is must. To arrange or manage the hard copies of a written document has been a type of deadly so far. Furthermore, to keep those at a secure place even necessitate a lot of awareness.
* In these scenarios an Optical Character Recognition (OCR) is used. It’s a process that translates images of handwritten texts, pictures of characters into machine-editable text.

**Data collection and preprocessing:**

* IAM Dataset - <http://www.fki.inf.unibe.ch/databases/iam-handwriting-database>
* Convert the sample images into required size of (128, 32) and normalize to grayscale
* Increase the data set by stretching the images randomly.

**Machine Learning model used:**

* The model used is Recurrent Neural Network (RNN) it is a class of artificial neural networks.
* This makes the applicable to tasks such as handwriting recognition or speech recognition.
* It is the first algorithm that remembers it’s input, due to an internal memory, which makes it perfectly suited for machine learning problems that involve sequential data.
* RNN cycles through a loop when it makes a decision, it considers the current input and also what is has learned from the inputs it received previously.

**Conclusion and Future scope:**

* This model can recognize the characters in a single word, the next step would be to be able to digitize entire scanned documents.
* Optical Character Recognition will be a great help in areas such as better Number Plate Detection in cases of Traffic Violations, make more accurate textual versions of printed documents, etc
* We could also incorporate Machine Learning to intelligently predict the characters in the image or target the text one word at a time instead of one character at a time.