OPTICAL CHARACTER RECOGNITION FOR VISUALLY IMPARED PEOPLE USING TENSOR FLOW.

1.Scope

OCR model is conversion of images of typed or printed text into machine-encoded text, whether from a scanned document, a photo of a document, a scene-photo (for example the text on signs and billboards in a landscape photo) .OCR is a field of research in pattern recognition, artificial intelligence and computer vision.

The scope of our project Optical Character Recognition is to provide an efficient and enhanced software tool for the users to perform Document Image Analysis, document processing by reading and recognizing the characters in research, academic, governmental, business organizations and for blind people that are having large pool of documented, scanned images. Irrespective of the size of documents and the type of characters in documents, the product is recognizing them, searching them and processing them faster according to the needs of the environment.

The model takes english text scanned image as an input. This image is analysed in order to identify each letter or digit. When a character is recognised it converts it into braille language as well as in english language. The output is in the form of well recognised and understandable document.

2.Technology Stack

- Tensorflow-TensorFlow is a free and open-source software library for dataflow and differentiable programming across a range of tasks. It is a symbolic math library, and is also used for machine learning applications such as neural networks.It is used for training the model.
- Open CV- Open source computer vision is a library of programming functions mainly aimed at real-time computer vision. In this project it is used for image processing.
- Python 3.7- Python is an interpreted, high-level, general-purpose programming language.It is the programming language used in this project with its basic libraries.
- Azure jupyter notebook- It is a web-based interactive computational environment for creating Jupyter notebook documents.The source code of OCR model will be executed in this.
- Numpy-is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays.

3. Benefits for environment

- Paperless revolution- The project troes the documents in softcopy and hence the paper work is reduced.
- Environment friendly- Due to reduction in use of paper, deforestation is also reduced.
- Reduced cost- Besides helping organisation in cutting down the cost of hiring manpower for data extraction, OCR also helps in reducing cost like printing,copying, shipping charge, etc

4.Benefits for society

- Retyping-It reduces the work of retyping the text as it can be directly scanned and converted to document.
- Speedy digital searches -By converting scanned text into a word processing file, OCR lets you search through documents using keywords or phrases.
- Typing new text-The image of a document to function like real text, where you can add new paragraphs, copy and paste, edit out an old reference.
- Saving space -The documents can be converted to pdfs saving the space.
- Time management-Manual data entry demands hours,efforts and sanity with time dedicated for for document creation and endless forms.
- Accessibility-For the visual impaired people, OCR software can help turn books, magazines and other printed documents into accessible files that they can get printed into Braille language.

5.Applications-

- The project recognises scanned image and converts it into english text document. The document would be precise and more accurate.
- Assistive technology for blind and visually impaired users- The project converts the scanned image into braille language.This is helpful for visually impared people.They can easily understand and interpret it.

Project Members-

1. Anuja Velaskar-16102042
2. Nidhi Munavalli-16102049
3. Apurva Waingankar-16102050