ChatGPT

OCR Web App – Text Extraction from Images using EasyOCR & Flask

This project is a web-based OCR (Optical Character Recognition) application built using **Python**, **Flask**, and **EasyOCR**. It allows users to upload an image (JPEG, PNG, etc.) containing printed or handwritten text and extracts that text using an advanced deep-learning OCR model.

🔍 What is OCR?

Optical Character Recognition (OCR) is a technology that detects and extracts text from images such as scanned documents, photos of signs, handwritten notes, and more. OCR bridges the gap between image-based and text-based information.

📚 Tesseract OCR vs EasyOCR – A Brief Theory

Tesseract OCR:

- Developed by HP and maintained by Google.
- Uses traditional image processing + LSTM (Long Short-Term Memory) neural networks.
- Best for clean documents, scanned text, and printed text.
- Supports over 100 languages.
- **Needs good image preprocessing** for accurate results (grayscale, thresholding, etc.).

EasyOCR:

- Built using deep learning (PyTorch-based).
- Supports over 80 languages including non-Latin scripts.
- Works better out-of-the-box for:
- Handwritten text
- Artistic/graphic fonts
- Poor lighting or contrast
- No complex preprocessing needed.

> 🔍 **This app uses EasyOCR for improved recognition of stylized and real-world images.**

💻 Features

- Upload image files via a browser

- Extract text using **EasyOCR**
- Displays extracted text on the same page
- Automatically saves uploaded images
- Lightweight Flask backend
- Easy to deploy and extend

Folder Structure

```
ocr-web-app/
├── main.py                # Flask app
├── templates/
│   └── index.html         # Web UI
├── uploads/               # Temporary image uploads
├── static/                # (optional) CSS or JS files
├── output/                # (optional) extracted text output
└── README.md              # Documentation
```

⚙ Installation Guide

Step 1: Clone the Repository

```
git clone https://github.com/your-username/ocr-web-app.git
cd ocr-web-app
```

Step 2: Install Required Libraries

Option A: Using `requirements.txt`

```
pip install -r requirements.txt
```

Option B: Manual Installation

```
pip install flask easyocr pillow
```

Step 3: Run the Flask App

```
python main.py
```

Open your browser and go to:

```
http://127.0.0.1:5000/
```

How It Works

1. User uploads an image via the web interface.
2. The image is saved to the `uploads/` directory.
3. **EasyOCR** scans the image and extracts visible text using deep learning.
4. Extracted text is shown below the image.

Sample Output

Uploaded Image:

`example_1.png`

Extracted Text:

```
DATA
VISION
BIG
ANALYSIS
SCIENCE
```

Future Improvements

- Add support for Tesseract OCR as an option
- Save extracted text to PDF/Word
- Add multiple language support
- Deploy to Heroku or Render

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Acknowledgements

- EasyOCR
- Flask
- Tesseract OCR