Image Background Removal Web Application

Overview

This project is a web application that allows users to remove the background from images using advanced machine learning techniques. The application is built using Flask, a lightweight Python web framework, and leverages pre-trained deep learning models for precise background removal.

Features

-- Image Upload: Users can upload images directly through the web interface.

-- Background Removal: Advanced machine learning models like DeepLab are used to remove the image background.

-- Before and After View: The web app displays both the original and processed images side-by-side for easy comparison.

-- User-Friendly Interface: The web-based UI is simple, intuitive, and responsive.

Technologies Used

-- Flask: A Python web framework used to build and serve the web application.

-- PyTorch: A deep learning framework used to run the pre-trained models for background removal.

-- rembg: A Python library that provides easy-to-use functions for image background removal.

-- PIL (Pillow): A Python Imaging Library used for image processing.

Installation

Prerequisites

-- Python 3.8+

-- Anaconda (recommended)

Steps

1. Clone the Repository:

In [8]:
```
#git clone <repository-url>
#cd <repository-directory>
```

1. Create and Activate Anaconda Environment:

In [9]:
```
#conda create -n flask-app python=3.8
#conda activate flask-app
```

1. Install Dependencies:

In [10]:
```
#pip install flask rembg torch torchvision pillow
```

1. Run the Application:

In [11]:
```
#python app.py
```

Usage

Open a web browser and navigate to http://127.0.0.1:5000. Upload an image using the provided form. Click the "Remove Background" button to process the image. The original and processed images will be displayed side-by-side.

Future Enhancements

-- Custom Models: Train custom deep learning models for more accurate background removal.

-- Batch Processing: Enable users to upload and process multiple images simultaneously.

--RESTful API: Extend the app to provide an API for programmatic access.

Conclusion

This web application demonstrates the practical use of machine learning in computer vision by allowing users to quickly and easily remove backgrounds from their images. It showcases the ability to build user-friendly applications using modern web frameworks and machine learning libraries.

In [ ]:
```
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