AdSnap: AI-Powered Ad Banner Generator – User Manual

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1. Project Overview

This project automates advertisement banner generation, by implementing a modular AI powered advertisement banner generation pipeline. This model transforms raw inputs like product image, tone input, product name into visually coherent and lightweight banners.

Our modular architecture provides flexibility and interpretability for the entire pipeline – from slogan generation to dynamic color contrast, font sizing, textbox selection and background color analysis.

2. Requirements

Python version: Python 3.10+

Required Libraries (install using pip):
- openai

- datasets
- python-dotenv
- opencv-python
- matplotlib
- numpy
- pillow

Command: pip install openai python-dotenv datasets pillow opencv-python matplotlib numpy

Or paste this in notebook: !pip install openai python-dotenv datasets pillow opencv-python matplotlib numpy

3. Setup Instructions

1. Clone or download the project files.

2. Setup OpenAI API

    - Generate a OpenAI key
    - Create a `.env` file in the root folder
    - Add your OpenAI key like this:

OPENAI_API_KEY=sk-xxxxxx

The notebook will automatically load this key using the code added. This ensures your key is safe.

Do not paste your key directly in the notebook.

3. Launch Jupyter Notebook

```bash

jupyter notebook AdSnap.ipynb

```

4. Run all cells in order:

- It will load the `CGL-Dataset-v2` from HuggingFace

- Extract bounding box annotations

- Assign product names and tones manually (for first 50 entries)

- Generate 3 slogans using GPT-3.5, select the best one

- Place slogan in the largest box

- Decides text color based on background

- Background color for CTA is based on the bottom 15% color of poster

- Adds CTA banner at the bottom

4. Example Outputs

Each final image includes:

- Catchy tone-aligned slogan rendered in largest bounding box

- CTA banner

- contrast-aware text rendering

5. Troubleshooting

Problem	Solution
OpenAI error	Check `.env` file and API key
Dataset download fails	Ensure you have internet connection. It is a huge dataset and might take a lot of time and stable internet. Alternatively, x`you can skip the cell and only use the streaming version in the next cell