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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

(Artificial Intelligence and Machine Learning)

<u>USER - REPORT</u>

"AI – MEME GENERATOR"

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1. Introduction

The AI Meme Generator is an intelligent application designed to automatically create meme captions using a trained LSTM model and render the final meme with a selected image. The system allows users to upload an image, generate text, enhance it for readability and humor, and download the completed meme.

This user document guides you through installation, setup, and usage.

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2. System Requirements

2.1 Hardware Requirements

- Minimum 4 GB RAM (8 GB recommended)

- Dual-core processor or higher

- At least 500 MB free storage

- Stable internet connection (for online model hosting, if used)

2.2 Software Requirements

- Windows 10/11 or Linux-based OS

- Python 3.9+

- Pip package manager

- Required Python libraries from requirements.txt

- Streamlit framework for running the UI

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3. Installation Guide

Step 1 — Download the Project

Download or extract the project folder:

ai-meme-creator/

Step 2 — Create a Virtual Environment

Open a terminal inside the project folder:

```
python -m venv venv
```

Step 3 — Activate the Virtual Environment

Windows:

```
venv\Scripts\activate
```

Linux/Mac:

```
source venv/bin/activate
```

Step 4 — Install Dependencies

Install the required packages:

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

Step 5 — Ensure Model Files Exist

Inside:

```
ai-meme-creator/models/
```

You must have:

- meme_lstm.h5

- tokenizer.pkl

(If missing, the app will not run.)

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4. Running the Application

Open the terminal in the project directory and run:

```
streamlit run app/app.py
```

OR, if Streamlit is not recognized:

```
python -m streamlit run app/app.py
```

Streamlit will display a local URL such as:

http://localhost:8501

Click the link to open the app in your browser.

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5. Using the Application

5.1 Home Screen

You will see:

- App title

- Input options

- Image upload panel

- Buttons for caption generation

5.2 Uploading an Image

Click **"Upload Image"**.
Supported formats:

- JPG

- PNG

- JPEG

The image preview appears on the screen.

5.3 Generating a Caption

Click **"Generate Caption"** to:

- Pass the image placeholder into the LSTM model

- Produce a meme-style caption

The generated caption will appear immediately.

5.4 Enhancing the Caption

Click **"Enhance Caption"** if available.
This step:

- Improves grammar

- Adds humor

- Increases meme clarity

5.5 Rendering the Meme

After caption selection, click **"Generate Meme"**.

The system:

- Opens the uploaded image

- Places the caption on the image

- Produces the final meme

5.6 Downloading the Meme

Click **"Download Meme"** to save it.

The file will be saved to:

ai-meme-creator/generated/

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6. Features Overview

- Automatic caption generation using LSTM

- Optional caption enhancement module

- Support for custom user images

- Clean Streamlit-based user interface

- Real-time meme rendering using Pillow

- Meme download option

- Pretrained tokenizer for text processing

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7. Troubleshooting

Problem 1: Streamlit Not Recognized

Solution:

pip install streamlit

python -m streamlit run app/app.py

Problem 2: FileNotFoundError: meme_lstm.h5

Solution:

- Make sure the models folder exists

- Add the trained model file

- If missing, run the training notebook

Problem 3: App Opens Without UI

Make sure you run:

streamlit run app/app.py

NOT:

python app.py

Problem 4: Caption Not Generating

Causes:

- Model not loaded

- Tokenizer missing

- Improper file format

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8. User Responsibilities

- Upload appropriate images

- Use captions ethically and responsibly

- Do not create offensive or harmful memes

- Maintain the model files safely for the system to work

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9. Support

For help or customization, contact the project administrator – eng23am1004@dsu.edu.in

or refer to developer documentation.

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10. Conclusion

The AI Meme Generator system offers a smooth and user-friendly experience for generating high-quality memes. With automatic captioning and image rendering, even beginners can create engaging memes effortlessly.