

# Leepookie Meme Reactor (AI Gesture → Meme Player)

A real-time gesture-controlled meme generator using **MediaPipe Holistic**, a **machine-learning gesture classifier**, and **OpenCV**.

When you perform a gesture in front of your webcam, the app predicts the gesture and instantly plays the matching meme GIF.

Perfect for VS Code demos, TikTok/Reels videos, and coding fun with friends.

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## ✨ Features

- Real-time webcam tracking (face + hands)
  - ML-trained gesture classifier (Random Forest)
  - Smooth, stable predictions using majority-vote filtering
  - Animated GIF playback
  - Easy dataset capture and model retraining
  - Fully customizable gesture → meme mapping
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## 🐘 Project Structure

```
MemeProject/
|
├── data_capture.py      # Capture gesture samples
├── train_model.py       # Train RandomForest model
├── build_dataset.py     # (Optional) Build dataset from .npy files
└── main.py              # Final real-time meme reactor

|
├── gesture_model.pkl   # Model generated after training
└── dataset.npz          # Combined dataset

|
└── dataset/             # Raw .npy per-sample files
    ├── baby/
    ├── dog/
    ├── lebron/
    ├── mj/
    ├── rabbit/
    └── shaq/
```

```
|   └─ memes/ (optional)      # Or keep memes in project root  
|       └─ niche_baby.jpg  
|       └─ lebron_james.gif  
|       └─ mj.gif  
|       └─ rabbit.gif  
|       └─ shaq.gif  
|       └─ dog.gif
```

## Supported Gestures

Gesture	Meaning	Meme Triggered
Hand on mouth	"Baby" expression	niche_baby.jpg
Hand on head	"Lebron frustrated"	lebron_james.gif
T-pose with hands	Timeout gesture	shaq.gif
Pointing / holding	Rabbit meme	rabbit.gif
Crossed arms	MJ "Stop it" meme	mj.gif
No gesture (default)	Idle	dog.gif

## Installation

### 1. Install dependencies

```
pip install mediapipe opencv-python numpy scikit-learn joblib imageio pillow
```

## Step 1: Capture Gesture Samples

Run:

```
python data_capture.py
```

Press these keys while performing each gesture:

```
0 → dog (default)  
1 → baby (hand on mouth)  
2 → lebron (hand on head)  
3 → shaq (T pose)  
4 → rabbit (pointing/holding)  
5 → mj (crossed arms)
```

Each press saves one sample.

► Recommended: **40+ samples per gesture** for good accuracy.

After collecting samples, press:

```
c → combine into dataset.npz
```

## Step 2: Train the Model

Run:

```
python train_model.py
```

This will: - load dataset.npz - train a RandomForest classifier - evaluate accuracy - save  
`gesture_model.pkl`

## Step 3: Run the Meme Reactor

```
python main.py
```

You will see two windows: - **leepookie cam** → webcam view - **leepookie reaction** → meme GIF based on prediction

Press `q` to quit.

## Optional: Rebuild Dataset Manually

If you added `.npy` files manually, run:

```
python build_dataset.py
```

This regenerates `dataset.npz` without recapturing.

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## Troubleshooting

### Model is confused / misdetecting

- Ensure 30–50 samples **per gesture**
- Vary lighting, distance, and angle while capturing
- Retrain using `train_model.py`

### GIFs not animating

`imageio` is required.

```
pip install imageio
```

### Webcam not opening

If using VS Code, run from a **local terminal**, not inside a remote environment.

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## Tips for Better Accuracy

- Keep your face centered during capture
- Avoid harsh backlight
- Move slightly between each saved sample
- Capture at different distances
- Add more gestures easily by updating labels and retraining

## Customize Your Own Gestures

Add a new folder under `dataset/`, capture `.npy` samples, rebuild dataset, retrain, and map it to any meme.

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## Credits

Created by **Nithin** — gesture-based meme reactor built with ML and MediaPipe.

Friends are free to modify, break, remix, and create meme chaos.

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## ⭐ If you share this on GitHub

Consider adding project tags:

```
mediapipe, opencv, machine-learning, gestures, cv2, meme-generator, python-project
```

## 🐻 Enjoy creating chaos with gestures!