MoodMirror AI – Smart Mirror for Mood & Motivation

Reflect How You Feel, Uplift How You Live

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The Problem

Many people start their mornings feeling tired, stressed, or unmotivated. Most technology focuses on information, not inspiration. There's no easy way to visually reflect your mood and receive something encouraging in return — until now.

The Solution

MoodMirror AI uses computer vision to recognize a person's facial emotion in real time and respond with positive affirmations or mood-matching music that helps boost or balance emotions. It's like having a motivational coach built into your mirror — smart, supportive, and personal.

Technical Approach

Technique	Emotion recognition + real-time feedback
Model	YOLOv8 for face detection + FER2013 CNN for emotion classification
Frameworks	PyTorch, OpenCV, Gradio/Streamlit
Optional API	Spotify API for music playback

■ Requirements

The following Python libraries and tools are required for the MoodMirror AI project:

torch	Deep learning framework for model training
torchvision	Image processing utilities for PyTorch
ultralytics	YOLOv8 implementation package
opencv-python	Real-time computer vision library
numpy	Numerical operations and matrix handling
pandas	Data manipulation and analysis
matplotlib	Data visualization library
gradio	Web-based interface for AI demos
streamlit	Interactive user interface for deployment

■ Dataset Information

Dataset: FER2013 (Facial Expression Recognition 2013)
• Source: Kaggle / Roboflow
• Type: Facial emotion recognition dataset

• Total Images: ~35,000 grayscale facial images
• Classes: Angry, Disgust, Fear, Happy, Sad, Surprise, Neutral
• Format: 48x48 pixel grayscale
• License: Public educational use

Preparation Steps:
1. Resize all images to (224x224).
2. Split data into 80/10/10 for training, validation, and testing.
3. Apply augmentations such as flips, brightness, and rotations for better generalization.

Data Plan

Dataset: FER2013 (35K+ labeled facial images)
Labels: Happy, Sad, Angry, Surprised, Fearful, Disgusted, Neutral
Preparation: Resize, clean, and augment for balanced training
Source: Public dataset via Kaggle / Roboflow

System Pipeline

[Camera Input] → [YOLOv8 Face Detection] → [Emotion Recognition Model] →
[Affirmation / Music Response] → [Mirror Display Output]

Success Metrics

Metric	Target	Description
Accuracy	≥ 90%	Emotion detection performance
Latency	< 1 sec	Real-time feedback speed
User Rating	≥ 4/5	Positive user experience

Week-by-Week Plan

Week	Task	Milestone
10	Gather dataset & set up environment	Dataset ready
11	Train or fine-tune model	Model functional
12	Connect webcam + detection	Prototype live
13	Add affirmations / music	System integrated
14	Test, tune, document	Final version
15	Present project	Showcase day

Challenges & Backup Plans

• Low accuracy → Use pretrained model or augment data
• Slow performance → Lower image resolution
• API limits → Use offline playlists

• Mirror hardware unavailable → Simulate on laptop screen

Resources Needed

Compute: Google Colab GPU or Kaggle
Frameworks: PyTorch, OpenCV, Ultralytics, Hugging Face
Interface: Gradio or Streamlit
APIs: Spotify or local music player
Cost: $0–$10

Why It Matters

MoodMirror AI turns technology into a source of motivation and mindfulness. It’s not just about recognizing faces — it’s about recognizing feelings. Every morning, the mirror can remind you to breathe, smile, or start your day with positivity.