

# PoseMinute: Emotion-Guided Pose Photography with Real-Time Feedback in Flutter

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## ABSTRACT

This extended abstract presents *PoseMinute*, a mobile application developed in Flutter that enhances emotional self-expression in photography through real-time guidance based on body posture and facial orientation. Using Google ML Kit’s pose [1] and face detection [2] modules, the app enables users to express a selected emotion through physical alignment, thereby supporting intuitive and emotion-aware self-portraits. By eliminating the need for external equipment or professional guidance, *PoseMinute* empowers content creators, artists, and mindfulness practitioners to take emotionally expressive photos using only a smartphone. Core features include multimodal feedback (visual and audio), automatic photo capture, multilingual and theme customization, and personalized pose comparison using a reference image. Preliminary testing showed strong user engagement and a noticeable improvement in pose consistency and emotional clarity. Future development targets include emotion-specific pose recommendation engines, artistic post-processing filters, cloud-based storage, and support for iOS platforms.

## KEYWORDS

Flutter, mobile application, pose detection, emotion-guided photography, ML Kit, real-time feedback, self-expression, human-computer interaction

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## 1 INTRODUCTION

The intersection between computer vision and self-expression has led to the emergence of emotion-aware tools that support creativity, identity, and visual communication. As mobile photography continues to evolve, there remains a gap between what users intend to express emotionally and what their final photo captures. Current applications largely focus on filters, lighting, and post-editing, with

minimal real-time support for guiding users on how to pose or align their facial expressions.

*PoseMinute* addresses this gap by providing real-time posture and expression feedback based on an emotion chosen by the user. By analyzing pose keypoints [1] and facial orientation [2], the app offers actionable guidance—ensuring the resulting image aligns with the intended emotion.

## 2 CONTEXT

Many users—especially non-professionals—find it difficult to translate emotional intent into body language. Whether due to lack of confidence or posing experience, this gap often leads to unsatisfying self-portraits. While mirror-assisted or trial-and-error methods are common, they are time-consuming and lack consistency.

Recent advances in mobile-based detection systems such as ML Kit [1, 2] allow efficient real-time analysis on-device. Flutter [3], a UI toolkit by Google, provides a performant cross-platform environment suitable for implementing interactive and responsive mobile applications. Additionally, *PoseMinute* builds upon concepts discussed in HCI literature on emotion-aware pose systems [4], adapting them to a mobile-first, real-time use case.

## 3 SYSTEM DESCRIPTION

*PoseMinute* is built entirely in Flutter [3] and leverages Google ML Kit’s Pose Detection and Face Detection APIs. The user journey consists of selecting an emotion (e.g., joy, elegance, confidence), followed by a real-time guided session in which the camera feed is analyzed frame-by-frame.

Key functionalities include:

- **Native pose and face detection:** Detection is handled on-device using ML Kit APIs [1, 2], integrated into the Flutter app via platform channels, eliminating the need for external services.
- **Multimodal real-time feedback:** Users receive both visual cues (overlays and angle indicators) and auditory prompts to correct posture or facial direction.
- **Automated photo capture:** Once alignment is considered “adequate” based on thresholded angular similarity to the target, the app automatically captures between 1–5 photos, depending on user preference.
- **Custom pose comparison:** Advanced users may upload a reference image. The system extracts landmarks and compares the user’s live pose to it, offering targeted suggestions.
- **Personal gallery with favorites:** Captured photos are stored locally with metadata, and users can mark favorites or review image feedback history.

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- **Personalization:** Includes language options (e.g., Romanian, English, Spanish) and interface theme toggles for accessibility and visual comfort.

Testing was conducted on various Android devices including mid-range smartphones (e.g., Pixel 5a, Samsung A52). Frame analysis, landmark extraction, and feedback rendering all ran in real-time without noticeable delay or dropped frames.

## 4 CONCLUSION

*PoseMinute* demonstrates the potential of real-time AI-driven guidance in democratizing expressive photography. It transforms posing into an interactive, guided experience, bridging the gap between emotional intent and visual outcome. Unlike traditional timer-based or post-edited selfies, this app gives users control and confidence during the photo-taking process, especially in solo photography contexts.

## 5 FUTURE PERSPECTIVES

Future work focuses on three main areas: personalization, reach, and intelligence.

- **Emotion-specific pose recommendations:** Training an ML model or using curated datasets to provide emotion-specific body and face cues.

- **iOS compatibility:** Porting the app using Flutter's iOS support to reach a broader user base.
- **Cloud features:** Integrating Firebase or Google Drive for optional cloud photo backups and cross-device sync.
- **Post-processing filters:** Real-time photo enhancements such as contrast tuning, vintage blur, or brightness normalization to improve photo aesthetics.
- **Pose model personalization:** Allowing users to build a personalized pose dataset to track improvements or preferred aesthetics over time.

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