e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:04/April-2024 Impact Factor- 7.868 www.irjmets.com

EMODETECT: REAL-TIME EMOTION RECOGNITION ANDROID APP

Gautam Dandgawhal[*1], Ashish Shinde[*2], Tejas Sonawane[*3], Piyush Shimpi[*4], Suhayb Khan[*5]

[*1,2,3,4,5]Jawahar Education Society's Institute Of Technology Nashik, Maharashtra, India.

ABSTRACT

The "EmoDetect" Android application leverages Convolutional Neural Networks (CNNs) powered by Tensor Flow to detect emotions in real-time from both images and live video streams. This innovative app empowers users to explore the emotional dimensions of human faces, making it a valuable tool for a wide range of applications, from personal expression analysis to mental health support.

Users can seamlessly access their device's camera, and the app processes each frame, accurately identifying emotions like happiness, sadness, anger, and more. The deep learning model is trained on extensive emotion-labelled facial datasets, ensuring robust and accurate predictions, This android app excels in real-time emotion recognition, offering a versatile interface that overlays detected emotions onto live camera previews

Keywords: Sentiment, Psychological, Analysis, Android).

I. INTRODUCTION

In the contemporary landscape of technology and human interaction, our Android application embarks on an ambitious journey to decode the intricate language of emotions. Harnessing the potency of Convolutional Neural Networks (CNNs) developed with TensorFlow, our Android app presents a compelling solution for real-time emotion analysis, working seamlessly with both images and live video streams. This project seeks to unravel the enigmatic world of emotions and provide a versatile platform for various applications, from user experience research to mental health support.

Our Android app grants users access to their device's camera, offering an intuitive means to capture and scrutinize human emotions, whether it's the exuberance of joy, the profundity of sorrow, or the intensity of anger. The underlying deep learning model has undergone rigorous training on extensive datasets encompassing labeled facial expressions, guaranteeing the precision and adaptability required to excel in a multitude of scenarios.

Developed using Java in Android Studio, our application effortlessly integrates into users' lives. It enables them to explore the emotional spectrum by overlaying detected emotions onto live camera previews and offers the convenience of image emotion analysis. Upholding user privacy, we ensure transparent, consent-based camera access while optimising performance through a lightweight TensorFlow Lite model, thereby ensuring a seamless experience on mobile devices. This convergence of computer vision and emotional intelligence embodies the transformative power to reshape our understanding of human emotions in the digital age.

II. METHODOLOGY

Agile methodology emphasizes iterative development, collaboration, and flexibility, making it well-suited for projects like the development of an Android app for emotion detection. Here's how Agile principles and practices has been applied to the project:

Scrum Framework:

Organize the development process into sprints, typically two to four weeks long.

Conduct sprint planning meetings at the beginning of each sprint to define goals, select tasks, and estimate effort. Hold daily stand-up meetings to discuss progress, identify obstacles, and adjust plans accordingly.

Conduct sprint review meetings at the end of each sprint to review accomplishments and gather feedback.

User Stories and Product Backlog:

Define user stories representing specific features or functionalities from the perspective of end-users.

Maintain a product backlog containing a prioritized list of user stories, features, and enhancements.

Break down user stories into smaller, manageable tasks or sub-tasks, known as backlog items.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:04/April-2024 Impact Factor- 7.868 www.irjmets.com

Continuous Integration and Delivery:

Implement continuous integration practices to ensure that code changes are integrated frequently and tested automatically.

Use version control systems like Git to manage code changes and collaborate effectively within the development team.

Automate the build, testing, and deployment processes to streamline delivery and reduce manual overhead.

Iterative Development and Feedback:

Develop the app incrementally, focusing on delivering a working product with essential features in each iteration.

Gather feedback from stakeholders, users, and team members regularly to validate assumptions, prioritize requirements, and refine the product backlog.

Embrace change by adapting plans and priorities based on feedback and evolving requirements throughout the project lifecycle.

III. MODELING AND ANALYSIS

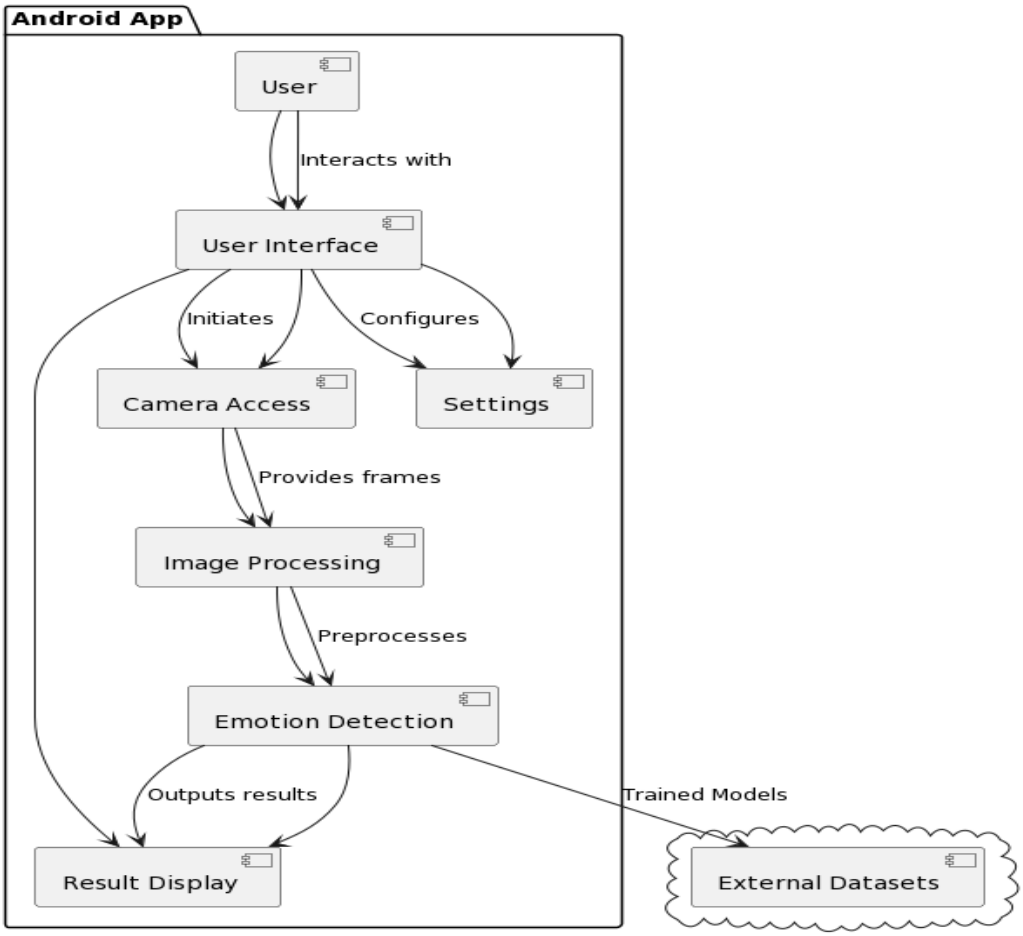

Figure 1: System Architecture.

The Mood Detection Android App is designed to analyze and interpret users' moods based on various inputs, such as facial expressions captured through the device's camera or user input. The app aims to enhance user experience by providing personalized content or suggestions based on their emotional state. The architecture of the app involves several key components that work cohesively to achieve accurate mood detection.

• User Interface (UI):

The UI component is the front end of the app where users interact with the system. It includes elements like the camera interface for facial expression capture and user input for mood-related information.

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:04/April-2024 Impact Factor- 7.868 www.irjmets.com

• Input Module:

The Input Module manages the collection of user data. It interfaces with the device's camera to capture facial expressions and may include additional input sources like text input or voice recognition for users to explicitly express their moods.

• Preprocessing Module:

The captured data undergoes preprocessing to enhance its quality and extract relevant features. Facial recognition algorithms may be applied to recognize key facial expressions, and other preprocessing techniques may be employed to normalize input data.

• Mood Detection Model:

This is the core of the app, where machine learning or deep learning models are implemented. These models analyze the preprocessed data and classify the user's mood into predefined categories (e.g., happy, sad, angry). The model is trained on a dataset that associates facial expressions with corresponding moods.

IV. RESULTS AND DISCUSSION

The project underscores the importance of privacy, consent, and user customization, ensuring that users have control over their data and the app's behavior. It's designed to provide a seamless experience on various Android devices, irrespective of the hardware specifications.

The journey from model training in Tensor Flow to real-time emotion recognition in a mobile app represents the convergence of cutting-edge technology with the profound subtleties of human emotions. Our project aspires to offer a valuable tool for researchers, developers, and end-users interested in the complex and captivating world of emotions. By bridging the domains of computer vision and emotional intelligence, we envision a future where understanding and empathizing with human emotions are not just aspirations but a readily accessible reality.

Table 1. Test cases for mood detection

Sr No	Use Case	Description	Actors	Assumptions	Result
1	Use Case 1	Check Cam	Camera	Camera should be in good condition	Pass
2	Use Case 2	Creation of Datasets	Datasets	Datasets should be created	Pass
3	Use Case 3	Trained images	Images	User should able to trained as many as images he/she wants	Pass
4	Use Case 4	Mood Identification	User	User mood should able to identify	Pass
5	Use Case 5	Prediction of links	User	Links should be predict to user	Pass
6	Use Case 6	System Output	System	System should give expected output	Pass

e-ISSN: 2582-5208
International Research Journal of Modernization in Engineering Technology and Science
(Peer-Reviewed, Open Access, Fully Refereed International Journal)
Volume:06/Issue:04/April-2024 Impact Factor- 7.868 www.irjmets.com

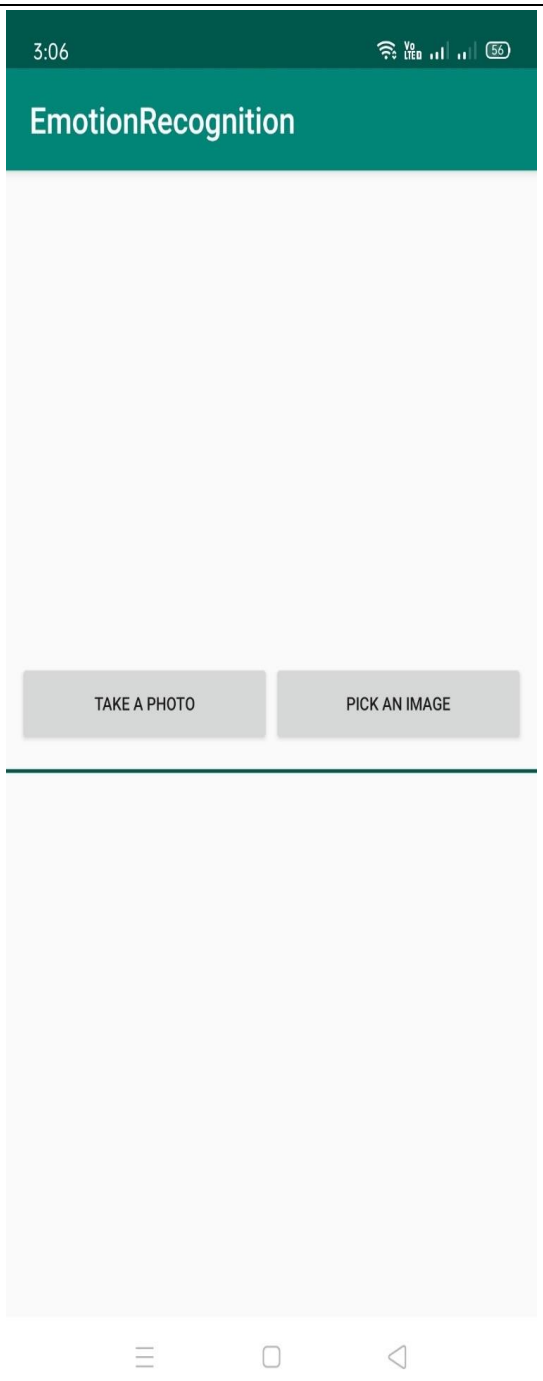

Figure 2: Gui of the app

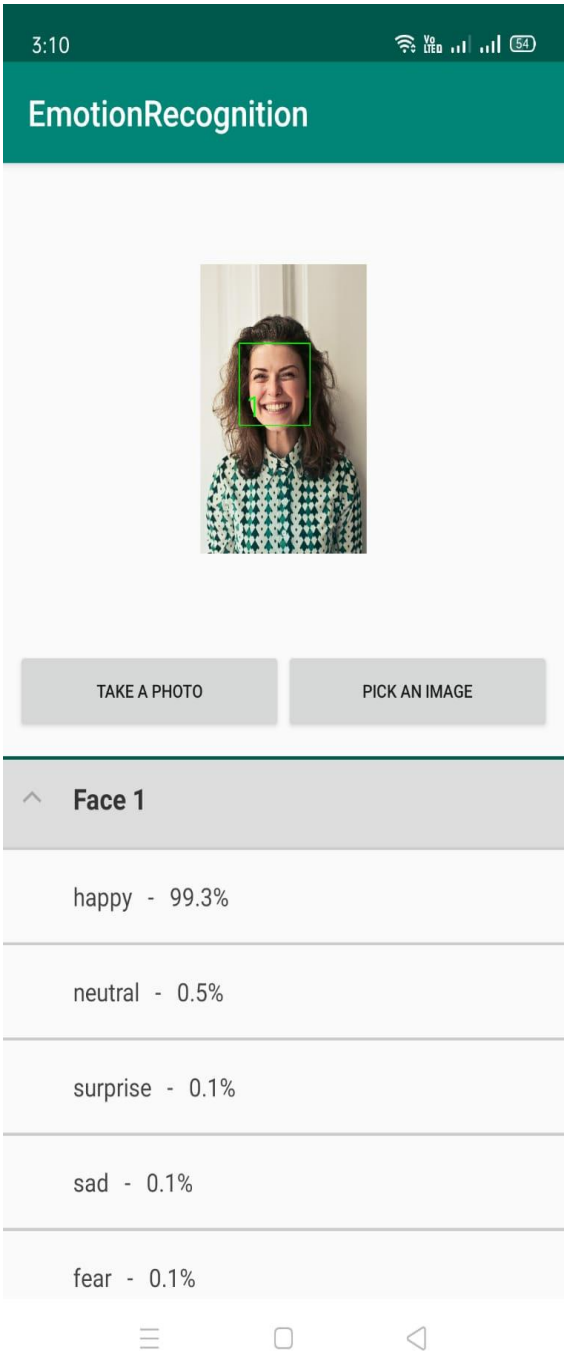

Figure 3: Mood detection result

V. CONCLUSION

In the realm of technological innovation and human interaction, our Android app for real-time emotion detection using Convolutional Neural Networks (CNNs) has set out to unlock the fascinating world of human emotions. This project represents a significant step forward in understanding and leveraging the power of artificial intelligence to interpret the complex language of emotions.

Our app offers a user-friendly interface, allowing individuals to access their device's camera and instantly discern the nuances of human expression. Whether it's the subtle curve of a smile or the furrowed brows of concern, our app strives to recognize emotions like happiness, sadness, anger, and more with precision.

VI. REFERENCES

[1] Agrawal A, An A (2012) Unsupervised emotion detection from text using semantic and syntactic relations. In: Proceedings of the The 2012 IEEE/WIC/ACM international joint conferences on web intelligence and intelligent agent technology - Volume 01, WI-IAT '12, pp 346–353, USA. IEEE Computer Society

[2] Aldunate N, Villena-González M, Rojas-Thomas F, López V, Bosman CA (2018) Mood detection in ambiguous messages: the interaction between text and emoticons. Front Psychol 9:423

[3] An Y, Sun S, Wang S (2017) Naive Bayes classifiers for music emotion classification based on lyrics. In: 2017 IEEE/ACIS 16th international conference on computer and information science (ICIS), pp 635–638

[4] Anagnostopoulos C-N, Iliou T, Giannoukos I (2012) Features and classifiers for emotion recognition from speech: a survey from 2000 to 2011. Artif Intell Rev 43:02

[5] Bandhakavi A, Wiratunga N, Padmanabhan D, Massie S (2017) Lexicon based feature extraction for emotion text classification. Pattern Recognise Lett, 93:133 – 142. Pattern recognition techniques in data mining

[6] Bhatt A, Patel A, Chheda H, Gawande K (2015) Amazon review classification and sentiment analysis. Int J Comput Sci Inf Technol 6(6):5107–5110

[7] Binali H, Wu C, Potdar V (2010) Computational approaches for emotion detection in text. In: 4th IEEE international conference on digital ecosystems and technologies, pp 172–177

[8] Bodendorf F, Kaiser C (2009) Detecting opinion leaders and trends in online social networks. In: Proceedings of the 2nd ACM workshop on Social web search and mining, pp 65–68