# INTISARI

## PENERAPAN METODE CONVOLUTION NEURAL NETWORK MENGGUNAKAN WEBCAM UNTUK MENGANALISIS EKSPRESI WAJAH SISWA YANG BERMASALAH PADA UNIT BIMBINGAN KONSELING(STUDI KASUS DI SMAN 1 PENENGAHAN LAMPUNG SELATAN)

**Oleh :**

**Rendi Pratama**

**1911010065**

Bandar Lampung, Telp 098676086001

Teknik Informatika, Institut Informatika dan Bisnis Darmajaya, Bandar Lampung

E-Mail: rendipratama2408@gmail.com

Dalam konteks Bimbingan dan Konseling (BK), pentingnya deteksi ekspresi wajah siswa menjadi salah satu permasalahan utama yang perlu dicermati. Siswa seringkali menghadapi kesulitan dalam mengungkapkan perasaan mereka secara verbal, terutama ketika mengalami emosi seperti depresi, cemas, atau stres. Oleh karena itu, metode deteksi ekspresi wajah menjadi fokus utama dalam penelitian ini. Penelitian ini berfokus pada penggunaan *Convolution Neural Network* sebagai metode untuk mengklasifikasikan ekspresi wajah siswa. *Convolution Neural Network* adalah teknik yang mampu mengidentifikasi objek dari warna dan kontur dalam gambar, yang dapat digunakan untuk memahami ekspresi wajah siswa dalam konteks bimbingan konseling. Data penelitian terdiri dari 618 gambar wajah yang di bagi ke dalam 7 kelas ekspresi. Proses *preprocessing* melibatkan perubahan ukuran gambar, konversi ke skala abu-abu, dan penggantian label kelas.

*Model Convolution Neural Network* dikembangkan dengan berbagai lapisan, termasuk *Conv2D, MaxPooling2D, Conv2D, Flatten Layer, Dense Layer, Dropout Layer* dan *Dense Layer* yang setelah melalui proses pelatihan, model menunjukkan peningkatan dalam akurasi data latih, meskipun hasil pengujian data uji bervariasi. Akurasi total model saat pengujian adalah sekitar 33% yang kemudian dilakukan validasi model dengan melakukan pengujian model pada 30 data uji baru yang menghasilkan akurasi 20%. Meskipun akurasi ini masih perlu ditingkatkan, namun penelitian ini memberikan dasar yang kuat untuk pengembangan lebih lanjut dalam deteksi ekspresi wajah siswa selama sesi bimbingan konseling. Riset kedepan dapat berfokus pada peningkatan akurasi model dengan meningkatkan jumlah data dan merancang arsitektur *Convolution Neural Network* yang lebih kompleks.

**Kata Kunci : CNN, Ekspresi Wajah, Bimbingan Konseling, Peningkatan Akurasi, Implementasi Praktis, Analisis Emosi, Deteksi, Klasifikasi, Webcam.**

## ABSTRACT

## APPLICATION OF THE CONVOLUTION NEURAL NETWORK METHOD USING A WEBCAM TO ANALYZE THE FACIAL EXPRESSIONS OF PROBLEM STUDENTS IN THE GUIDANCE COUNSELING UNIT

### (CASE STUDY AT SMAN 1 PENENGAHAN LAMPUNG SELATAN)

*By :*

**Rendi Pratama**

**1911010065**

Bandar Lampung, Telp 098676086001

Informatics Engineering, Institute of Informatics and Business Darmajaya,

Bandar Lampung

*E-Mail*: rendipratama2408@gmail.com

*In the context of Guidance and Counseling (BK), the importance of detecting students' facial expressions is one of the main problems that need to be examined. Expression detection becomes one of the main problems that need to be examined. Students often face difficulties in expressing their feelings verbally, especially when experiencing emotions such as depression, anxiety, or stress. Therefore, facial expression detection methods were the main focus of this research. This research focused on the use of Convolution Neural Network as a method to classify students' facial expressions. Convolution Neural Network is a technique that can identify objects from colors and contours in an image, which can be used to understand facial expressions in an image, which can be used to understand students' facial expressions in a counseling guidance context. The research data consisted of 618 student images which were divided into 7 expression classes. The preprocessing process involved image resizing, conversion to grayscale, and label replacement class. A Convolution Neural Network model was developed with various layers, including Conv2D, MaxPooling2D, Conv2D, Flatten Layer, Dense Layer, Dropout Layer, and Dense Layer after going through the training process, the model showed an improvement in the accuracy of the training data, although the results of testing the test data varied. The total accuracy of the model during testing was about 33%, which was then validated by testing the training data. Then validated the model by testing the model on 30 new test data which resulted in an accuracy of 20%. Although this accuracy still needs to be improved, this research provides a solid foundation for further development in student facial expression detection during counseling sessions. Future research can focus on improving the accuracy of the model by increasing the amount of data and designing a more complex Convolution Neural Network architecture.*

**Key Words: CNN, Facial Expression, Guidance Counseling, Accuracy Improvement, Practical Implementation, Emotion Analysis, Detection, Classification, Webcam.**