ABSTRAK

Muhammad Akram Fais, NIM 4213250013 (2026), Implementasi Convolutional Neural Network Untuk Mendeteksi Suara Darurat Bagi Penyandang Tunarungu Berbasis Android.

Tunarungu adalah kondisi hilangnya kemampuan mendengar secara parsial atau total, yang dapat terjadi sejak lahir atau diakibatkan oleh faktor tertentu seperti cedera, penyakit, atau paparan suara bising secara berlebihan. Penelitian ini bertujuan membangun sistem pendeteksi suara darurat berbasis Android menggunakan metode *Convolutional Neural Network* (CNN). Alur penelitian meliputi identifikasi masalah, pengumpulan data, *data preprocessing*, pelatihan model CNN, evaluasi model, pengembangan aplikasi Android, serta pengujian sistem. Hasil percobaan model terbaik menunjukkan bahwa model memiliki rata-rata akurasi 93%. Model yang telah dilatih kemudian diimplementasikan pada aplikasi Android agar dapat mengklasifikasikan suara secara *real-time* dan memberikan notifikasi ketika suara darurat terdeteksi. Hasil pengujian menunjukkan bahwa model CNN mampu mengklasifikasikan suara darurat dengan tingkat akurasi yang baik dan bekerja secara baik pada perangkat Android.

Kata Kunci: Tunarungu, Suara Darurat, *Machine Learning*, *Convolutional Neural Network,* Android

ABSTRACT

Muhammad Akram Fais, NIM 4213250013 (2026), Implementation of a Convolutional Neural Network for Emergency Sound Detection for Hearing-Impaired Individuals on an Android-Based Platform.

Hearing impairment is a condition characterized by partial or total loss of hearing ability, which may occur congenitally or be caused by factors such as injury, disease, or prolonged exposure to excessive noise. This study aims to develop an Android-based emergency sound detection system using the Convolutional Neural Network (CNN) method. The research workflow includes problem identification, data collection, data preprocessing, CNN model training, model evaluation, Android application development, and system testing. Experimental results show that the best-performing model achieved an overall accuracy of 93%. The trained model was then implemented into an Android application to enable real-time sound classification and to provide visual notifications when emergency sounds are detected. The evaluation results indicate that the CNN model is capable of accurately classifying emergency sounds and operates effectively on Android devices.

Keywords: Deaf, Emergency Sound, Machine Learning, Convolutional Neural Network, Android