

ABSTRAK

SISTEM PENGENALAN PELAKU PEMBUANG SAMPAH DI SUNGAI SEKANAK DENGAN METODE FACE RECOGNITION

(2026: xiii + 72 Halaman + 15 Gambar + 17 Tabel + Daftar Pustaka + Lampiran)

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Pembuangan sampah sembarangan di Sungai Sekanak masih menjadi permasalahan lingkungan yang memerlukan pengawasan yang efektif. Penelitian ini bertujuan mengembangkan sistem pengenalan pelaku pembuangan sampah berbasis *Face Recognition*. Sistem mengintegrasikan *YOLOv8* untuk mendeteksi aktivitas pembuangan sampah, *Haar Cascade* dan pustaka *face_recognition* untuk mengenali wajah, fitur *Security Alert*, serta *Telegram* untuk mengirimkan notifikasi beserta bukti foto pelaku. Pengujian dilakukan pada berbagai kondisi pencahayaan dan jarak kamera menggunakan 35 data wajah. Kinerja sistem dievaluasi menggunakan *confusion matrix* dengan parameter *precision*, *recall*, *accuracy*, dan *F1-score*. Hasil pengujian menunjukkan nilai *precision* sebesar 100%, *recall* sebesar 20%, *accuracy* sebesar 20%, dan *F1-score* sebesar 33,33%. Sistem mampu mengenali wajah dengan tepat ketika berhasil terdeteksi, namun performanya masih dipengaruhi oleh kondisi pencahayaan dan jarak kamera. Secara keseluruhan, sistem berhasil mengintegrasikan deteksi aktivitas, pengenalan wajah, *Security Alert*, dan notifikasi otomatis sehingga dapat mendukung pengawasan kebersihan di kawasan Sungai Sekanak.

Kata Kunci: *Face Recognition*, *YOLOv8*, *Haar Cascade*, *Security Alert*, *Telegram*.

ABSTRAK

OFFENDER IDENTIFICATION SYSTEM FOR ILLEGAL WASTE DISPOSAL IN THE SEKANAK RIVER USING THE FACE RECOGNITION METHOD

(2026: xiii + 72 Pages + 15 Figures + 17 Tables + References + Attachments)

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Improper waste disposal in the Sekanak River area remains an environmental problem that requires effective monitoring. This study aimed to develop a Face Recognition-based system for identifying waste disposal offenders. The system integrated YOLOv8 for waste disposal activity detection, Haar Cascade and the face_recognition library for facial recognition, a Security Alert feature, and Telegram for automatic notification with image evidence. The system was evaluated under various lighting conditions and camera distances using 35 facial samples. Performance was assessed using a confusion matrix based on precision, recall, accuracy, and F1-score. The results showed a precision of 100%, recall of 20%, accuracy of 20%, and an F1-score of 33.33%. The system accurately recognized registered faces when detected, although its performance was affected by lighting conditions and camera distance. Overall, the proposed system successfully integrated activity detection, face recognition, Security Alert, and automatic notifications to support environmental monitoring in the Sekanak River area.

Kata kunci: *Face Recognition, YOLOv8, Haar Cascade, Security Alert, Telegram.*