

ABSTRAK

Oyin Anjam Ainurrosidah, 2026. Implementasi Face Recognition dan Liveness Detection untuk Sistem Presensi Perangkat Desa Dengan Notifikasi WhatsApp Gateway. Program Studi Teknik Informatika, FT, Universitas PGRI Madiun. Pembimbing (I) Sekreningsih Nita, S.Kom., M.T. Pembimbing (II) Yessi Yunitasari, S.Kom., M.Cs.

Sistem presensi perangkat desa di Kantor Desa Sirapan saat ini masih manual menggunakan tanda tangan, sehingga rentan manipulasi data dan menurunkan kedisiplinan. Penelitian ini bertujuan membangun sistem presensi berbasis *website* mengintegrasikan *computer vision* dan validasi lokasi GPS. Kebaruan sistem ini adalah otomatisasi *resize* wajah menjadi 112x112 piksel dengan *Library InsightFace (ArcFace Buffalo_L)*. Deteksi wajah menggunakan YOLO, sedangkan keamanan dari manipulasi foto menggunakan *active liveness detection* (kedipan, gerakan kepala, senyum) berbasis *MediaPipe* dan *OpenCV*. Bukti kehadiran dikirim *real-time* via *WhatsApp Gateway* (API Fonnte). Sistem dibangun dengan *TypeScript*, PHP, Python, MySQL, serta *framework Laravel 12* dan *React.js*. Pengujian fungsionalitas dengan *Black-Box Testing* menunjukkan seluruh fitur berjalan sukses. Evaluasi kepuasan menggunakan *System Usability Scale* (SUS) terhadap 30 responden menghasilkan skor rata-rata 81,42 (kategori *Acceptable, Grade A, Excellent*). Sistem ini terbukti mudah, praktis, dan berhasil memodernisasi administrasi desa.

Kata Kunci: *Presensi, Face Recognition, Liveness Detection, InsightFace, YOLO, FastAPI, Laravel, ReactJS, MySQL, WhatsApp Gateway SUS*.

ABSTRACT

Oyin Anjam Ainurrosidah, 2026. Implementation of Face Recognition and Liveness Detection for a Village Official Attendance System with WhatsApp Gateway Notifications. Informatics Engineering Study Program, Faculty of Engineering, Universitas PGRI Madiun. Supervisor I: Sekreningsih Nita, S.Kom., M.T. Supervisor II: Yessi Yunitasari, S.Kom., M.Cs.

The manual attendance system at the Sirapan Village Office is prone to manipulation. This study implements a website-based attendance system integrating computer vision and GPS validation. The novelty is automated face resizing to 112x112 pixels using the InsightFace Library (ArcFace Buffalo_L). The system utilizes YOLO for face detection, and MediaPipe with OpenCV for active liveness detection (blinking, head movements, smiling) to prevent photo fraud. Attendance alerts are sent via WhatsApp Gateway (Fonnte API). Developed using TypeScript, PHP, Python, MySQL, Laravel 12, and React.Js, Black-Box Testing confirmed all features functioned perfectly. User experience evaluation using the System Usability Scale (SUS) with 30 respondents yielded an average score of 81,42 (Acceptable, Grade A, Excellent categories). The system provides an efficient, secure, and practical digital solution for village administration.

Keywords: Presence, Face Recognition, Liveness Detection, InsightFace, YOLO, FastAPI, Laravel, ReactJS, MySQL, WhatsApp Gateway SUS.