

ABSTRAK

RANCANG BANGUN ALAT *VIDEO BOOTH 360°* BERBASIS *ARTIFICIAL INTELLIGENCE (AI) (SOFTWARE)*

(2025: xvii: 73 Halaman + 48 Gambar + 10 Tabel + 16 Daftar Pustaka + 13 Lampiran)

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Penelitian ini bertujuan untuk merancang dan membangun perangkat lunak Video Booth 360° berbasis Artificial Intelligence (AI) dengan kemampuan pengendalian otomatis melalui deteksi gestur tangan. Sistem ini dirancang untuk meningkatkan efisiensi dan interaktivitas dalam dokumentasi video pada acara-acara seperti pesta, pameran, dan pernikahan. Perangkat keras utama yang digunakan adalah ESP32 dan ESP32-CAM yang berfungsi sebagai pusat kontrol dan pengolah citra, serta motor DC, relay, dan modul pendukung lainnya. Sistem dilatih menggunakan Edge Impulse untuk mendeteksi gestur "Start", "Stop", "Left", dan "Right" sebagai pemicu pengaktifan alat. Pengujian dilakukan terhadap berbagai aspek, termasuk fungsi perangkat, performa inferensi AI, kecepatan respons, keandalan sistem, serta kualitas hasil video. Hasilnya menunjukkan bahwa sistem mampu beroperasi secara otomatis dengan tingkat akurasi deteksi gestur di atas 95% dan rata-rata waktu respons di bawah 700 ms. Sistem juga menunjukkan ketahanan yang baik saat diuji dalam skenario operasional selama dua jam non-stop. Penelitian ini berhasil menunjukkan potensi penerapan AI dalam otomasi video booth yang efisien dan adaptif terhadap kebutuhan pengguna.

Kata Kunci: Video Booth 360°, Artificial Intelligence, Edge Impulse, ESP32-CAM, Gestur Tangan, Otomatisasi.

ABSTRACT

DESIGN AND DEVELOPMENT OF A 360° VIDEO BOOTH DEVICE BASED ON ARTIFICIAL INTELLIGENCE (AI) (SOFTWARE)

(2025: xvii: 73 Pages + 48 Pictures + 10 Tables + 16 Bibliography + 13 Attachments)

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This research aims to design and develop a 360° Video Booth software system based on Artificial Intelligence (AI) with automated control triggered by hand gesture detection. The system is designed to enhance efficiency and interactivity in video documentation for events such as parties, exhibitions, and weddings. The main hardware components include ESP32 and ESP32-CAM modules for central control and image processing, along with DC motors, relays, and other supporting modules. The system is trained using Edge Impulse to detect "Start", "Stop", "Left", and "Right" gestures as activation commands. Various tests were conducted, including functional testing, AI inference performance, response speed, system reliability, and video quality assessment. Results showed that the system could operate autonomously with gesture detection accuracy above 95% and an average response time of less than 700 ms. The system also demonstrated strong endurance when tested in continuous operation for up to two hours. This research successfully demonstrates the potential of applying AI in an automated video booth that is efficient and user-adaptive.

Keywords: 360° Video Booth, Artificial Intelligence, Edge Impulse, ESP32-CAM, Hand Gesture, Automation.