Development of face recognition application for quiz login system using convolutional neural network

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Supervised by Nugroho Setyo Wibowo, ST., M.T

Waezqorney Huanfareyzo

Study Program of Informatics Engineering

Majoring of Information Technology

ABSTRACT

This study developed a mobile application with supporting web platform for managing and delivering educational content, to enhance academic integrity a face recognition using MobileNetV2 and real-time blink detection were implemented with Flutter and Laravel. The authentication system has two factor pipelines, which are convolutional login and face scan to address identity impersonation. Utilizing of 390 face images from six individuals, the MobileNetV2 model achieved a validation accuracy of 98.72% after 50 epochs, with a minor 8% misclassification. Comparison to others models have been conducted revealed that the MobileNetV2 surpassed others model in terms of performance and computational cost, while blink detection effectively mitigated spoofing risks. A questionnaire revealed 46.7% of respondents considered face recognition as very important feature for preventing identity impersonation, with 70% preferring mobile platforms.

Keywords: *Face Recognition, Blink Detection, MobileNetV2, Authentication, Academic Integrity, Flutter, Laravel*

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Program Studi Teknik Informatika

Jurusan Teknologi Informasi

ABSTRAK

Penelitian ini mengembangkan aplikasi berbasi mobile dengan dukungan platform website untuk mengelola dan menyampaikan konten pendidikan. Untuk meningkatkan integritas dalam akademik, sistem pengenalan wajah menggunakan MobileNetV2 serta deteksi kedipan mata secara *real-time* diimplementasikan dengan Flutter dan Laravel. Sistem Autentikasi memiliki dua cara, yaitu *convolutional login* dan pemindaian wajah untuk mengatasi masalah pemalsuan identitas. Dengan memanfaatkan 390 citra wajah dari enam individu, model MobileNetV2 memperoleh akurasi validasi sebesar 98.72% setelah 50 epoch, dengan tingkat kesalahan klasifikasi sebesar 8%. Perbandingan dengan model mlain menunjukkan bahwa MobileNetV2 melampaui model lainnya dalam hal kinerja dan biaya komputasi, sementara deteksi kedipan secara efektif mampu mengurangi risiko *spoofing.* Hasil kuesioner menunjukkan bahwa 46.7% responden menganggap pengenalan wajah sebagai fitur yang sangat penting dalam mencegah pemalsuan identitas, dengan 70% responden lebih memilih platform berbasi mobile.

Keywords: Pengenalan Wajah, Deteksi Kedipan, MobileNetV2, Autentkasi, Integritas Akademik, Flutter, Laravel