

ABSTRAK
MEDIA VIRTUAL TRY-ON UNTUK SIMULASI
SHADE MAKEUP SECARA REAL-TIME

(Calista Luphi Lindarti, 2026: 109 Halaman)

Perkembangan teknologi digital mendorong pemanfaatan media interaktif untuk membantu konsumen memilih produk *makeup* dengan variasi warna atau *shade*. Pembelian *makeup* secara *online* sering menyulitkan pengguna karena produk tidak dapat dicoba secara langsung sebelum membeli. Penelitian ini bertujuan untuk merancang dan membangun media *Virtual Try-On* berbasis *Markerless Augmented Reality*, mengimplementasikan simulasi *shade makeup* secara *real-time* menggunakan teknik *face tracking*, serta mengetahui hasil pengujian kinerja aplikasi dan validasi mitra. Produk yang digunakan mengacu pada data produk *best seller* dari Toko Kosmetik My O Beauty yang meliputi *foundation*, *blush on*, lipstik, dan *eyeshadow*. Metode penelitian yang digunakan adalah *Research and Development* (R&D) dengan model *Multimedia Development Life Cycle* (MDLC). Aplikasi dikembangkan menggunakan Unity dan DeepAR SDK serta diuji menggunakan *Black Box Testing* dan *confusion matrix* berdasarkan variasi jarak wajah, sudut wajah, pencahayaan, *occlusion*, dan objek non-wajah. Hasil pengujian menunjukkan bahwa seluruh fungsi utama aplikasi berjalan sesuai rancangan. Evaluasi *confusion matrix* menghasilkan nilai *accuracy* sebesar 78,24%, *precision* 99,19%, *recall* 77,36%, dan *F1-score* 86,93%. Selain itu, hasil validasi mitra memperoleh persentase sebesar 80% dengan kategori **Valid**, yang menunjukkan bahwa simulasi *shade* pada aplikasi telah cukup sesuai dengan produk *makeup* asli dan layak digunakan sebagai media simulasi sebelum pembelian.

Kata kunci : Augmented Reality, Virtual Try-On, Shade Makeup, Face Tracking, Confusion Matrix

ABSTRACT
VIRTUAL TRY-ON MEDIA FOR REAL-TIME
MAKEUP SHADE SIMULATION

(Calista Luphi Lindarti, 2026: 109 Pages)

*The advancement of digital technology has encouraged the use of interactive media to assist consumers in selecting makeup products with various colors or shades. Online makeup purchases often make it difficult for users because products cannot be tried directly before purchase. This study aims to design and develop a Virtual Try-On media based on Markerless Augmented Reality, implement real-time makeup shade simulation using face tracking techniques, and determine the results of application performance testing and partner validation. The products used refer to best-selling product data from My O Beauty Cosmetic Store, including foundation, blush on, lipstick, and eyeshadow. The research method used is Research and Development (R&D) with the Multimedia Development Life Cycle (MDLC) model. The application was developed using Unity and the DeepAR SDK and tested using Black Box Testing and a confusion matrix based on variations in facial distance, facial angle, lighting conditions, occlusion, and non-face objects. The test results showed that all main application functions operated according to the design. The confusion matrix evaluation produced an accuracy of 78.24%, precision of 99.19%, recall of 77.36%, and an F1-score of 86.93%. In addition, the partner validation obtained a percentage of 80% in the **Valid** category, indicating that the shade simulation in the application was sufficiently consistent with the original makeup products and feasible to be used as a simulation medium prior to purchase.*

Keywords : *Augmented Reality, Virtual Try-On, Makeup Shade, Face Tracking, Confusion Matrix*