ABSTRAK

Sistem *Virtual Try-On* (VTO) lantai konvensional masih bergantung pada media fisik atau Augmented Reality (AR) berbasis marker yang kurang praktis. Hal ini menimbulkan kesenjangan kognitif bagi konsumen dalam membayangkan visualisasi keramik di ruangan nyata. Penelitian ini bertujuan mengembangkan sistem VTO keramik lantai otomatis dan realistis tanpa marker fisik, dengan mengintegrasikan arsitektur U-Net dan transformasi perspektif. Metodologi yang digunakan meliputi pengumpulan citra interior, pra-pemrosesan data, pelatihan model segmentasi dua tahap (*pre-training* dan *fine-tuning*), estimasi titik korespondensi, komputasi matriks homografi, serta implementasi sistem berbasis web. Hasil penelitian menunjukkan model U-Net mampu mencapai nilai metrik *Intersection over Union* (IoU) sebesar 0,9483 pada tahap evaluasi. Selain itu, modul transformasi perspektif berhasil memetakan motif keramik secara presisi pada area hasil segmentasi sesuai dengan sudut pandang kamera dan kedalaman ruang. Kesimpulannya, integrasi segmentasi semantik U-Net dan manipulasi perspektif terbukti efektif dalam menghasilkan sistem VTO yang akurat, sehingga mampu menjembatani keraguan visual konsumen secara praktis.

Kata Kunci: segmentasi semantik, sistem markerless, transformasi perspektif, u-net, *virtual try-on.*

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ABSTRACT

Conventional floor Virtual Try-On (VTO) systems still rely on physical media or marker-based Augmented Reality (AR) which is less practical. This creates a cognitive gap for consumers in visualizing ceramic tiles in real rooms. This research aims to develop an automatic and realistic floor tile VTO system without physical markers by integrating the U-Net architecture and perspective transformation. The methodology includes interior image collection, data preprocessing, two-stage segmentation model training (pre-training and fine-tuning), correspondence point estimation, homography matrix computation, and web-based system implementation. The results show that the U-Net model achieved an Intersection over Union (IoU) metric score of 0.9483 during evaluation. Furthermore, the perspective transformation module successfully mapped ceramic motifs precisely onto the segmented area according to the camera viewpoint and spatial depth. In conclusion, the integration of U-Net semantic segmentation and perspective manipulation has proven effective in producing an accurate VTO system, thereby bridging consumers' visual doubts practically.

***Keyword**: markerless system, perspective transformation, semantic segmentation, u-net, virtual try-on*

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