

ABSTRACT

Defania Adesti, 10122342

APPLICATION OF YOLOV8N AND RULE-BASED METHOD IN EYEGLASS FRAME RECOMMENDATION SYSTEM EQUIPPED WITH VIRTUAL TRY-ON FEATURE

Undergraduate Thesis. Department of Information Systems, Faculty of Computer Science and Information Technology, Gunadarma University, 2026.

Keywords: *Face Shape, Website, Eyeglass Frame Recommendation, Rule-Based, Virtual Try-On, YOLOv8n*

(xiii+122+Attachment)

Selecting eyeglass frames that complement face shape is essential for comfort and aesthetics. However, users often struggle to identify their face shape independently and cannot physically try on glasses on online shopping platforms. This study designs a web-based eyeglass frame recommendation system named Mataku, integrating the YOLOv8n single-stage object detection algorithm for real-time face shape classification, a rule-based recommendation method, and a virtual try-on feature. System development combines the CRISP-DM methodology and the Software Development Life Cycle Waterfall model. The Face Shape Detection dataset from Roboflow was augmented to 8,486 images across five classes (heart, oblong, oval, round, square). The YOLOv8n model was trained using transfer learning on an NVIDIA Tesla T4 GPU for 50 epochs. Evaluation on 499 testing images yielded a Precision of 90.5%, Recall of 90.2%, mAP50 of 95.7%, mAP50-95 of 87.0%, and an F1-score of 0.90 at a 0.568 confidence threshold. Detection results were mapped to six frame types (round, oval, rectangle, square, cat-eye, aviator) based on visual balance principles. Black-box testing across 13 interface scenarios and virtual try-on simulations achieved a 100% success rate. This web-based eyeglass frame recommendation system can be accessed at the URL : <https://mataku.biz.id/> which can be used to help users obtain eyeglass frame recommendations and perform virtual try-on simulations accurately and interactively.

Bibliography (2007-2026)