

## **ABSTRAK**

### **EVALUASI KINERJA METODE KECERDASAN BUATAN BERBASIS YOLOv5 UNTUK DIAGNOSIS JENIS KANKER KULIT SECARA *MOBILE REAL TIME***

**Oleh**

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Kanker kulit dikenal sebagai salah satu jenis kanker yang umum dan berisiko tinggi yang memerlukan prioritas pengobatan medis. Untuk meningkatkan efektivitas pengobatan, kanker kulit perlu dideteksi sedini mungkin. Baru-baru ini, dengan semakin populernya penggunaan sistem Computer Assisted Diagnosis (CAD), banyak peneliti melaporkan penggunaan pendekatan Artificial Intelligence (AI) untuk mendiagnosis berbagai penyakit, termasuk beberapa jenis kanker. Penelitian ini bertujuan untuk mengevaluasi kinerja sistem berbasis YOLO dalam mendiagnosis kanker kulit. Kami mengembangkan dan mengevaluasi aplikasi mobile berbasis YOLO untuk mendiagnosis kanker kulit secara langsung menggunakan smartphone. Dalam eksperimen, kami menggunakan 9 (sembilan) kelas kanker kulit berbeda. Kami telah melakukan eksperimen intensif dan mengukur Akurasi model untuk mengetahui seberapa baik model dapat mendeteksi objek serta mengukur Presisi, Recall, dan F1-Score dari setiap kelas untuk mengevaluasi kinerja masing-masing kelas. Hasil menunjukkan bahwa model berbasis YOLO ini memiliki kemampuan yang sangat baik untuk mendeteksi kanker kulit secara real-time dengan Akurasi sebesar 87,7%, Presisi 87,7%, Recall 87,8%, dan F1-Score 87,8%.

Kata Kunci: Kecerdasan Buatan (AI), *Computer Assisted Diagnosis* (CAD), Aplikasi Seluler, Kanker Kulit, YOLOv5

## **ABSTRACT**

### **PERFORMANCE EVALUATION OF YOLOV5-BASED ARTIFICIAL INTELLIGENCE MODEL TO DIAGNOSIS SKIN CANCER TYPES IN REAL-TIME**

**By**

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Skin cancers are known as some of the common and high-risk cancers that need medical treatment priority. To increase the effectiveness of the medical treatments, it needs to be detected as early as possible. There are several types of skin cancers, that often have similar symptoms. Thus, it becomes very difficult to classify and diagnose the diseases. Recently, as the use of Computer Assisted Diagnosis (CAD) systems has become very popular, many researchers have reported the use of Artificial Intelligence (AI) approaches for diagnosing various diseases including several types of cancers. This research aims to evaluate the performance of a YOLO-based system in diagnosing skin cancers. We developed and evaluated the YOLO-based mobile application for diagnosing skin cancers directly by using a smartphone. For the experiments, we use 9 (nine) different classes of skin cancers taken from Kaggle.com. We have done intensive experiments and measured the model's Accuracy to know how well the model can detect objects and measure each class' Precision, Recall, and F1 Score to know how well each class perform. The results show that this YOLO-based model has a very good capability to detect skin cancer in real-time with an Accuracy of 87,7%, a Precision of 87,7%, a Recall of 87,8%, and an F1-Score of 87,8%.

Key words: Artificial Intelligence (AI), Computer Assisted Diagnosis (CAD), Mobile Application, Skin Cancer, YOLOv5