

INTISARI

Latar Belakang: Luka pada jenazah maupun korban hidup berperan penting dalam pembuatan *Visum et Repertum*. Dokter menggambarkan luka secara visual dengan pengukuran geometris dan mengevaluasi jaringan kulit terkait. Seiring dengan pesatnya perkembangan zaman dan teknologi, bidang pengenalan dan pendeteksian objek dalam *Computer Vision* mulai diterapkan di berbagai bidang, mulai dari industri hingga kedokteran khususnya bidang kedokteran forensik. *Injury Detector* merupakan salah satu aplikasi yang menggunakan metode *image processing* dengan menggunakan YOLO v4 sebagai pendeteksi objek. Aplikasi ini dapat menginterpretasi jenis luka robek dan memar. Penggunaan *Injury Detector* dapat mempercepat waktu interpretasi jenis luka robek dan memar.

Tujuan Penelitian: Mengetahui interpretasi jenis luka robek dan memar pada *Injury Detector* dari pencitraan digital luka, mengetahui perbedaan proporsi interpretasi jenis luka robek dan memar antara pemeriksaan makroskopik kedokteran forensik dengan *Injury Detector* dari pencitraan digital luka, mengetahui keakuratan *Injury Detector*, mengetahui kemudahan dalam pengoperasian *Injury Detector* dan mengetahui perbedaan nilai hasil belajar antara penggunaan *Injury Detector* dengan *textbook Knight's Forensic Pathology Fourth Edition*.

Metodologi Penelitian: Penelitian ini menggunakan metode deskripsi analitik dengan desain penelitian potong lintang (*cross sectional*) analitik. Populasi pertama berupa citra digital, sampel yang diambil berupa citra digital luka robek dan memar sesuai dengan kriteria inklusi dengan metode *consecutive sampling* antara bulan Januari 2021 sampai bulan Desember 2021 di RS Bhayangkara POLDA Daerah Istimewa Yogyakarta dan populasi kedua berupa Mahasiswa Program Pendidikan Profesi Dokter yang sedang menjalankan kepaniteraan klinik di Departemen Ilmu Kedokteran Forensik dan Medikolegal FKMK UGM. Sebanyak 71 responden mengikuti Uji Kebergunaan dan 70 responden terlibat dalam Uji Hasil Belajar. Analisis statistik pada penelitian ini menggunakan Uji *Wilcoxon Signed Rank Test* dalam pengujian hipotesis, *Confusion matrix* pada uji akurasi, Skala likert pada uji kebergunaan, dan uji *Dependent t-test* pada Uji hasil belajar

Hasil Penelitian: *Injury Detector* menginterpretasi 36 citra digital luka robek dan memar, Uji proporsi interpretasi jenis luka robek dan memar didapatkan hasil $p = 0.000$ ($p < 0.05$), Akurasi *Injury Detector* Luka Robek dan Memar sebesar 64 %, Uji Kebergunaan didapatkan hasil 4,40 dalam skala likert, Uji hasil belajar didapatkan hasil $p = 0.229$ ($p > 0.05$).

Kesimpulan: Ada perbedaan interpretasi luka robek dan memar antara *Injury Detector* dan Pemeriksaan Makroskopik Kedokteran Forensik.

Kata Kunci: *Injury Detector*, Traumatologi Forensik, Citra Digital, Luka Robek, Memar, Hasil Belajar.

ABSTRACT

Background: Wounds on both dead bodies and living victims play an important role in making *Visum et Repertum*. The doctor visually depicts the wound with geometric measurements and evaluates the associated skin tissue. Along with the rapid development of the times and technology, the field of object recognition and detection in Computer Vision began to be applied in various fields, ranging from industry to medicine, especially the field of forensic medicine. Injury Detector is an application that uses the image processing method using YOLO v4 as an object detector. The application can interpret the types of lacerations and bruises. The use of Injury Detector can speed up the interpretation time of the types of lacerations and bruises.

Research Objectives: Knowing the interpretation of the type of lacerations and bruises on the Injury Detector from digital imaging of wounds, knowing the difference in the proportion of interpretation of the types of lacerations and bruises between macroscopic examination of forensic medicine and Injury Detector from digital imaging of wounds, knowing the accuracy of the Injury Detector, knowing the ease of operation of the Injury Detector and knowing the difference in the value of learning outcomes between the use of the Injury Detector and the textbook Knight's Forensic Pathology Fourth Edition.

Research Methodology: This study uses analytical description method with analytical cross sectional research design. The first population is in the form of digital images, samples taken in the form of digital images of lacerations and bruises in accordance with the inclusion criteria with the consecutive sampling method between January 2021 until December 2021 at Bhayangkara POLDA Hospital Yogyakarta Special Region and the second population is in the form of Medical Professional Education Program Students who are running clinical clerkships at the Department of Forensic Medicine and Medikolegal FKMK UGM. A total of 71 respondents took the Usability Test and 70 respondents were involved in the Learning Outcomes Test. Statistical analysis in this study used the Wilcoxon Signed Rank Test in Hypothesis testing, Confusion Matrix on Accuracy Test, Likert Scale on Usability Test, and Dependent t-test on Learning Outcome Test.

Research Results: Injury Detector interprets 36 digital images of lacerations and bruises, Test the proportion of interpretation of lacerations and bruises obtained results $p = 0.000$ ($p < 0.05$), Accuracy in Injury Detector for lacerations and bruises is 64%, Usability Test obtained results of 4.40 on a Likert scale, Learning outcomes test obtained results $p = 0.229$ ($p > 0.05$).

Conclusion: There are different interpretations of lacerations and bruises between Injury Detector and Forensic Medicine Macroscopic Examination.

Keywords: Injury Detector, Forensic Traumatology, Digital Imaging, Lacerations, Bruises, Learning outcome