

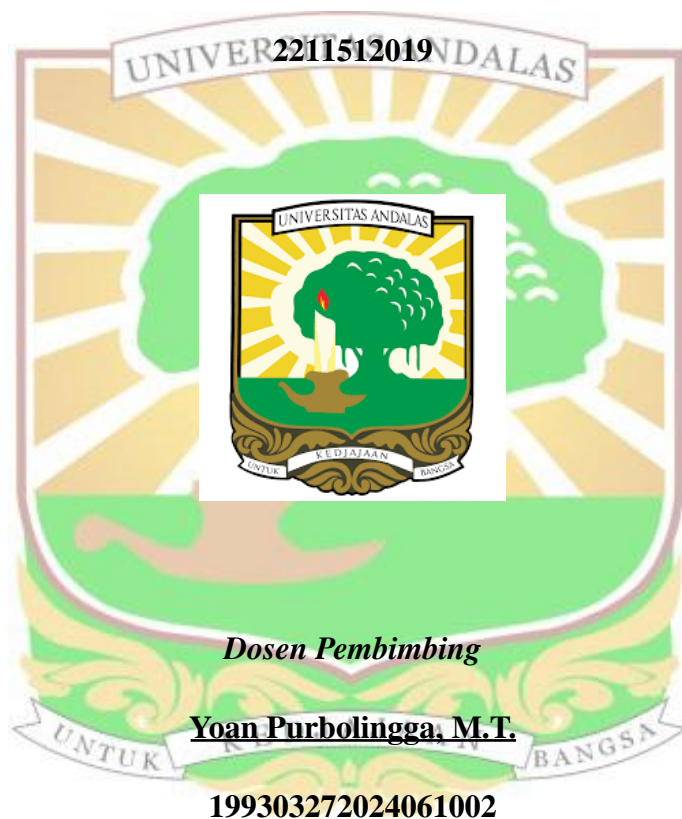
**RANCANG BANGUN SISTEM PENGUKURAN DIMENSI OBAT
BERBASIS OPENCV TERINTEGRASI PROGRESSIVE WEB APP DI
RUANG GRANULASI FAKULTAS FARMASI**

LAPORAN TUGAS AKHIR TEKNIK KOMPUTER

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**DEPARTEMEN TEKNIK KOMPUTER
FAKULTAS TEKNOLOGI INFORMASI
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Sebagai Salah Satu Syarat Untuk Menyelesaikan Program Sarjana

Pada Jurusan Teknik Komputer Universitas Andalas



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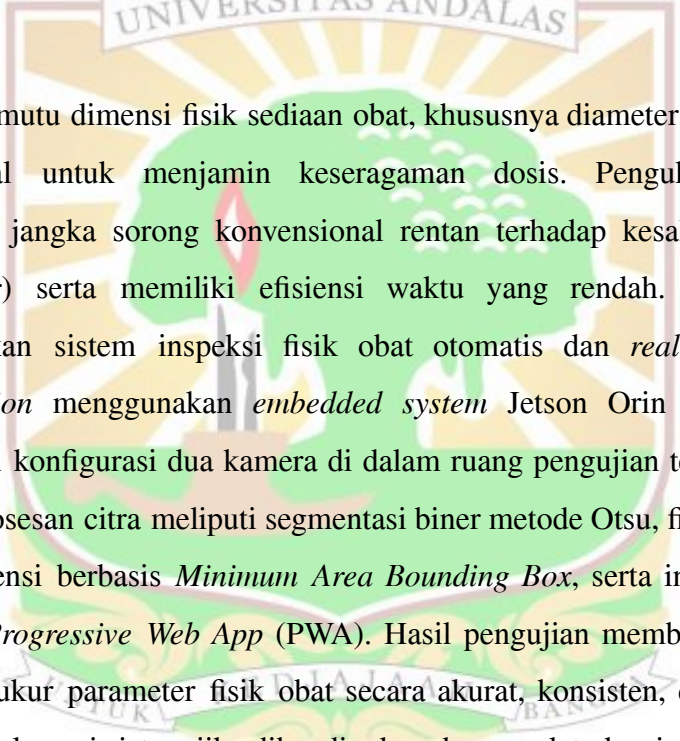
RANCANG BANGUN SISTEM PENGUKURAN DIMENSI OBAT BERBASIS OPENCV TERINTEGRASI PROGRESSIVE WEB APP DI RUANG GRANULASI FAKULTAS FARMASI

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ABSTRAK



Pengendalian mutu dimensi fisik sediaan obat, khususnya diameter dan ketebalan, sangat krusial untuk menjamin keseragaman dosis. Pengukuran manual menggunakan jangka sorong konvensional rentan terhadap kesalahan manusia (*human error*) serta memiliki efisiensi waktu yang rendah. Penelitian ini mengembangkan sistem inspeksi fisik obat otomatis dan *real-time* berbasis *computer vision* menggunakan *embedded system* Jetson Orin Nano. Sistem memanfaatkan konfigurasi dua kamera di dalam ruang pengujian tertutup dengan tahapan pemrosesan citra meliputi segmentasi biner metode Otsu, filter morfologi, ekstraksi dimensi berbasis *Minimum Area Bounding Box*, serta integrasi dasbor pemantauan *Progressive Web App* (PWA). Hasil pengujian membuktikan sistem mampu mengukur parameter fisik obat secara akurat, konsisten, dan memenuhi standar batas toleransi sistem jika dibandingkan dengan alat ukur jangka sorong.

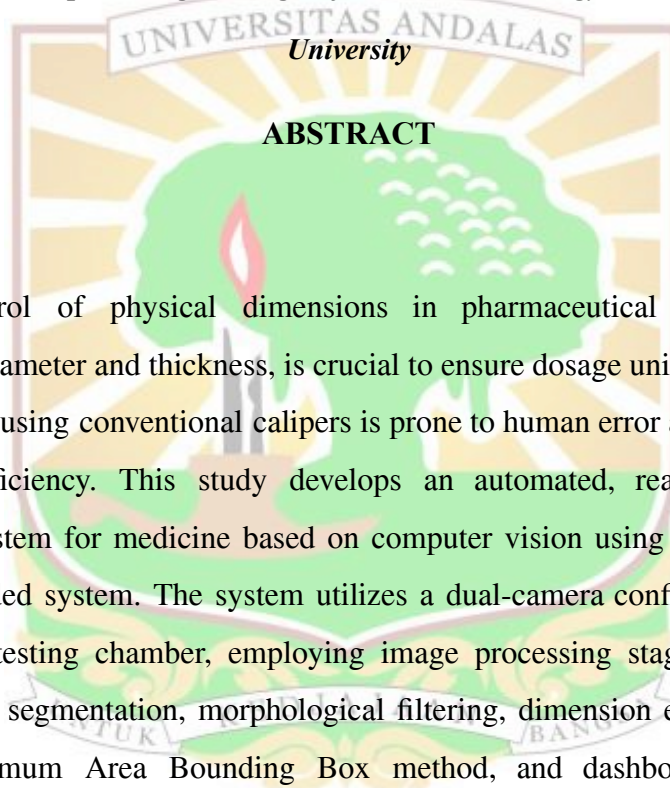
Kata kunci: *Computer Vision*, Dimensi Obat, *Embedded System*, *Minimum Area Bounding Box*, *Otsu Thresholding*, *Progressive Web App*.

DESIGN AND IMPLEMENTATION OF AN OPENCV-BASED MEDICINE DIMENSION MEASUREMENT SYSTEM INTEGRATED WITH A PROGRESSIVE WEB APP IN THE GRANULATION ROOM OF THE FACULTY OF PHARMACY

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ABSTRACT

Quality control of physical dimensions in pharmaceutical dosage forms, particularly diameter and thickness, is crucial to ensure dosage uniformity. Manual measurement using conventional calipers is prone to human error and suffers from low time efficiency. This study develops an automated, real-time physical inspection system for medicine based on computer vision using the Jetson Orin Nano embedded system. The system utilizes a dual-camera configuration within an enclosed testing chamber, employing image processing stages that include Otsu's binary segmentation, morphological filtering, dimension extraction based on the Minimum Area Bounding Box method, and dashboard monitoring integration via a Progressive Web App (PWA). The test results demonstrate that the system successfully measures the physical parameters of medicine accurately, consistently, and within predefined tolerance limits compared to manual caliper measurements.

Keywords: Computer Vision, Embedded System, Medicine Dimensions, Minimum Area Bounding Box, Otsu Thresholding, Progressive Web App.