

ABSTRAK

Nama : HELNI HELIYANTI
Program Studi : Fisika
Judul : Rancang Bangun Alat Sortir Warna Objek Berdasarkan Identifikasi Warna RGB Menggunakan Metode *Support Vector Machine* (SVM)

Pada penelitian ini dibuat sebuah robot *arm* yang memiliki kemampuan untuk mensortir barang berdasarkan warna objek. Robot *arm* disusun oleh 4 *Degree of Freedom* (DOF) dan terhubung dengan mikrokontroler Arduino UNO. Agar robot dapat mengenali objek berwarna digunakan metode *Support Vector Machine* SVM berbasis pemrograman Python 3.9.0 dan library OpenCV. Dalam penelitian ini dilakukan pengujian deteksi warna objek sebanyak 10 kali percobaan setiap warnanya. Dari hasil pengujian pendeteksian warna objek (berbahan kertas origami) menggunakan metode SVM didapatkan nilai ketelitian tertinggi pada masing-masing warna sebesar 98% pada intensitas cahaya lingkungan 188 lux.

Kata Kunci: *Robot Arm, Warna, RGB, Intensitas Cahaya, Arduino UNO, Python 3.9.0, SVM*

ABSTRACT

Name : HELNI HELIYANTI
Studies Program : Physics
Title : *Design and Build an Object Color Sorting Tool Based on RGB Color Identification Using the Support Vector Machine (SVM) Method*

In this research, a robot arm is made that has the ability to sort items based on the color of the object. The robot arm is composed of 4 Degree of Freedom (DOF) and is connected to the Arduino UNO microcontroller. In order for the robot to recognize colored objects, the Support Vector Machine SVM method based on Python 3.9.0 programming and the OpenCV library is used. In this study, the object color detection test was tested 10 times for each color. From the results of the object color detection test (made from origami paper) using the SVM method, the highest accuracy value for each color is 98% at an environmental light intensity of 188 lux.

Keyword: *Arm Robot, Color, RGB, Light Intensity, Arduino UNO, Python 3.9.0, SVM*