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| **Title:** | Development of a Low-Cost Real Time Color Detection Capable Robotic Arm | | |
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| **Abstract:** |  |
| As the era of fourth industrial revolution approaches automation via robotic arms in the industrial and daily work routine are getting more attention. Robotic assistance can play a major role in efficient production and assembly lines by eliminating human error and producing more precise tasks. Moreover, such robots can help to reduce the accident risk for humans in hazardous conditions. In this research a low-cost, feasible, and easy to build robot arm has been presented which can distinguish colors and can pick and place light objects autonomously. The gripper and two wheeled robots were controlled by an Arduino UNO microcontroller to move and pick and place function with four degrees of freedom. A pixy2 camera sensor was used for object color detection which works independently with an internal microprocessor that uses a color-filtering algorithm based on hue. The fully automated prototype robot utilizes real-time image processing and path learning to successfully detect objects with six different colors and do pick and place operation within its pre-trained path or task. The prototype robot showed over 75% accuracy and an average of 15 seconds of operation time while picking and placing different colored objects autonomously. | |