

**DESIGN AND DEVELOPMENT OF A SIX-LEGGED LIGHT-SEEKING
ROBOT FOR ROBOTICS CLASS DEMONSTRATION**

Undergraduate Design Project
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*Design and development of a six-legged
light seeking robot for robotics*
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ABSTRACT

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The main objective of the study was to design and develop a six-legged light-seeking robot for robotics class demonstration. Specifically, the study aimed to: design and construct a micro-controller circuit that would control the robot; develop a program that control the robot to walk in different directions; test and evaluate the robot in terms of its walking ability, light seeking ability and obstacle avoidance behavior; and determine the cost the robot.

The hardware part of the machine includes the microcontroller unit, infrared proximity unit and servomotors. It served as the center of all commands that the other units had to perform. The robot performed an instruction unless an input from the sensor is sent to the microcontroller that changes the instruction.

Assembly language was used to develop the software of the system. The software instructed the microcontroller to control the operation of the whole system.

The robot's functionality and performance was evaluated in terms of light-seeking ability and obstacle avoidance behavior. Performance varies upon the wattage of light being used and the distance of the robot from the light. The robot's operation was also evaluated at different light inclination. The light seeking ability was satisfactory achieved at 0 degrees light inclination since the destination was reached but there are some instances that the robot did not respond for it loose focus in sensing the light.

Instead the robot tries to locate the light source and then continue navigating. At 20 degrees and 35 degrees inclination of light, the robot did not reached its destination.

The average distance before the robot can detect an obstacle ranged from 4 inches to 6 inches. The robot walked continuously unless the trail was blocked.

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