



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> <b>An T. Ho</b>	<b>Project Number</b> <b>S0708</b>
<b>Project Title</b> <b>In Search of Photon Distributions</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The problem of my project is how will I construct a simple light-sensing robot? This project's purpose is to fill in the need for a robot that is NOT alive but responds to light. To sum up, I theorize that a relay will utilize light and determine the location of the light source.</p> <p><b>Methods/Materials</b> The experiment included designing and constructing a robot using a solar cell, 2 motors, 3 wheels, four batteries, and wires in addition to the relay. I designed eight models, constructed a total of four prototypes and recorded the weight and cost of the last prototype. Using the light meter, I measured the energy of the light source for the robot to response. I also noted the voltage used to power the robot. Other experiments included recording the time it would take for the robot to locate the light source, and observing the numbers of spins needed to find the light source. Out of the four prototypes, the fourth prototype cost the least, weighed the least, required the weakest light source, and required the least amount of time to locate the light source.</p> <p><b>Results</b> The information to build the robot resulted from my experience in constructing three prototypes and through information I had acquired throughout the year. Each prototype used a different electrical processing component. My Last successful prototype was successful in reaching the light source quickly and efficiently. The robot weighted approximately half a kilogram, cost \$10.75, required six volts to power up, and took 17 seconds to reach the source of light. Although, my robot used fewer parts, it was slower to respond to the light source.</p> <p><b>Conclusions/Discussion</b> After creating four prototypes, I successfully built a stable and efficient prototype, based on the mistakes and improvement of earlier prototypes. I had discovered that a relay could be used to search for light. The completion of a good prototype led me to conclude that I have taken the first step in building a seeing robot. Future projects include designing and constructing a robot that can search for certain color and sound frequencies with certain modifications.</p>	
<b>Summary Statement</b> After successfully constructing a light-sensing robot from mistakes and improvements of earlier prototypes, my robot can understand the difference between light and dark, and can respond by moving toward the light.	
<b>Help Received</b> I would like to acknowledge the help from the following people: my father, who bought all the materials to build the prototypes; and Ms. Miller for her constant support.	