



CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

Name(s) Sophya Mirza	Project Number J0320
Project Title Decoding the Artificial Intelligence behind Tactile and Photocell Navigation	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this project is to revolutionize the idea of using sensors instead of just sticking a robot to places like Mars or finding new terrain for people like scientists and U.S. Military agents that are navigating through unknown areas. My objective is to use mathematics and the language of Parallax Stamp to decode the artificial intelligence behind the robots in which one has a tactile, touch sensory detection embedded in its hardware and software and the other photo transistors, light sensors embedded in its software and hardware, in which then is tested in a challenge of efficiency and a race against time. The first question I asked myself was, What mechanism, the robot with the tactile or the robot with the photo transistors can complete the obstacle course more efficiently and at a quicker time? After completing the first step in the scientific method, I thought up a hypothesis in which was based on the idea that the mechanism with the photo transistors would complete the course better than the other robot.</p> <p>Methods/Materials I began to develop this project by using the scientific method. After figuring out the use of this project, my hypothesis and research, I began to build the two robots. In the lightest and most basic terms, both of the robots consist of arduinos, micro controllers, two servos per robot, and battery packs. After developing the robots and completing small hardware installments such as resistors, LED bulbs and etc, I began to develop the software for the robots. The final steps in my process of developing this project was to design and build my obstacle course.</p> <p>Results My hypothesis was based on the idea that the mechanism with the photo transistors would complete the course faster, but it turned out the results indicated that the tactile sensors completed it faster and more efficiently. The tactile AKA whisker sensors completed the obstacle course in 34.19 seconds and the photocell sensory device took 49.38 seconds showing a clear winner the tactile sensory detection system!</p> <p>Conclusions/Discussion In conclusion, this experiment helped me as a student and a young engineer to realize that if something can be made easier, in this case testing out different sensors to find the more efficient one to use instead of a human in controls, why not use it. I drew conclusions from my results and learned that the tactile sensors would help a lot in navigating through any kinds of terrain.</p>	
Summary Statement My project compares the efficiency of two robotic mechanisms, one with tactile sensors and the other with phototransistors inscribed in the two robots software and hardware that are in a test against time and efficiency.	
Help Received I didn't get any help from anyone. I designed, built, and performed the experiments myself, but my science teacher Ms. Pearson helped me to put my thoughts together in complete and ethical ways.	