Introduction to Electrical Engineering

Project Report Microbug

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My personal interests made me build collectible cars and wood boats during my childhood. In addition to these hobbies, I have always had the curiosity of disassembling and assembling things to learn about their components and to learn how they are wired. Therefore, I believe that this project, which consisted in soldering the different component of a microbug, such as resistors, transistors, diodes, LEDs, photodiodes, and motors, strengthen my desire to pursue my career as an engineer and apply that knowledge in industry.

Building the microbug was an excellent experience, because I learned how to solder, to be cautious with the components so they would not get damaged by the heat of the soldering iron, and I got to experience in real life the applications of what we have learned in lecture. I learned that to be an outstanding engineer, students need to learn all content taught in class, consequently I need to focus more in lectures to be more creative and know how to solve future situations on my job.

Besides the things I learned, there are some difficulties that I encountered while building the microbug. The first difficulty was that I soldered incorrectly the diode (step number eight) that works as the rear rotor, but the teacher assistant indicated this error and explained me the way in which I could solve it by taking the soldering away and cut the wire that was not needed, so I had to solder it again in the correct position to allow the rear rotor to be at the same height as the front rotors.

The second issue that I had was placing the motor with the correct inclination, so it will have a better performance. First, I glued the motors to the printed circuit board with a hot glue gun, after several tries, the motors where in the correct position, until then I was able to solder the motors. The third and final problem was that the sensitivity of the light of the LDR (which was on the right side of the circuit board) was low that the LDR did not reduce the resistance, therefore the current was not able to pass and one of the wheels (rotors) did not rotate. In this problem, I asked the teacher assistant for his help, so he indicated to adjust the resistor trimmer (variable resistors or potentiometers), so the sensitivity to the light of the LDR would increase, the resistance would decrease, and the wheel would start spinning.

My overall experience working on the project was satisfactory, because I saw the application of the theoretical knowledge in real life, understood the way that creativity is an important aspect in the development of an idea and in solving the issues that eventually are going to appear. I also learned that an engineer needs to make the most out of their time to be more productive. I have always thought that laboratory experience is a good complement to the knowledge attained in class; I proved the veracity of this statement with the microbug project realized in the laboratory.