

Non-contact Temperature Scanner Project Summary

Adam Farhat, Darius Salagean and Yovany Lopez

The goal of this project was to create a system that could calculate and display a human body temperature without requiring contact with the user. The system was to be self-contained and save data for a minimum period of 24 hours. The system also needed to be intuitive and simple to use without direct instruction. Along with these requirements, the group also decided that the system needed to be able to display both Celsius and Fahrenheit as well as respond quickly to the user, within 5 to 10 seconds.

The development of the system was broken up into three parts: sensors, microcontroller, and data transmission. Each individual was responsible for designing and implementing one of these three systems. The first part of the system was centered around each sensor contained within the device. These sensors include the temperature sensor, the motion sensor, and the distance sensor. The second part of the system was centered around the LCD screen, microcontroller, and power system. The microcontroller was responsible for taking in the measurements from every sensor on the Smiley Scanner and outputting to the display. Two 9v batteries were used for the power system. Development and design of the PCB was also tackled within this part. The last part of the system was centered around saving the system's data. A radio frequency transmitter was decided to be used. Code was written for a separate microcontroller which would be plugged into a computer. A Python program would take the readings from the receiver and organize them into an excel spreadsheet.

After the completion of the Smiley Scanner project, a few places we have considered making improvements were towards the power system and enclosure design. Rechargeable batteries would make the system last longer and not require the system to be opened up when power runs out. The text on the enclosure can be improved to be more reliable using different colors, as well as adding a feature on the backing to allow for easier wall mounting capabilities would be beneficial to future designs.

Our biggest takeaway was to be more mindful of errors in 3D printing. When designing the enclosure there were some features that did not have enough clearance and parts did not fit smoothly into designated spaces. Planning for more clearance will help prevent design errors.

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