



Portable Board-Style Computer Interface

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Background

Whiteboards are generally considered to be an effective tool to assist in the educational and professional industries. With the advancement of technology, interactive whiteboards that use a projector as a screen and a board that registers user input have modernized the concept. However, traditional devices of this type tend to have a high cost, be limited by a fixed board size, and must be invasively installed using wall mounts.

Project Goal

Our goal is to create a cost-effective alternative to conventional interactive whiteboards that can be used on many surfaces. By using small infrared sensors to calculate the position of the stylus, we remove the limitation of a predetermined board size, and by adhering to a wall temporarily, the board interface can be set up rapidly.

Materials

- Arduino Uno Microcontrollers
- Infrared Optical Receiver
- Infrared Emitting Device
- Wireless Transmitters/Receiver
- 5V Batteries / Power Supply
- USB Serial Interface Transceiver

Diagrams

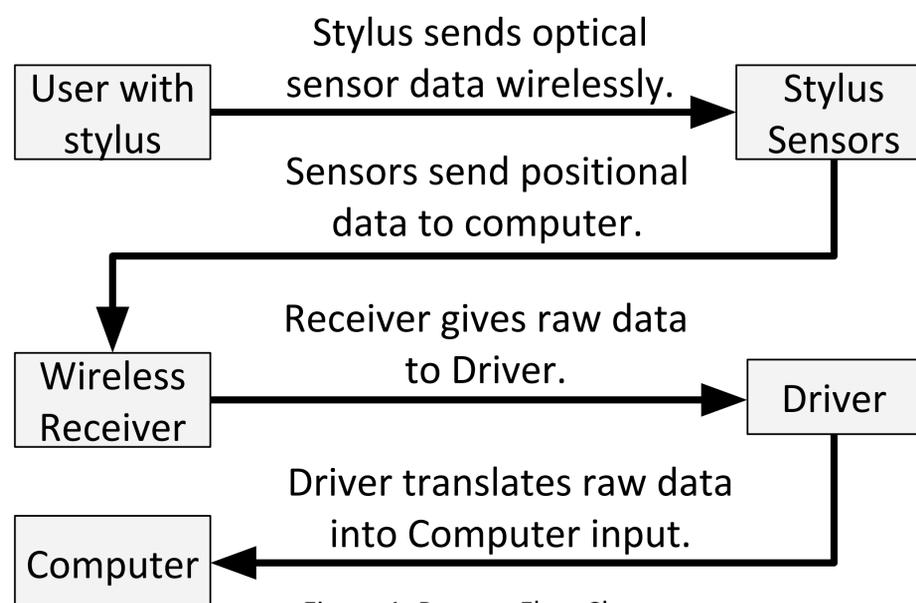


Figure 1: Process Flow Chart

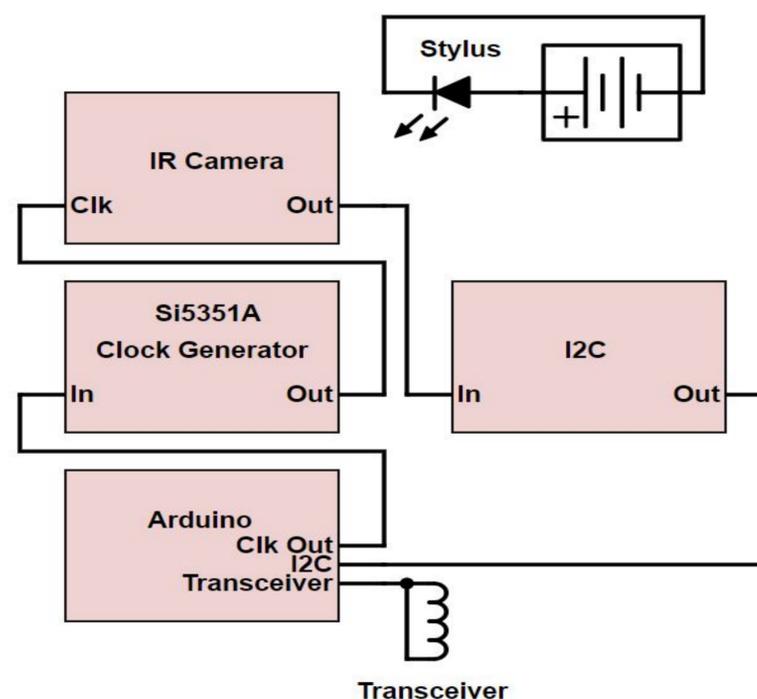


Figure 2: Sensor Circuit Diagram

Progress/Milestones

- Soldered small-scale I2C chips
- Tested IR receiver manually
- Next Milestone: Completing testing of sensor prototype that will detect tapping location and whether the stylus is touching the surface of the board.

Challenges/Future Work

We considered various approaches for our design, and we eliminated those that we found ineffective or too costly to implement, allowing us to reach a practical solution. In this quarter, we aim to complete the functional prototype of the sensor, along with enabling smooth drawing and controls of the stylus. Then we will focus on adapting to various board types.

References

- K. G. Bahadur and D Oogarah, "Interactive whiteboard for primary schools in Mauritius: An effective tool or just another trend?" in *International Journal of Education & Development Using Information & Communication Technology*. University of Mauritius, Mauritius. Jan. 2013, vol. 9, no. 1, pp. 19–35.
- D. Singh, et al., "Low Cost Interactive Electronic Whiteboard Using Nintendo Wii Remote." in *American Journal of Applied Sciences*. 2010, vol. 7, no. 11, pp. 1458–1463.

