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Chapter 1

Literature Review

1.1 Data Transmission and User Interface

The client requires the weight data to be retrieved remotely. We need to figure out two things: where do we want the data to be sent, and how do we want it to be sent. This section investigates different options for transmitting data from a microprocessor. In a comparative performance study by Eridani et al., three protocols were compared: Bluetooth, Wi-Fi direct, and ESP-NOW (‘a new protocol that allows multiple devices to communicate with each other without the use of Wi-Fi, with low power consumption’ [?]). 5 metrics were used in the tests: maximum range, transmission speed, latency, power usage, and signal resistance to obstructions [?]. A brief summary of the performance of each protocol is shown below in Figure 1.1.

Figure 1.1: Overall Performance of each Protocol [?]

ESP-NOW performs best in range and latency; Bluetooth in power usage; and Wi-Fi in transmission speed. In our context, power usage would be most important. Bluetooth seems to provide sufficient range and speed.

The problem with this; however, is that connecting the system to the user’s phone requires effort and perhaps expertise that the user may not have. In this case, connecting the system to the internet may be a better option (if internet connection is available, i.e. if eduroam is in range).

Budoyo and Andriana used the internet when designing a prototype of a digital scale to measure the weight of onions. [?]. They interfaced the microcontroller (an ATmega2560) to the internet using an ESP8266 Wi-Fi module. The weight data is sent to a website where it is stored in a database.

Glossary