

## 5. DISCUSSION

For this thesis, I did not get a chance to build a prototype. The prototype will be built as a continuation of this paper. During prototyping, programmes of automation must be written. The code will be written in c++ for all the programmes related to the Arduino i.e., programmes for communicating with sensors, controllers, and raspberry pi. On the other hand, code will be written in python for the programmes related to the raspberry pi i.e., programmes for communicating with the Arduino, a program to build a server and a Graphic User Interface upon it and most importantly programmes to store and process data about the fish tank. When attaching the components to the fish tank, a special glue will be used. Special glue is the best option because no extra attaching components will be needed which will contribute to the tidiness of the fish tank. Moreover, a renewable source of energy should be implemented to lower the cost of electrical power. I suggest a hydropower system that would take advantage of the constant motion of water in the fish tank.

In conclusion, Smart freshwater tank is a project that aims at taking away the burden of maintaining a fish tank. This is accomplished by using technological devices like microcontrollers, sensors, and actuators to automate all the tasks that are required to sustain a healthy fish tank. This project is reliable because the combined computing power of the main controlling units is enough to execute all the tasks instantly. The tasks being automated are fish feeding, temperature regulation, water quality management, controlling water levels and lighting. In addition, a functionality of monitoring the aquarium is added to enable the user to check on their pets whenever they want to. Smart freshwater tank brings value to the user because they can enjoy owning an aquarium while missing all the trouble that comes with maintaining it.