Remote Drinking Water Quality Unit Project Summary

Goal: To create a low-cost, remote water quality unit on an Arduino platform. A GSM shield will be programmed to communicate with a database to provide real-time data of water quality. A mobile app will also be created to facilitate access to data.

Rationale: According to the World Health Organization (2011), drinking water is considered safe if it has no significant health risk over lifetime consumption. In the country of Pakistan, the quality of drinking water does not meet the guidelines established by the WHO, thereby making the public susceptible to waterborne diseases (Nabeela, Azizullah, Bibi, Uzma, Murad, Shakir, Qasim, & Hader, 2014; Mehmood, Ahmad, Ahmed, Khalid, & Javed, 2013; Pakistan Environmental Protection Agency, June, 2008; World Wildlife Fund, 2007). Researchers have cited a need for improvement of water quality monitoring in Pakistan (Shahid, Zahida, Shahid, Bakhat, Anwar, Shah, & Ashraf, 2015; Nabeela, et al.; Hashmi, Farooq, & Qaser, 2009; WaterAid, 2009; World Wildlife Fund). The purpose of this project is to create a low-cost, remote, real-time water quality unit that can address this need.

Project Tasks:

- Perform a thorough literature review and consult with experts in the field to determine which water quality parameters to track.
- After selecting the water quality parameters, methods of measurement will be researched, specifically focusing on low-cost and/or DIY measurements that can be adapted on an Arduino platform.
    - Examples of previous probes used to obtain water quality measurements include the Atlas Scientific probes, which measured pH, ORP, dissolved oxygen, and conductivity. However, these probes are too expensive for the purposes of this project.
- Once the water quality parameters and measurements are decided upon, a prototype of the drinking water quality unit will be designed. A database to track the parameters will also be created. The prototype will undergo testing to ensure it is working properly.

Project Extensions:

Possible project extension involves either live “tweeting” or providing individuals with a notification of the water quality for each given day (for example, have different colors signify quality levels). Therefore, the public will be

able to make an informed decision regarding drinking the water. The “tweets”/notification system can also provide the public with information on household practices that can increaser water drinking safety.

References

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