Development of a Solar Powered Buoy to Measure and Report the Pollution Level of Wetlands

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Environmental pollution, which is one of the main causes of global warming, may have variations within itself; however, water, which is at the point of all cycles in nature, a blanket covering the whole world from the living body, should be the starting point of the solution. If water, which is the building block of living life and the essence of most substances in different forms, becomes scarce, polluted, and difficult to access, the damage it will inflict on the biosphere and the entire earth will undoubtedly be devastating. For this reason, water pollution will be of great importance in the fight against environmental pollution, thus global warming and many other problems. In this context, the project developed in this context provides instant detection of anomalies occurring in water resources or other elements that make up the wetland ecosystem and facilitates the user to take precautions in advance by sending periodic data to the user. It is powered by solar energy, making it self-sufficient. The fluorometer and nephelometer are optical sensors integrated into the buoy to measure the amount of chlorophyll and turbidity, temperature and humidity sensors to detect whether the buoy is taking water or not, and conductivity sensor to measure and detect other data. The measured values can be transferred to the server without human intervention thanks to the IoT server with RESTful API used alongside GPRS. As a result of the experiments, it was observed that the sensors reacted correctly to the variables, and the data was uploaded to the server at specified periods. The developed buoy system promises to detect the common consequences of water pollution at the stage of formation at a very low cost compared to existing systems.

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