Solar Powered Arduino Based Deforestation Alert System (Device) for Real Time Forest Monitoring

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One of the main causes of global warming is deforestation. In the Philippines, the main causes of deforestation are illegal logging and the slash-and-burn agriculture but in spite of this, few technology are available in detecting and monitoring these kind of activities. This study presents a solar-powered Arduino-based alerting device for detecting illegal logging and burning of trees in the forest. The system uses Arduino Uno R3 as the microcontroller, it acts as the brain of the device. Four different sensors were used, each one detecting the following: flame, smoke, sound (for the sound of chainsaw cutting trees), and vibration. These are factors implying a possible action of illegal logging and burning of trees or fields. The device uses Arduino GSM Module for the communication system in sending text messages when any of the sensors are activated giving alerts to the remote operators. The results show that the device is capable and reliable in sending messages to a remote site operator once any of the sensors are activated. In detecting and sending a message, the fastest mean recorded is when the device was placed 1 meter away. 7.1333 seconds for the sound of chainsaw, 10.66 seconds for flame, and 9.1333 seconds for smoke. There is no significant difference in the length of time the device took to detect the sound of chainsaw and be able to send an alert text message when placed in various distances, but there is a significant difference when the device was tested on smoke and flame. Keywords: Environment protection, Arduino controller, Sensors, Deforestation, Forest Fire

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