OFFICIAL ABSTRACT and CERTIFICATION

Designing a smart solution to water plants efficiently.

CLEAR SPRINGS HIGH SCHOOL , League City, Texas, US

Category

Embedded Systems

This project is about designing a smart solution to watering plants efficiently. Based on the rain forecast, current rain conditions, and soil moisture, the system will water the plants accordingly. This project is important because it could help alleviate unnecessary water usage by not watering when it rains, it is forecast to rain, or when the soil doesn't need it. It would also be cost effective (saving people money), and it would also help people who don't have the time to make sure they water their plants every day, or when the conditions are correct for ideal watering. Automating this process could end up making everyday life easier for the end user because they have one less thing to worry about. The hypothesis of the project is to design a smart solution to watering plants efficiently. Overall, after analyzing the data, the software preformed as expected. The Raspberry Pi only watered the plant when it had low moisture, was not raining, and it was not forecasted to rain later in the day and in the coming days. In conclusion, I set out with the goal of designing a smart solution to water plants efficiently. The hypothesis was that a system could be designed for watering plants efficiently, in the end it was designed/successful, since it watered the plants only when the correct conditions were met, thus proving my hypothesis. The final solution designed was also cost effective compared to commercially available systems.

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):
   - ☐ human Participants
   - ☐ potentially hazardous biological agents
   - ☐ vertebrate animals
   - ☐ microorganisms
   - ☐ rDNA
   - ☐ tissue
2. I/we worked or used equipment in a regulated research institution or industrial setting:
   - ☐ Yes
   - ☑ No
3. This project is a continuation of previous research:
   - ☐ Yes
   - ☑ No
4. My display board includes non-published photographs/visual depictions of humans (other than myself):
   - ☐ Yes
   - ☑ No
5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only:
   - ☑ Yes
   - ☐ No
6. I/we herby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work:
   - ☑ Yes
   - ☐ No

This stamp or embossed seal attests that his project is in compliance with all federal and state laws and regulations and that all appropriate reviews and approvals have been obtained including the final clearance by the Scientific Review Committee.