WASP
Wireless Arduino Sensor Protocol

Group SW513E15

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STUDENT REPORT

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Synopsis:

Synopsis her!

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Contents

1. Project introduction

This is an introduction.

Here is the initializing problem statement:

1.1 Initializing problem statement

How can a sensor network and a protocol be designed, so that data can be relayed throughout the network, enabling an endpoint device to receive the information without being within range of all sensors in the network?

It is a good question and we will analyze it.

Part I

Analysis

The analysis will discuss and look into the different aspects of the initializing problem formulation and the topics therein. The sections in this chapter blah-blablah..

2. Context

3. Use case

The purpose of this project is to create a protocol that allows multiple Arduinos to share data to a single endpoint, but a use case is needed to test the protocol.

The chosen use case for this report is soil moisture for use on golf courses. A golf course is usually very large, and covering an entire golf course with cords would be a big task. Furthermore this would make the system hard to extend and make hot pluggable.

That makes this project a good use case for golf courses, as soil moisture is important in determining where it is necessary to water the course. Wasting water is not much of a problem in Denmark, but some places in the world water is a sparse resource. Using less water on a large golf course could save money down the line too, and is good for the environment. The use of radiocommunication is well suited for large, open spaces, like a golf course.

3.1 Interview

An informal interview was performed with a greenkeeper at Aalborg Golfcourse, Kim Jensen. Kim provided insights on the requirements of the system, potential problems, and ideas for later iterations of the system. The interview questions and answers can be found in Appendix ##.

Some holes on Aalborg Golfklub is located in a swampy area, which often makes watering them obsolete. This project could help stop some of this water waste. Some holes are in a moor, where watering is often required. When it is required, this project could inform the greenkeepers, who could act on this. Making the product hot pluggable would be useful if there is suddenly more or less water than usually, in which case the product can be added to this location, and the water levels can be measured to determine if there is a problem, and in that case how to solve it. The same applies if an area is more dry than usual.

Another consideration is where to place the devices. The sensors needs access to the soil in order to measure the moistore levels, but they should not be placed above ground as golfers could hit and destroy the devices. The initial idea was to place it in the holes for the sprinklers, but this was bad since sprinklers often leak, and the sensor would therefore get inaccurate readings. This makes it necessary to bury the devices at known locations in the course. The depth the devices are buried at are important, due to the differnet types of grass. The greens use a 2cm. layer of sand at the top, which allows water to quickly go through. This makes it necessary to bury the devices 10-15cm. in the ground. These requirements changes based on the kind of grass and what is beneath.

Regarding future iterations of the project, Kim suggests adding a pH meter to the devices. This would allow the greenkeepers to create specific mixes of fertilizer for different parts of the course, depending on the pH value of the soil.

4. Technologies

We shall look at some existing technologies now.

4.1 Mesh networks

4.2 Wireless communication

4.3 Communication protocols

5. Problem Statement

Very good problem statement for you, my friend. Special prize.

Make a good sending data network for arduino.

Part II

Implementation

6. Theory

7. Design

8. Implementation

9. Test

Part III

Conclusion

10. Reflection

oh..

10.1 What have we done!?

11. Summary

ok..

11.1 It ended like this

12. Future Work

Here's what's missing..

12.1 To be done

Part IV

Appendix