

---

# WASP

## Wireless Arduino Sensor Protocol

---

GROUP SW513E15



Christian Lundtofte  
Henrik Djernes Thomsen  
Jonathan Hastrup

Bjørn Opstad  
Morten Mandrup  
Mathias Corlin



**AALBORG UNIVERSITY**  
STUDENT REPORT

**Department of computer science**  
Selma Lagerlöfs Vej 300  
9220 Aalborg Ø

**Title:**

WASP - Wireless Arduino Sensor Protocol

**Theme:**

Embedded Systems

**Project period:**

02/08/2015

21/12/2015

**Project group:**

SW513E15

**Members:**

Christian Lundtofte Sørensen  
Henrik Djernes Thomsen  
Jonathan Hastrup  
Bjørn Opstad  
Morten Mandrup Hansen  
Mathias Corlin

**Synopsis:**

Synopsis her!

**Supervisor:**

Hua Lu

**No. printed Copies: ?**

**No. of Pages: ?**

**No. of Appendix Pages: ?**

**Total no. of pages: ?**

**Completed: 21/12/2015**

*The contents of this report is freely accessible, however publication (with source references) is only allowed upon agreement with the authors.*

	<hr/>	Bjørn Opstad
<hr/>		
Christian Lundtofte		
	<hr/>	
		Morten Mandrup
<hr/>		
Henrik Thomsen		
	<hr/>	
		Matthias Corlin
<hr/>		
Jonathan Hastrup		

<b>1 Project introduction</b>	<b>5</b>
1.1 Initializing problem statement . . . . .	5
<b>I Analysis</b>	<b>6</b>
<b>2 Context</b>	<b>8</b>
<b>3 Use case</b>	<b>9</b>
<b>4 Technologies</b>	<b>10</b>
4.1 Mesh networks . . . . .	10
4.2 Wireless communication . . . . .	10
4.3 Communication protocols . . . . .	10
<b>5 Problem Statement</b>	<b>11</b>
<b>II Implementation</b>	<b>12</b>
<b>6 Theory</b>	<b>13</b>
<b>7 Design</b>	<b>14</b>
<b>8 Implementation</b>	<b>15</b>
<b>9 Test</b>	<b>16</b>
<b>III Conclusion</b>	<b>17</b>
<b>10 Reflection</b>	<b>18</b>
10.1 What have we done!?! . . . . .	18
<b>11 Summary</b>	<b>19</b>
11.1 It ended like this . . . . .	19
<b>12 Future Work</b>	<b>20</b>
12.1 To be done . . . . .	20
<b>IV Appendix</b>	<b>21</b>

# 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-blah..

## 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 sensors 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 almost impossible to make hot pluggable.

This 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.

## 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**





## 8. Implementation





## **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**