

## Exella ~ “The Umbrella”

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**Abstract:** “The Sword in the Stone-Excalibur” is a weapon in the Arthurian legend which only the rightful king of Britain can pull it from the stone which means only the chosen one can use it. And imagine if our belonging can also identify their own master which is us, will we lost our belonging just like before? Our idea is to make an umbrella that will not be stolen by others like the Excalibur.

### 1. Background and Purpose

Umbrella is necessary for the raining day, and many people have experience that goes outside with an umbrella and goes back with wet clothes which because they lost their umbrella. In our opinion, there are three reasons are responsible for losing umbrella. Theft, forgetting, confusion. Our product is target these three situations to prevent those situations happened.

### 2. Concept and Idea

To prevent those situations, happen, the umbrella need to complete those function.

- When the owner losing their umbrella, it need to remind the owner that they have lost their umbrella and recorded the position where the umbrella lost.
- Remind the people who take the wrong umbrella that the umbrella is not theirs.
- Remind the owner when their umbrella is stolen by someone else.

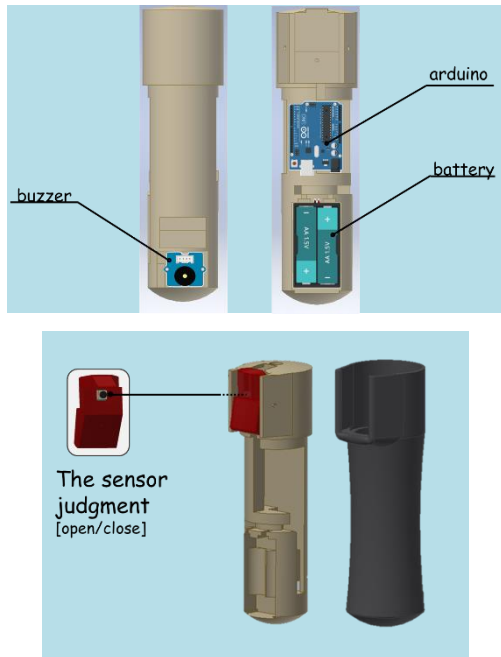
The umbrella need to know who’s the owner of it and who is not. Only the umbrella can do that, it can remind the owner when the umbrella is taking by other people and does not annoying the owner.

### 3. Design and Functions

Function: In summary, functions that we need the umbrella to complete including the following several:

1. Put the Bluetooth part in the umbrella and make it connect with the smart phone of the owner. When the connection between the umbrella and the smart is off. The smart-phone will record the place where last time receives the signal from umbrella to prevent the loss of umbrella.
2. If anyone wants to open the umbrella by not connect the Bluetooth, it will put the button and make the buzzer work to alarm the owner of the umbrella.

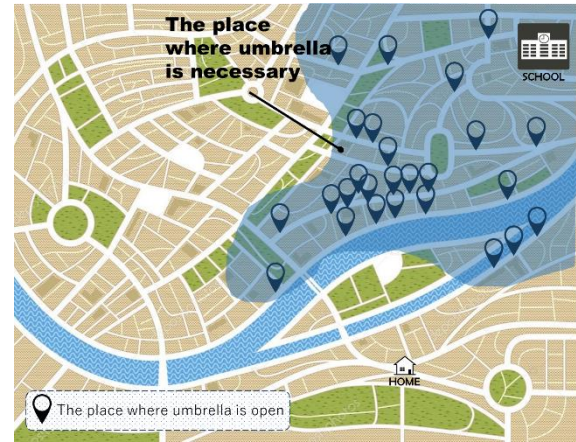




Design:

- The battery and the Arduino module is integrated in the umbrella handle part, used to drive the function of the umbrella, and use the Bluetooth part of the Arduino to connected to the smart phone.
- Umbrella handle button connected with the pressure sensor, press the button will trigger the pressure sensor at the same time, and it will open the buzzer switch,

start the buzzer alarm to remind the owner of the umbrella. The button does not work all the time, only when the Bluetooth is disconnecting which not cause inconvenience to the owner.



#### 4. Problems and Future Work

Assume that most people will use our product in the future, it will build a net of the product. When someone opens the umbrella, the location of him will upload to the net and if enough people open the umbrella in one area, it means that the area is raining, and people can use their phone to know that where is raining now.