



Prize Winner

**Programming, Apps &
Robotics
Year R-2**

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Intelligent Fire Fighting Robot

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Motivation

Firefighting is a very dangerous mission. Many firefighters are killed and injured due to the absence of information about hazard within buildings and infrastructures. We designed the alpha version of an intelligent firefighting robotic car that is able to extinguish fires.

What we thought and what we did

We (Louie and Samantha) had a discussion on firefighting and the dangerousness of firefighters a few weeks ago. After learning about sensors in school, we realised that we could help firefighters.

We asked helps from our parents to refine our ideas and set up the hardware of the robot car. On the robot car, we used infrared sensors to track trace and detect fires.

There are two infrared sensors applied:

1. The first infrared sensor is set up under the car. It is used for tracking the path. This infrared sensor is made with a pair of sensors: sender and receiver. The sender keeps sending out the infrared light. If the sensor is over white background, then the receiver can detect the light reflected from the white background. If the sensor is over black tape, nothing will be reflected. It allows the sensor to easily detect whether the car is over a black area or not.
2. The second infrared sensor is set up in the front of the car. It can detect heat, to make sure if there is fire flame in front of the car.

We used Scratch to code. Here is a list of what we did:

- We made small functions to define “move forwards”, “move backwards”, “turn left” and “turn right”.
We do not have a servo motor to control the car’s turning, but we learned how to use the speed difference between two wheels to turn the directions.
- We used variables to save the sensor signals.
- We used “if statement” to process sensors’ signals.
From the sensor signals, we can know if there exists a fire in front of the car. If it does, then we start the fan motor to blow the fire.
- We used “forever” to make the car keep moving.

What we learned

We learned to care other people and help them if we can.

We learned the technology can make our life easier and better.

We learned learning something new is awesome.

We learned how to ask helps if we are stuck in difficulties. For example, debugging code is very tricky, so we did seek helps from our parents.

What's next

As mentioned above, this is the alpha version of our intelligent fire-fighting robot car. We will continue to improve it. We will also continue to observe our surroundings, and try to do something that is beneficial towards society.

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