SASTA OLIPHANT SCIENCE AWARDS

Prize Winner

Programming, Apps & Robotics

Year 3-4

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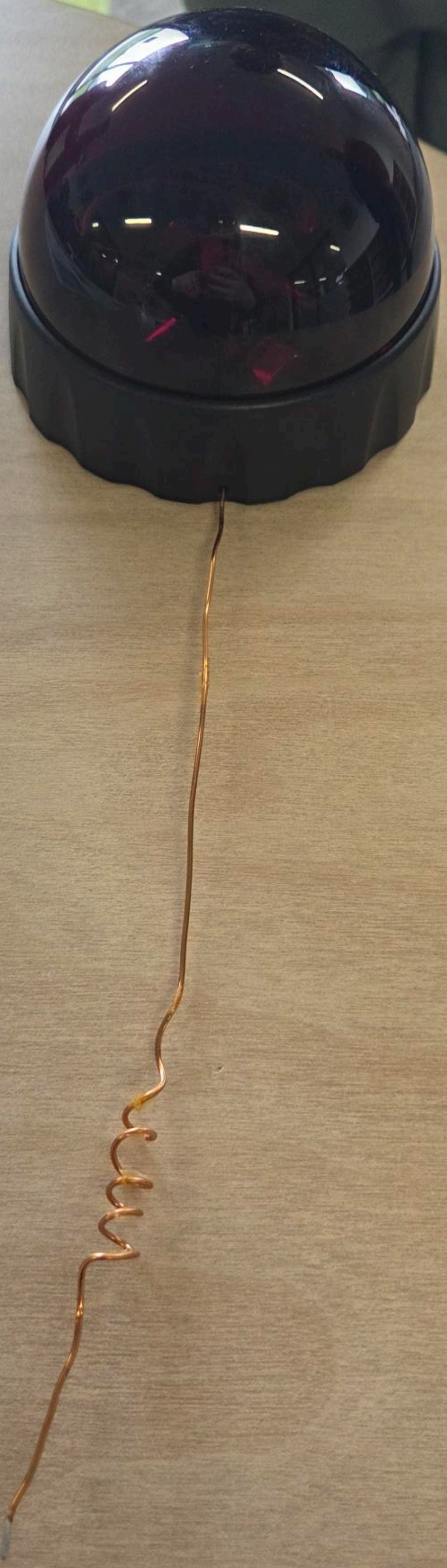
ROWE SCIENTIFIC PTY. LTD. www.rowe.com.au

Australian Government
Department of Defence

Government of South Australia
Department for Education

SASTA South Australian Science Teachers Association



Ghost detector

by

Benji Buchanan and Phoenix Hunter

Introduction

Our project is a ghost detector. We built it from some electronic parts on a breadboard first and then when it worked we soldered it together and put it in a case that we had to modify (with help).

1. The aim of the entry, and its scientific purpose and potential applications

A ghost detector circuit is also called an electromagnetic field detector (EMF). What is an electromagnetic field?

Electric and magnetic fields are (EMF) are invisible lines of force that surround any electric device. Power lines, wires and electrical equipment all make EMF.

An EMF detector is also called a ghost detector because some people think that if a ghost went by it would change a electromagnetic field.

Our ghost detector will detect (ghosts ha ha) or EMF changes.

A ghost detector (EMF detector) could be used for when electricians for power so they don’t get zapped.

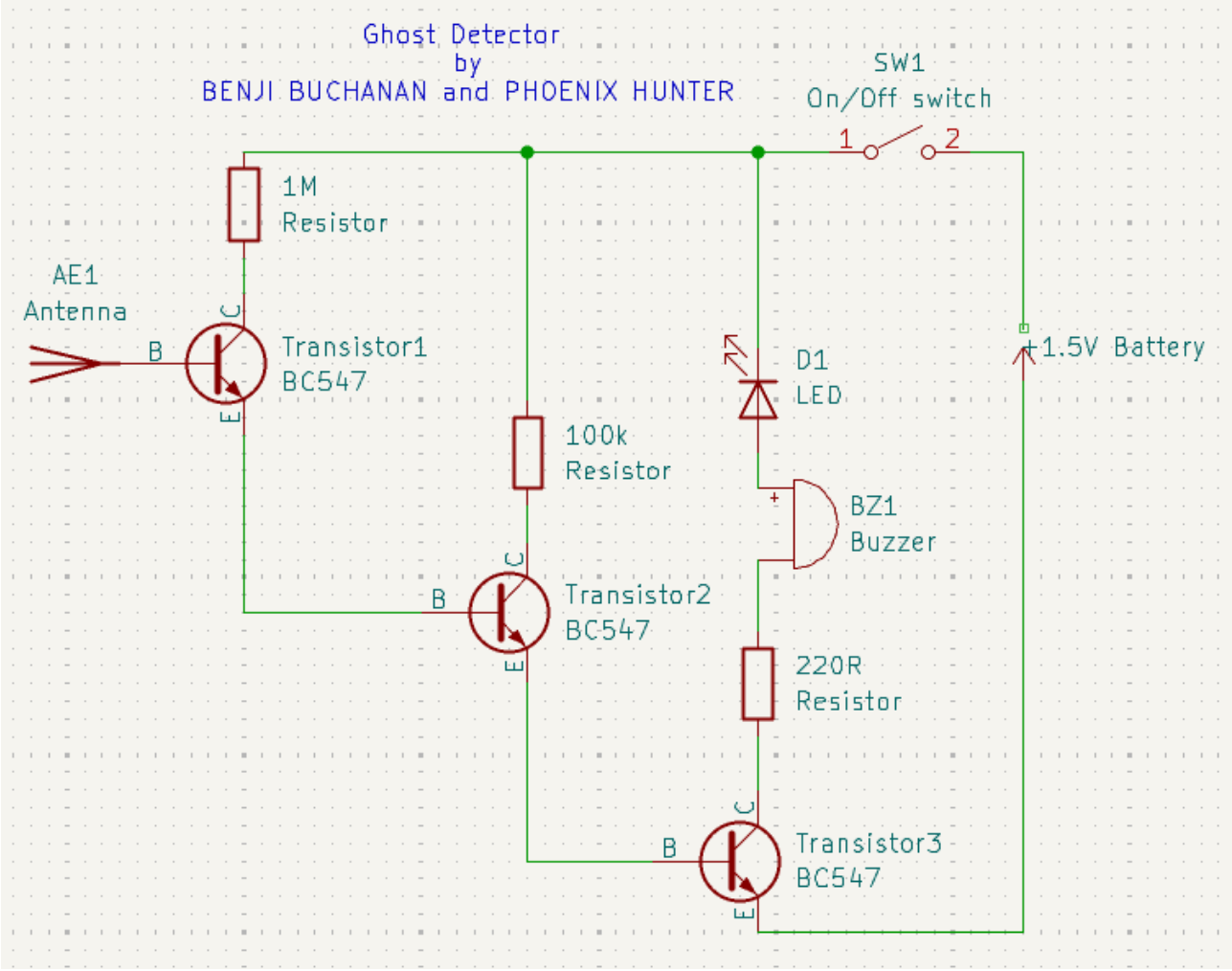
2. The type of robot or computer/device required to run the program

We will use an EMF detector circuit.

3. Clear instructions on loading or using the entry

To use the ghost detector turn on the switch at the bottom and move it around to detect EMF changes.

4. A hard copy of the program and an explanation of what the sections of the program do



When the antenna is in an EMF a little bit of the signal will flow into the base (b) of the transistor and current will flow from the collector (c) making a bigger current go out of the emitter (e). The three transistors will amplify the current a lot and the led (D1) will turn on and the buzzer will make a noise. The resistors help to make it work. The switch will turn it on and the battery will give it power.


eclipse
eclipse
5V
AA - 1.5V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5. Acknowledgement of any external support provided to the entry

Benji's dad helped us buy the parts and showed us the circuit and how to draw it. He also helped us put it together and did the soldering.

6. A bibliography that acknowledges relevant sources of information.

Links:

https://www.youtube.com/watch?v=oA5cuLMHIsY

https://www.youtube.com/watch?v=tHIchO1pbFA

https://kids.kiddle.co/Electromagnetism

https://www.seeedstudio.com/blog/2020/09/10/bc547-transistor-basic-knowledge-pinout-and-application/?srsltid=AfmBOooSqRfS3d17KwapQ4qmTPSoPg8n0ZNpkROcK58pwt5eXp1n578b

Main components:

Transistors

https://www.youtube.com/shorts/EACjoPZPYzI

Resistor

https://www.youtube.com/shorts/kWQnpShd9EM

LED

https://www.youtube.com/shorts/CIMbjJQNHa0

Design software:

KiCad

Parts list:

Transistors:
3 x BC547

Resistors:
1 x 220 Ohm

1 x 100K
1 x 1M

LED:
1 x Red LED

Other bits:
A buzzer, case, some wire, solder and hot glue