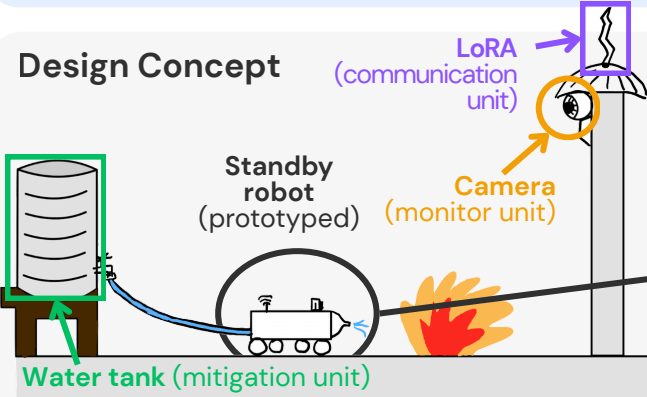


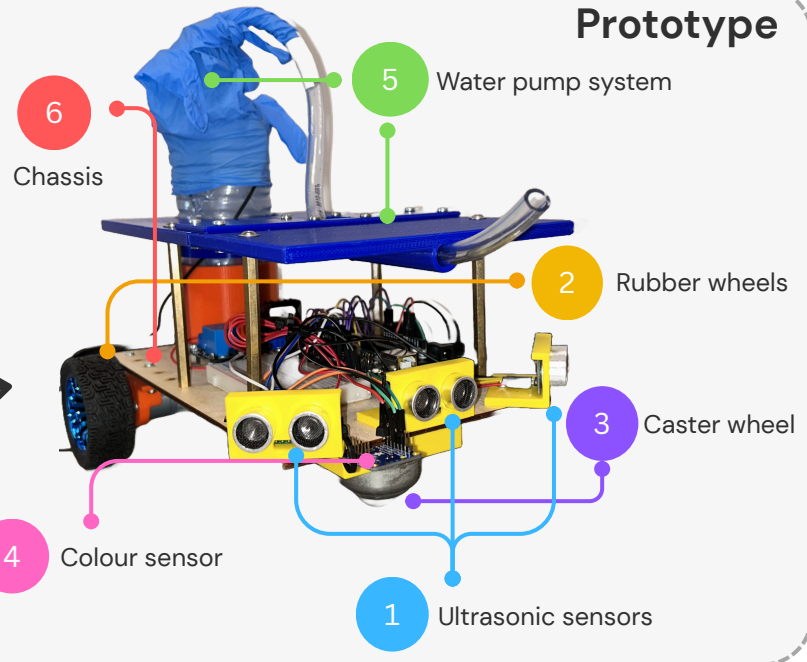
Opportunity: Human-induced fires, including **campfire incidents**, account for a significant proportion of wildfires in Canada.

Design Concept



Wabot (water-bot) monitors campfire sites via a **camera** and sends a **standby robot** connected to a **water tank** to extinguish small fires, while alerting local park rangers through **LoRA**.

Prototype



Monitoring + Communication Subunit (not prototyped)

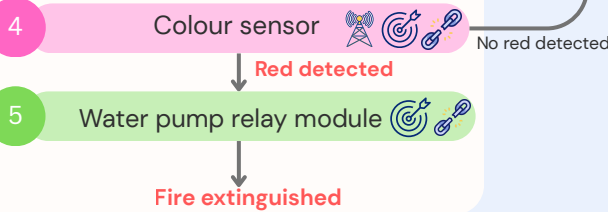
Obstacle detection

- 1 Left ultrasonic
- Center ultrasonic
- Right ultrasonic

Movement

- 2 Left motor wheel
- Right motor wheel (Motor-powered)
- 3 Caster wheel (Freely moveable)

Detection & Extinguishment



How Our Prototype Works

Ultrasonic sensors (1) detect obstacles and guide wheels (2, 3). A colour sensor (4) is used to detect red and identify if it has arrived at the target. Upon detection of red, the robot stops and initiates the water pump (5), shooting water at the target until red is no longer detected.

Key Objectives Achieved by Prototype



O-1.3: Fast data collection rate



O-2.2: Effective mitigation



O-4.1: Localized operation

Stakeholder Needs

Improve campsite safety for campers

Less need for park rangers to maintain the robot

Environment protecting by reducing risk of wildfires

Prototype Performance

Avoid **obstacles** and return to original path.

O-2.2

All components are **secured** at all times.

O-4.1

Able to navigate with a weight of at least **1.75kg** when the water tank is filled.

O-2.2 O-4.1

All sensors collect data at a rate of **1Hz**, minimizing action delay.

O-2.2 O-1.3

Stops and **pumps water** autonomously when red is detected.

O-2.2 O-4.1