# LET'S INTRODUCE

# SMART FIREFIGHTER ROBOT

AUTONOMOUS FIRE DETECTION AND SUPPRESSION SYSTEM

# Smart Firefighter Roboto

*Autonomous Fire Detection and Suppression System*

Introducing an advanced robot to automate fire detection and extinguishing. Designed for fast, safe responses in hazardous situations.

**Smart Firefighter Roboto** is an intelligent robotic system designed to assist firefighters in dangerous environments. It uses sensors and AI to detect fires, navigate obstacles, and help locate victims safely and efficiently.

# OBJECTIVES

## Key Goals

### Fire Detection

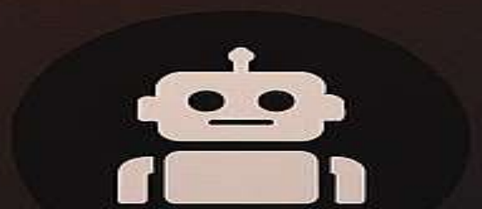
Detect fire using flame sensors.

### Mobile App Control

Enable manual control via mobile app.

### Fire Suppression

Automatically extinguish fires with a water pump.



### Demonstration & Functionality

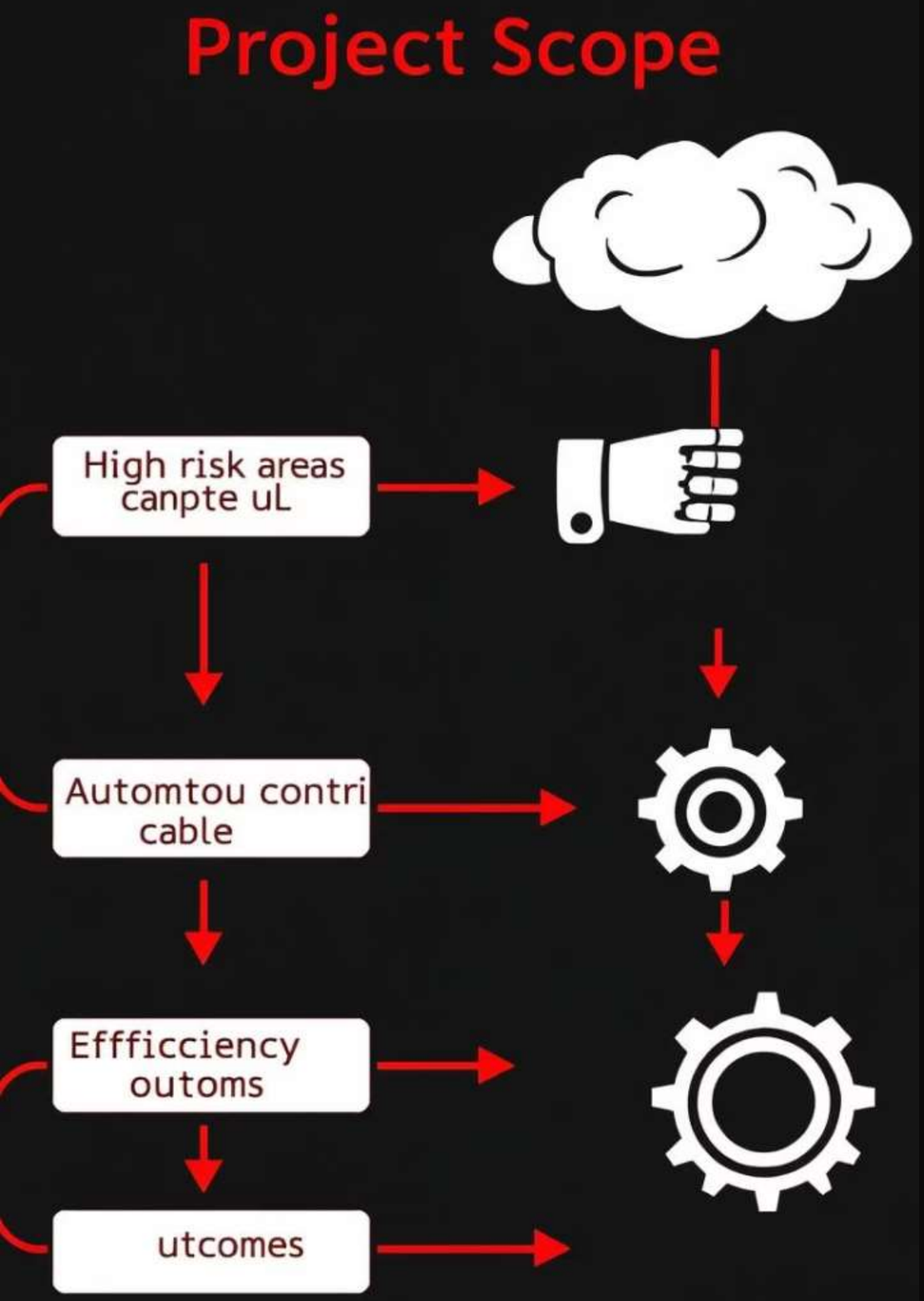
Demonstrate mobility, detection,

# Problem Statement

Traditional firefighting involves high risks for humans

Response times can be slow in dangerous environments

There’s a critical need for autonomous firefighting systems




# Project Scope

## High-Risk Fire Emergencies

Focus on hazardous zones with limited human access

## Dual Control Modes

Support for both autonomous and manual operation

## Real-World Performance

Effective in practical firefighting scenarios

# Key Functionalities

## Mobility & Navigation

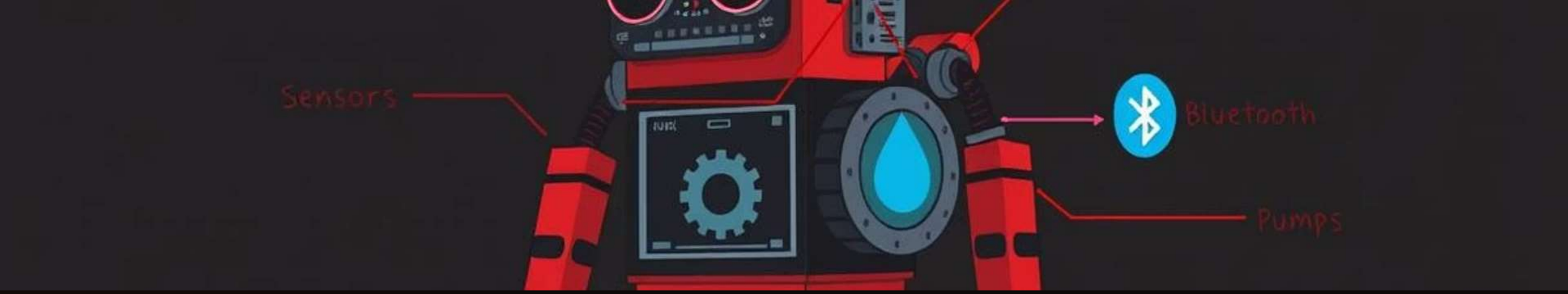
- DC motors driven by L298N driver
- Bluetooth control app

## Fire Detection & Suppression

- Flame sensors with Arduino processing
- Water pump controlled via relay

## Power Supply

Rechargeable battery ensures portability




# System Architecture

## Sensing Unit

Flame sensors feed data to Arduino

## Control Unit

Arduino Uno processes inputs, commands actuators

## Actuation Unit

Motors and pump activated via relay module

## Communication Unit

HC-05 Bluetooth for remote control

# Development Methodology & Circuit Diagram

1

## Hardware Assembly

Components integrated physically

2

## Programming

Arduino code development and debugging

3

## App Creation

Bluetooth control via MIT App Inventor

4

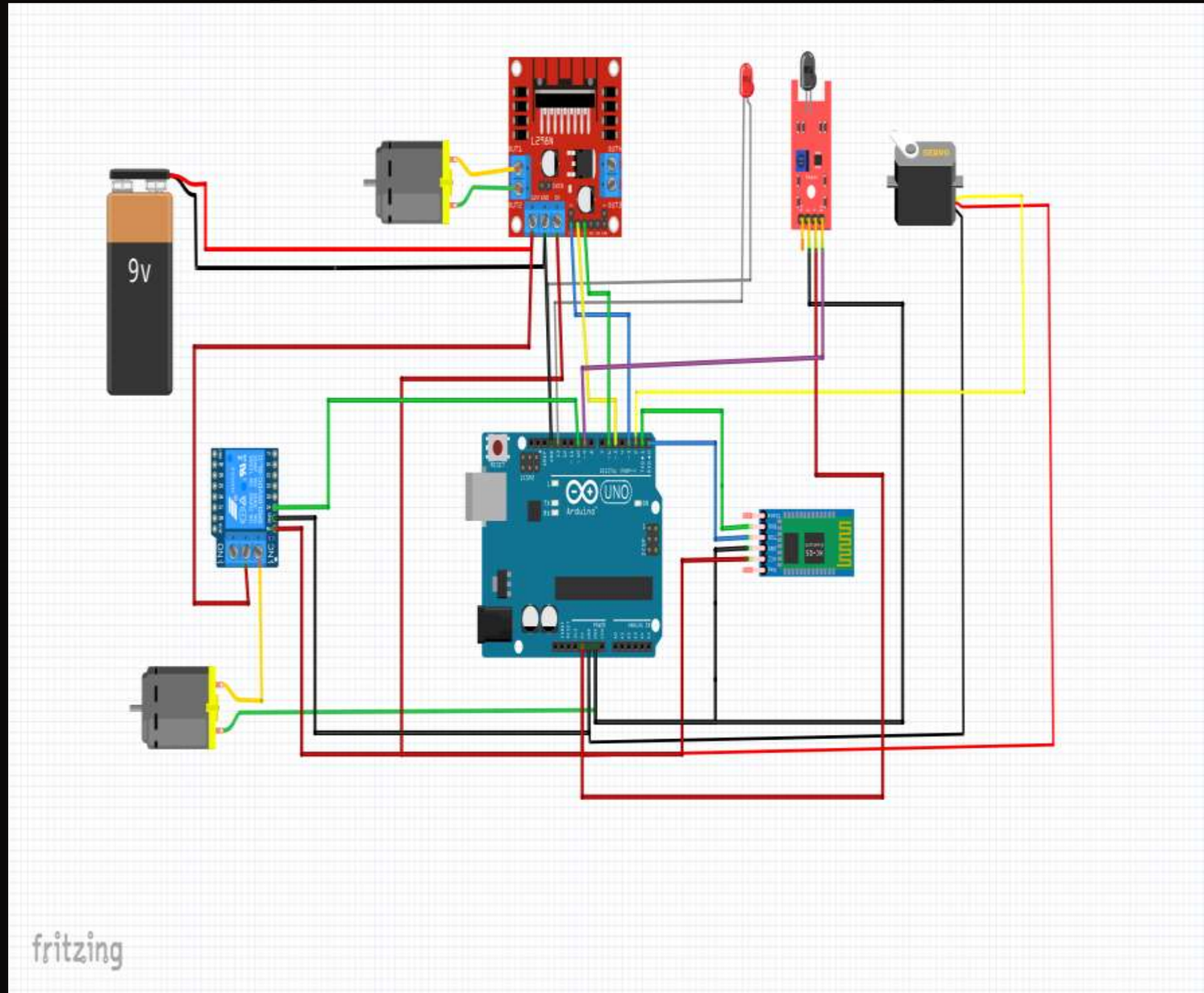
## Testing & Calibration

Fine-tuning sensors and controls

5

## Final Demo

Showcase full system functionality



# Applications

## Industrial Safety

Fire protection in hazardous industrial zones

## Robotics Research

Platform for autonomous mobile robots development

## Education

Demonstration tool for engineering concepts and AI

# Conclusion & Future Work

## Impact

Enhances safety, reduces firefighter risk

## Future Upgrades

Incorporate autonomous navigation and AI fire detection

# Thank You!

Contact us for collaborations and live demonstrations. Scan QR code to connect.