RESCUETECH: SMART WIRELESS BODY DETECTION SYSTEM FOR POST-DISASTER SEARCH OPERATIONS

BY
ABIRAMI M
MEENA K
PAVITHRA S
PRITI PANDEY R

INTRODUCTION

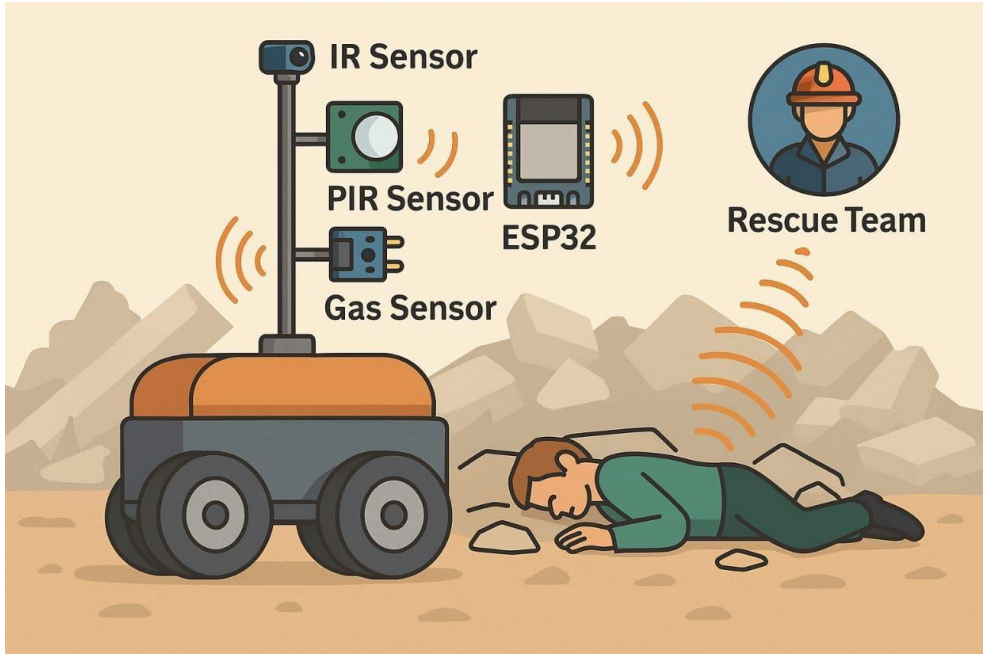
- Imagine a building collapse…
- Time is slipping away, debris is everywhere, and lives are at stake. Rescuers are racing against time to locate survivors—but manual searches are slow and dangerous.
- This is where RescueTech comes in—our smart body detection system designed to support Collapsed Structure Search and Rescue (CSSR) operations. It's compact, wireless, and intelligent. It sees what humans can't.

PROBLEM STATEMENT

- In disaster zones, identifying the presence and exact location of trapped survivors is one of the most critical and challenging tasks. Traditional methods often delay rescue efforts and increase risk to both victims and rescuers.

OBJECTIVE

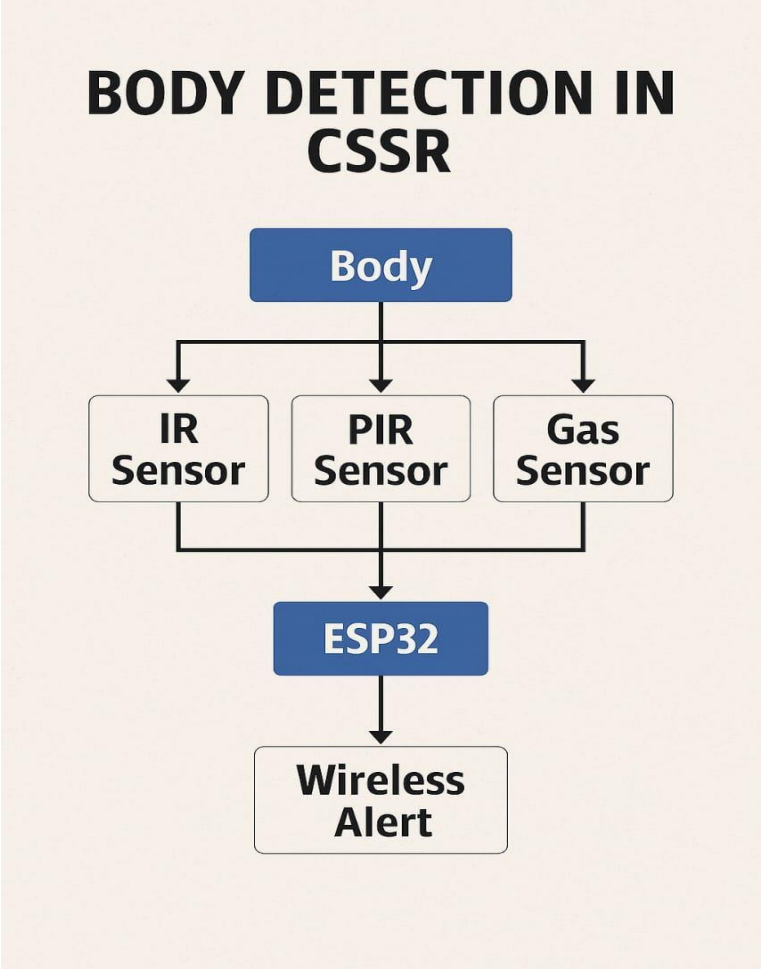
- Our goal is to develop a low-cost, portable, and real-time body detection device that helps locate survivors by detecting:
  Body heat (IR Sensor)
  Motion (PIR Sensor)
  Respiratory gases (Gas Sensor)
- All these are processed using an ESP32 microcontroller and sent wirelessly to the rescue team.



WORKING PRINCIPLE

- Our system is built on a multi-sensor logic:
- IR Sensor detects heat signatures from a human body.
- PIR Sensor captures movement if the person is alive and conscious.
- Gas Sensor senses CO_2 or other exhaled gases indicating breathing.
- ESP32 processes all data and triggers a detection alert.
- Alert is sent wirelessly to a control station or rescue team.
- Together, these sensors ensure high detection accuracy, even in challenging conditions.

- Power Supply (No USB in Real Use):
- We used USB during testing, but our final model is powered by:
  Rechargeable Li-ion battery
  Optional solar backup (future)
- This makes the device fully wireless and field-deployable.



REAL-WORLD DEPLOYMENT

- Can be placed manually in collapsed areas
- Mounted on rescue robots or drones
- Integrated into smart rescue kits
- Once a survivor is detected, the rescue team receives an instant alert, helping them act fast.

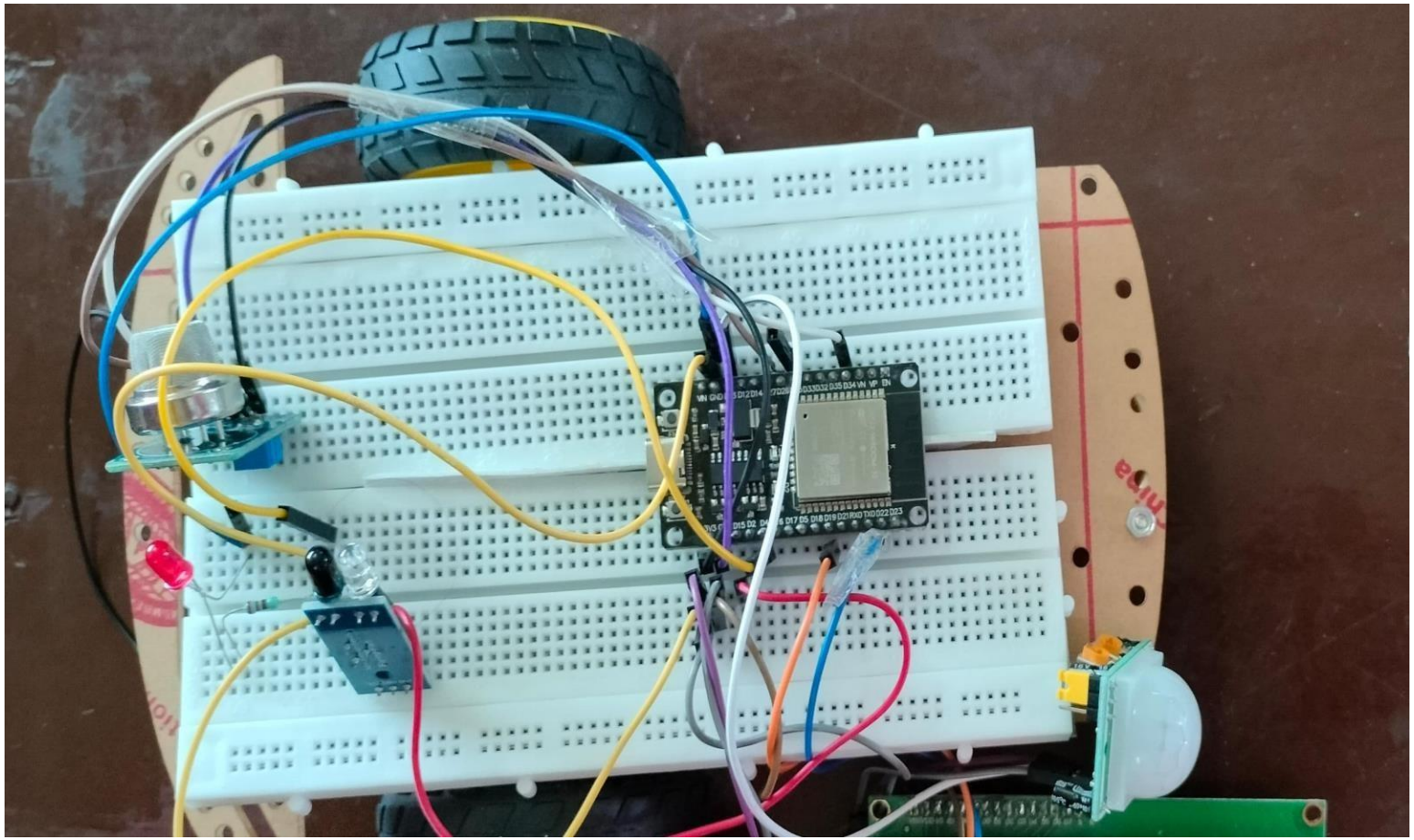
ADVANTAGES

- Fast detection = faster rescue
- No physical search = less risk
- Compact, portable, and affordable
- Real-time, wireless alerts

FUTURE SCOPE

- Add GPS module for exact survivor location
- Integrate with cloud dashboard for live monitoring
- Use AI to differentiate humans from pets or objects
- Deploy across multiple disaster zones using mesh networks

WORKING MODEL



CONCLUSION

- RescueTech isn’t just a project—
- It’s a lifesaving tool designed to revolutionize rescue operations.
- In every second that passes after a disaster, lives are hanging by a thread. Our system helps ensure that those seconds count.