To Predict ▶ To Design ▶ To Perform

College of Engineering
Department of Mechanical & Industrial Engineering

ME, ECE, BE Capstone Design Programs

Team #24: Stove Monitoring Appliance

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The Problem:

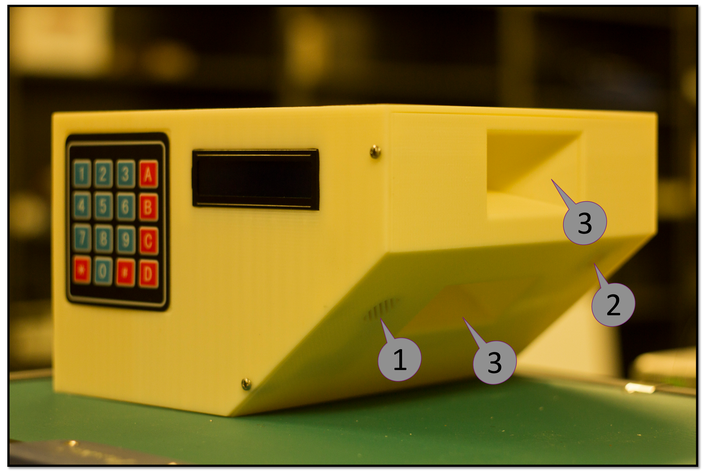
- NFPA – unattended cooking with ranges/stoves is #1 cause of kitchen fires.
- Kitchens with gas stove have higher chance of carbon monoxide build-up.
- 5,800 children burned each year from contact with hot object on stove.

Design Objectives:

- Detect 50 ppm carbon monoxide (OSHA Standard 1917.24).
- Determine if stovetop is in use.
- Determine if stovetop has been left unattended.
- Remotely notify owner of potential problem in kitchen.
- Prevent children from nearing stove surface.

Testing/Validation & Success:

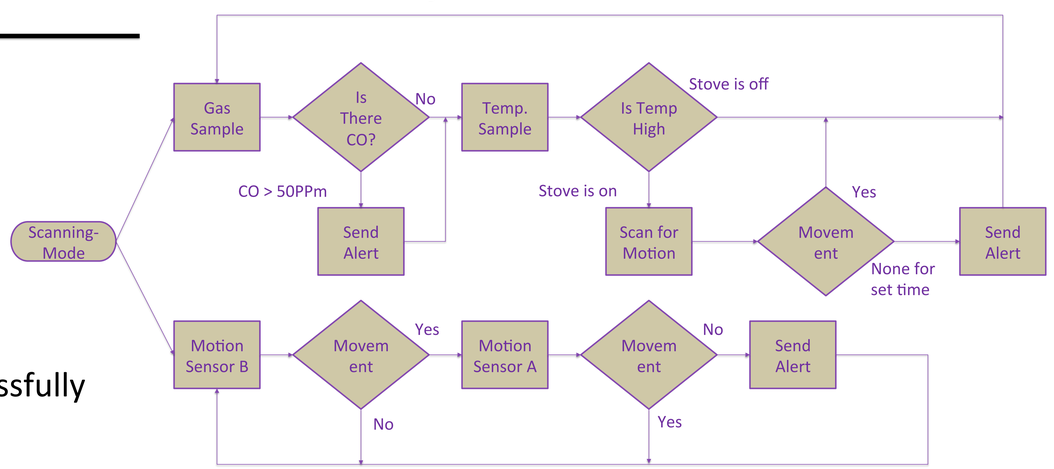
- Successfully and repeatedly detect:
  - 50ppm carbon monoxide
  - If stovetop is on
  - If child is trying to move pot
- In case of each listed condition, successfully send text message to user's phone.



Design Embodiment:

- Arduino Mega for processing.
- GSM Shield for text/call notification.
- Carbon monoxide (1), temperature (2), and PIR (motion) sensors (3) for environmental awareness.
- ABS 3D printed housing.
- Keypad and LCD display for user interface.

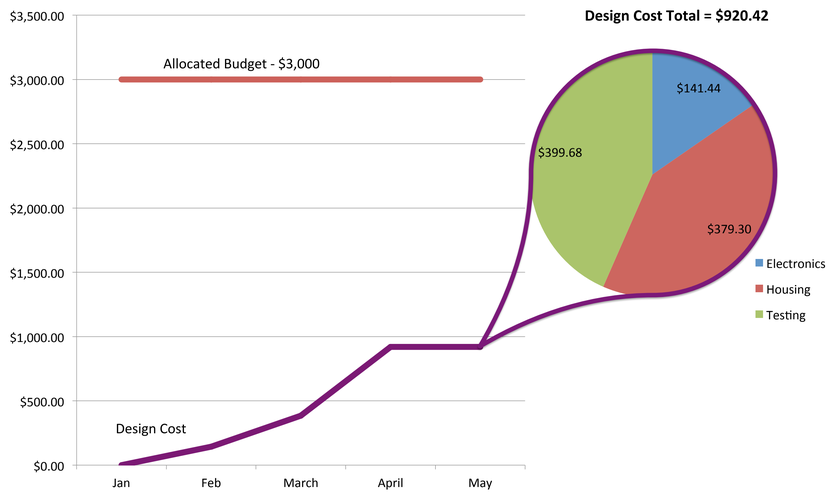
System Flowchart



Validation Results

Test	Cycles	Success Rate
CO Detection	20	100%
Stovetop On	20	100%
Child Movement	100	100%
Notification	140	98%

Design Cost



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