

STAN

The Smart Trashcan

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ELET 4308/4108

Team 11

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Presentation Outline

- Introduction
 - Ricardo Moreno
- Hardware
 - Chris Vanderbles
- Software
 - Alisha Garrett
- Cost Analysis
 - Alisha Garrett
- Questions



Introduction

What is STAN?

- An advanced waste system unit
- Trash management system
- User friendly trashcan shroud



Product Objectives

What will STAN do?

- Indicate Trash levels
- Touch-less automatic opening
- User friendly interface

Product Purposes

What are STAN's purposes?

- Prevent overflowing trashcans
- Maintain a sanitary environment
- Reduce janitorial workload





Hardware Specifications

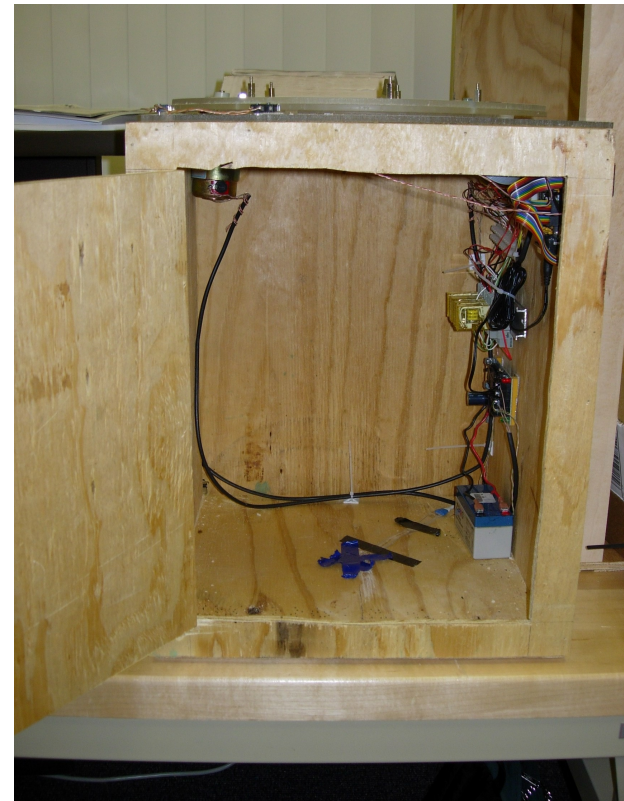
- Bipom 8051 Microcontroller
- FlexiForce Pressure Sensor (100 lbs)
- Sharp IR Sensor
- Figaro Methane Sensor
- 12 – 38 V DC Motor
- LCD
- Keypad
- Relays

STAN Prototype

Exterior View

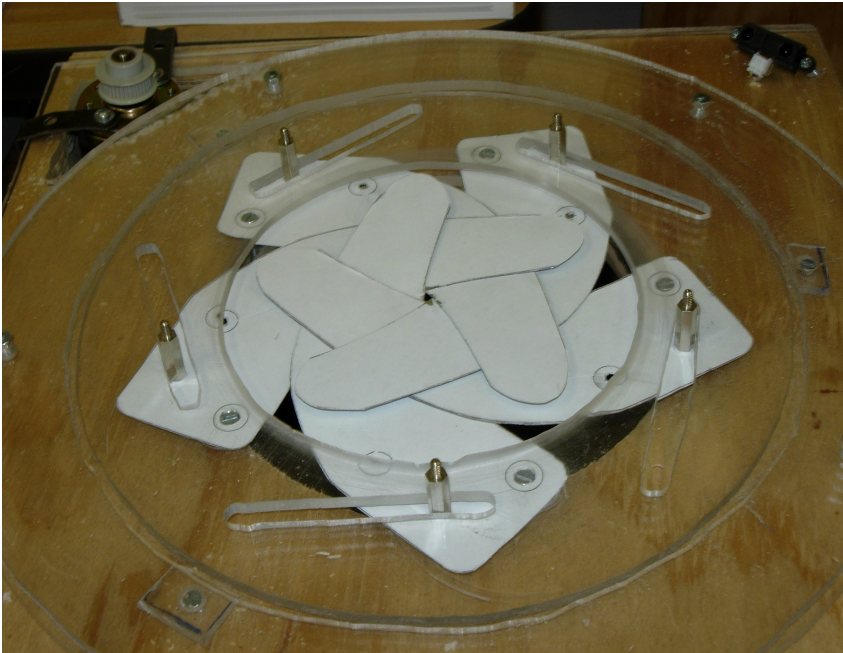


Interior View

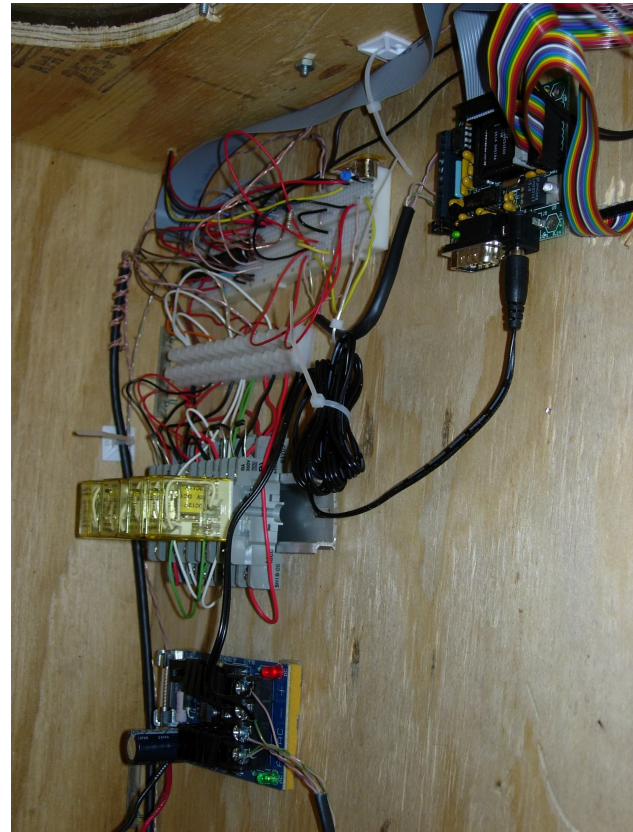


STAN Prototype

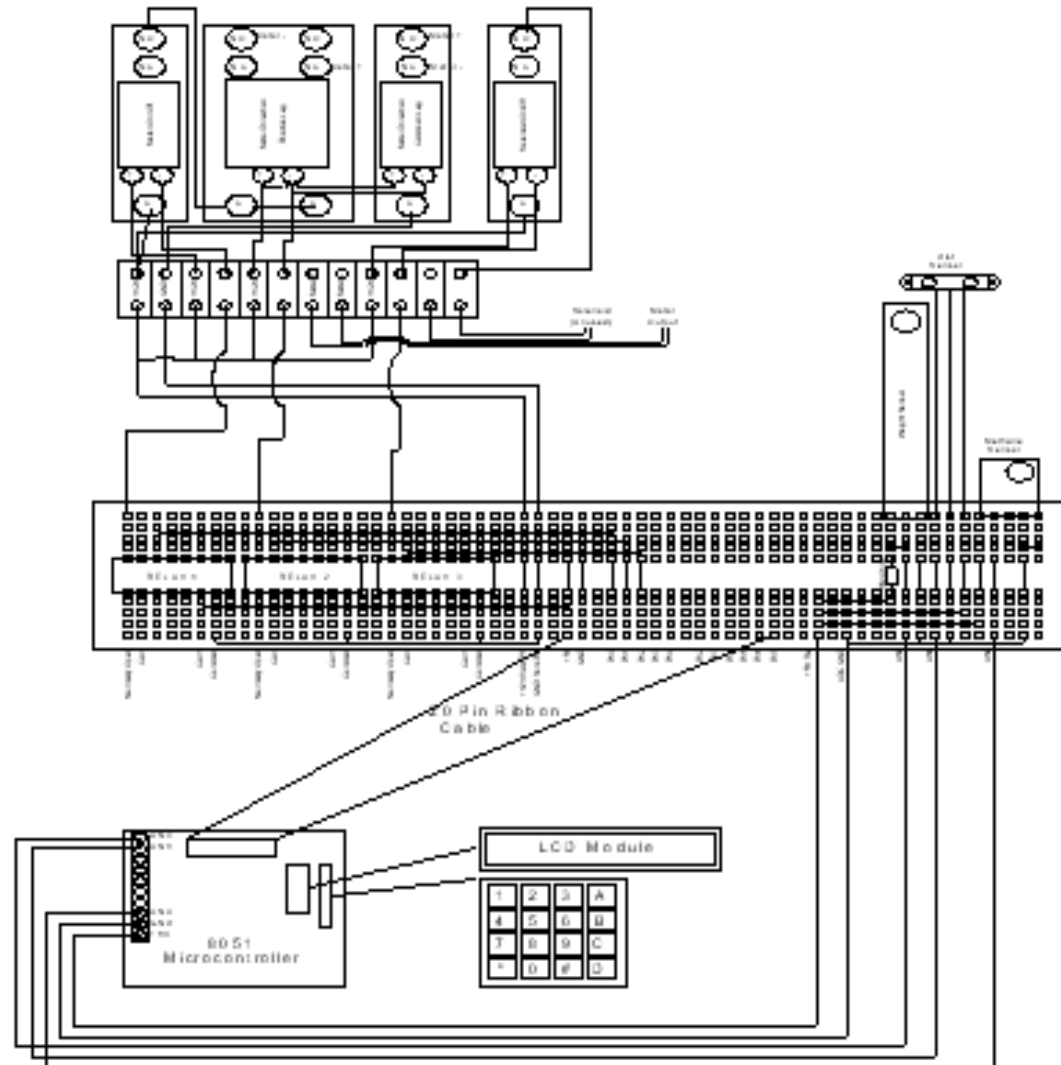
Iris Door Mechanism



Circuitry Interconnects



Hardware Design



Hardware Design

FlexiForce[®] Force Sensor

- A versatile and durable force sensor
- Pressure Range 0-100 lbs



Hardware Design

Sharp GP2D12 IR Sensor

- IR Distance Sensor
- Range = 10 cm – 80 cm



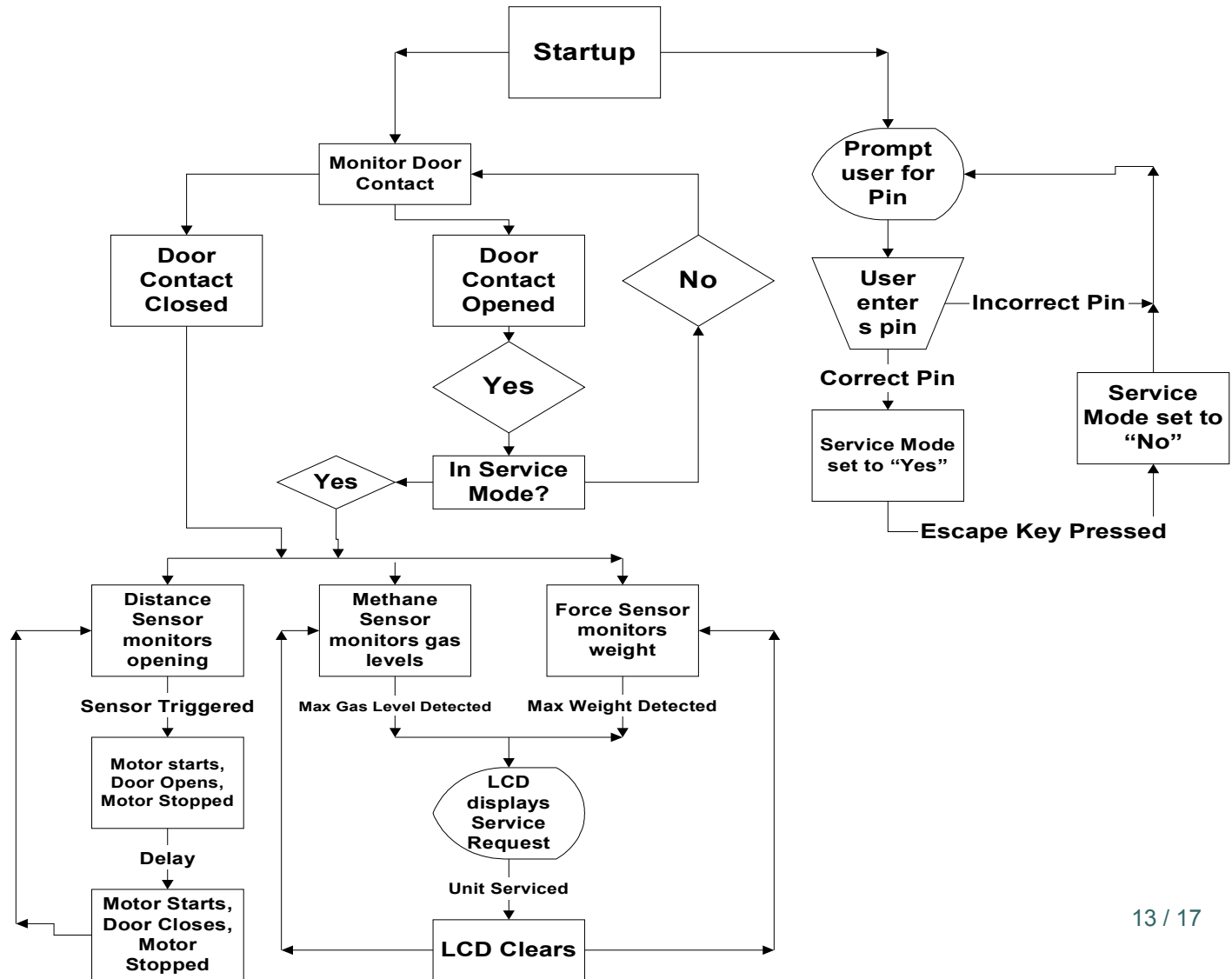
Hardware Design

Figaro NGM2611 Methane Gas Sensor

- Pre-calibrated
- Low power consumption



Software Design





Cost Analysis

Parts

○ Bipom Mini-Max 51/C2	\$69.00
○ LCD	\$29.00
○ Weatherized Keypad	\$13.00
○ FlexiForce Pressure Sensor	\$25.00
○ Sharp IR Sensor	\$22.91
○ Figaro Methane Gas Sensor	\$35.50
○ Relays (4)	\$26.25
○ 12 – 38 V DC Motor	\$16.95
○ Limit Switches (2)	\$5.00
○ Materials	\$65.00

Total

\$307.61



Cost Analysis

Equipment

BK Multimeter	\$ 695.00
BK Power Supply	\$ 689.00
Weller Soldering Kit	\$ 163.84
Dremel Kit	\$ 140.00
Total	\$ 1687.84

Labor

Total Hours	Salary
215 * 3	\$20 * 2.5
Total	\$ 32,250.00

GRAND TOTAL
=
\$ 34245.45



References

1. <http://www.lynxmotion.com/>
 - Sharp GP2D12 IR Sensor Specifications
2. <http://www.tekscan.com/flexiforce/flexiforce.html>
 - FlexiForce[®] Force Sensor Specifications
3. <http://www.figaro.co.jp/en/pdf/NGM2611ProductInfo1201.pdf>
 - Figaro NGM2611 Specifications
4. <http://www.bipom.com/documents/boards/minimax51c2>
 - Bipom Mini-Max/51-C2 Technical Manual



Questions?

