Jade

EVERY DRIP COUNTS

Damian Dziedzic
John Lee
Anfernee Zhao

Problem Statement

- When nurses are busy, it becomes difficult for them to run around and check in on many patients.

- It is difficult for a nurse to keep track of all information such as:
  - Patient identification
  - Drop factors
  - Saline concentration

Existing Products

- Company: Shift Labs
- Product: DripAssist
- Cost: $519.99

- Problems:
  - Bulky
  - Security Issues
  - No centralized data management
  - Still requires nurse to walk to every room

Value Proposition and Customer Segment

We present a small add on device to any IV setup that securely monitors volume and flow rate which is wirelessly displayed on a GUI.

Important Customers:

- Hospitals
  - Infirmary
  - Operating Room
- Veterinary Clinics

Product Features

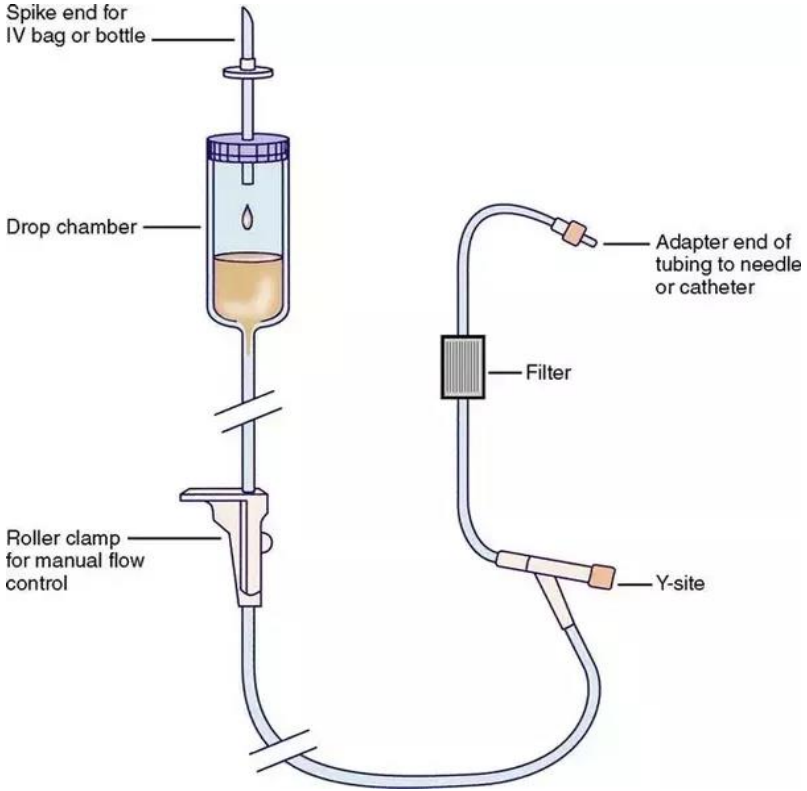
Features

- IR Beam Sensor
- Microcontroller
- Controllable Size
- Wireless Link
- Drip Chamber Clamp
- Small and durable
- GUI with Real-time Graphs

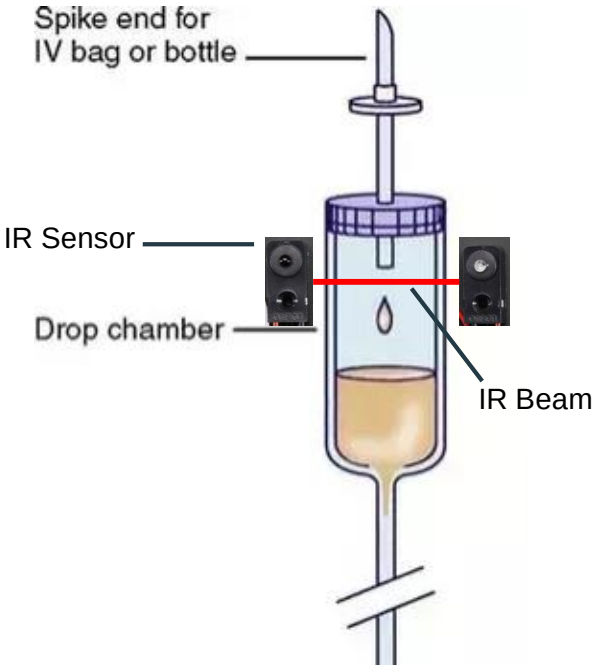
Specifications

- Wi-Fi Hospital Protocol
- 4 x 3 x 5 inches enclosure (L x W x H)
- 5-year operation
- Survives 6 ft drop

IV Line Layout



System Overview



RFID Tags

Drop Chamber

RFID Reader

IR Beam Sensor

SPI

GPIO

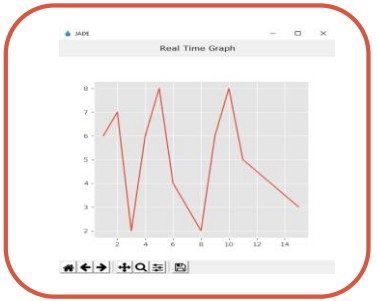
Microcontroller

UART

WiFi Module

WiFi

Computer GUI



Server/GUI Operation Overview

- Start-up GUI and server on seperate threads

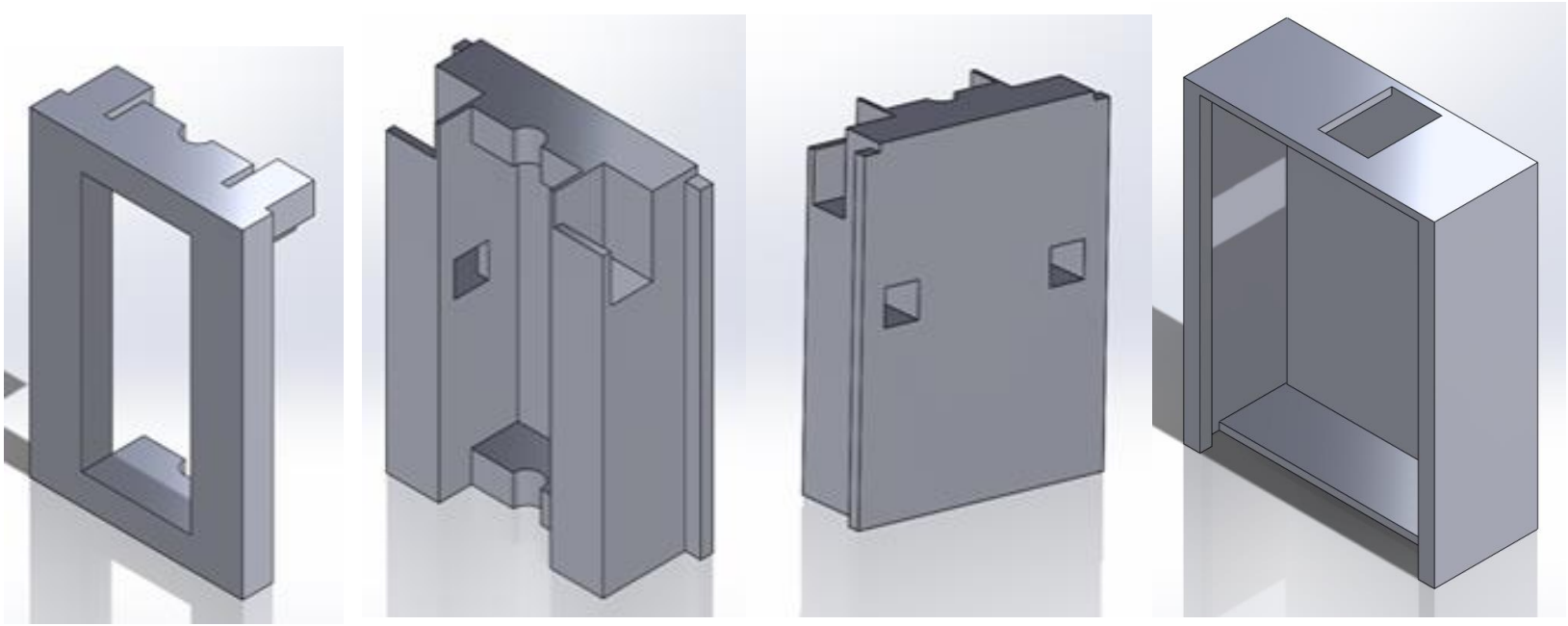
- Client attempts to connect
- Client is prompted for a password
- Client enters setup mode and sends the password and name of the client

- Server creates a patient object
- Server appends the patient object to a list of connected clients

- Server iterates through the client list and prompts for data from each client

- Client receives server acknowledgement that data can be sent
- Timestamp,volume,volume flow

3D Model

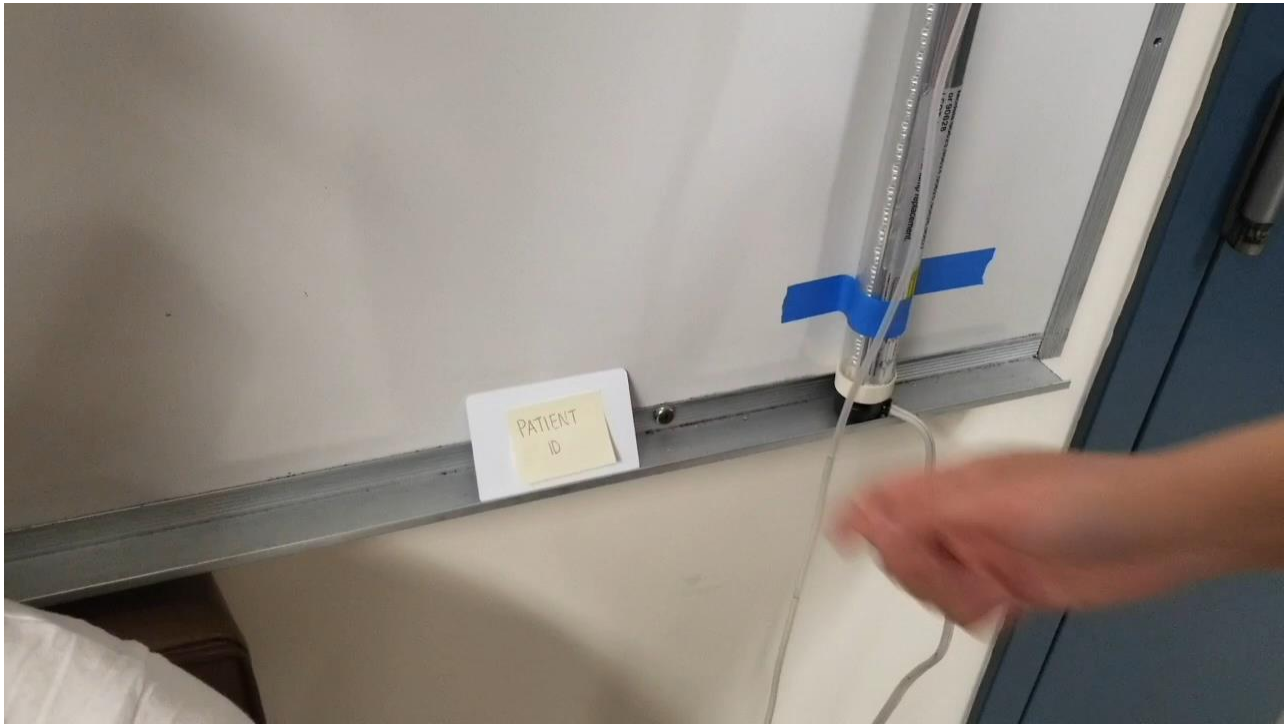


Bill of Materials

- Microcontroller: $21
- RFID Module with Tags: $10
- WIFI Module: $4.00
- IR Sensor: $10.00
- Lithium Polymer Battery: $7.00
- Miscellaneous: ~$5.00 (LEDs, Resistors, Switch, etc.)

Total: $57.00

Demonstration



Conclusion

- Additional Desired Features:
  - Feedback control that controls a motor that clamps the IV line to adjust flow rate from the GUI
  - Small UI on the device that aids in WiFi setup on the microcontroller and displays status of the microcontroller (data mode vs setup mode)
  - Push notifications to display on the GUI
- Further Improvements:
  - Make the device smaller and lighter
  - Make a custom PCB for the electronics

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