

# **Simple Telepresence Rover**

With the RaspberryPi

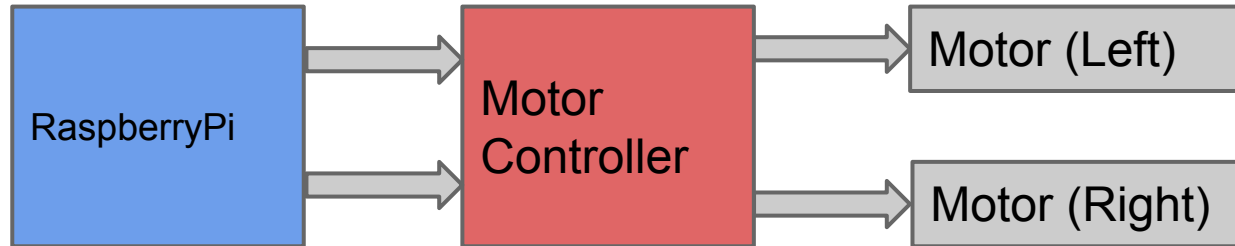
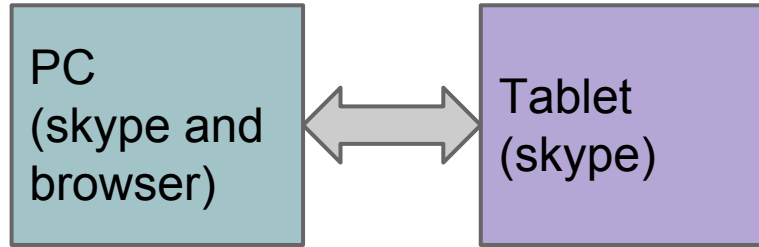
# Objective

Simple

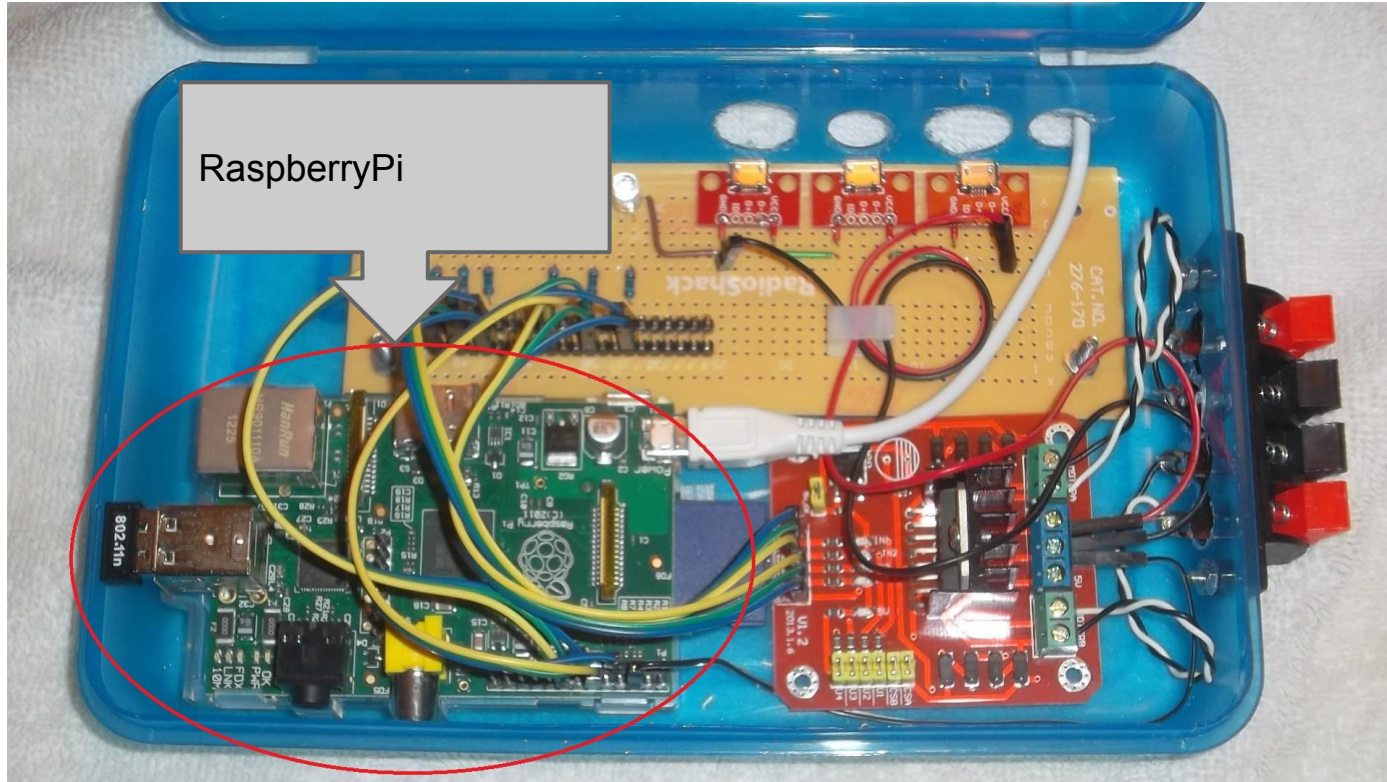
Uses RaspberryPi

Fun

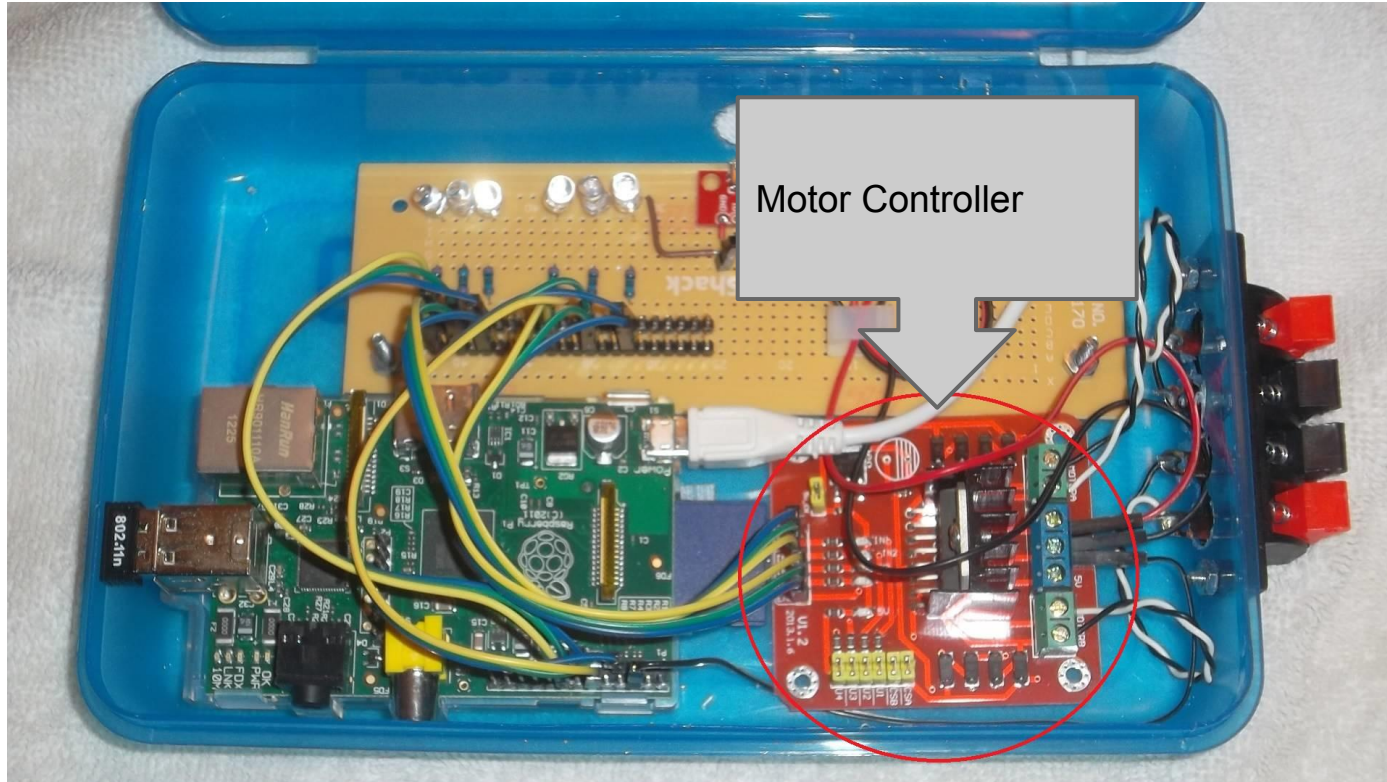
# Hardware



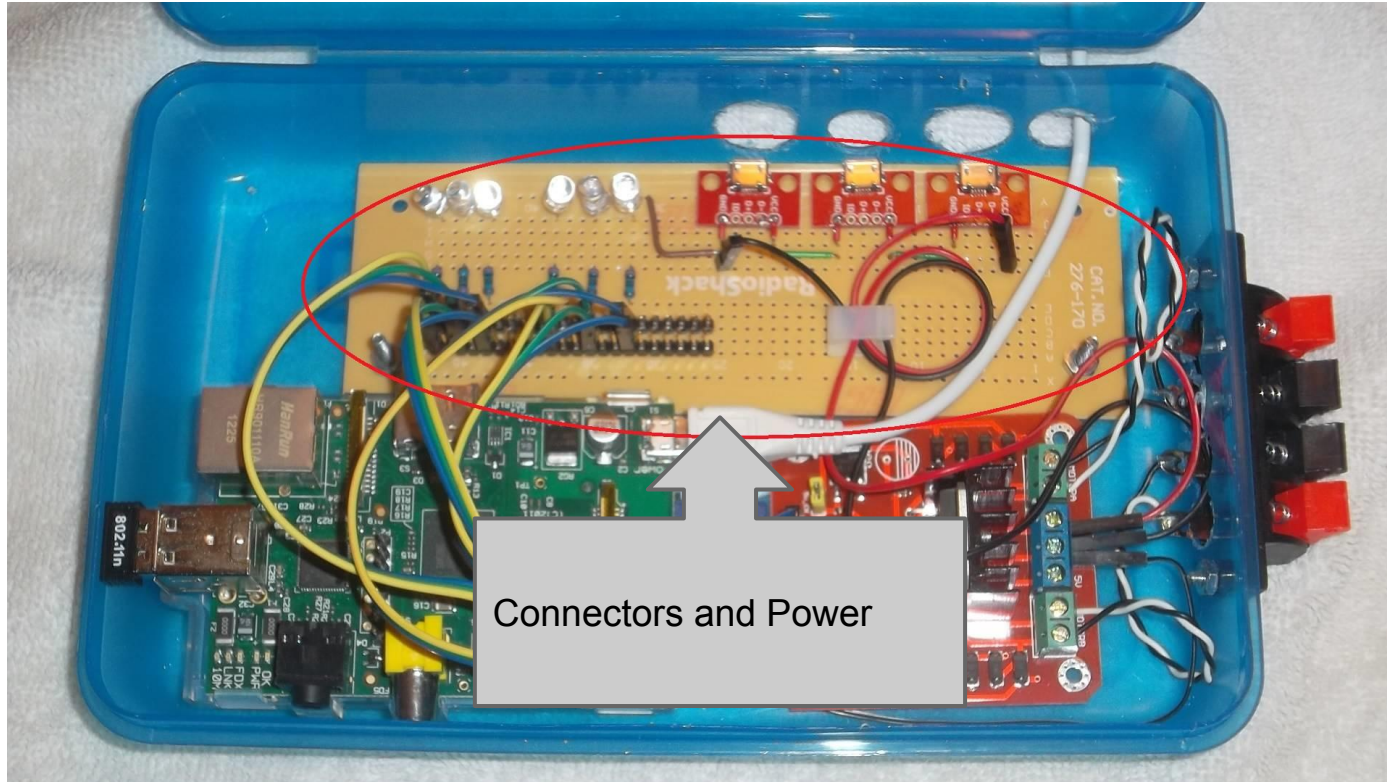
# RaspberryPi



# Motor Controller

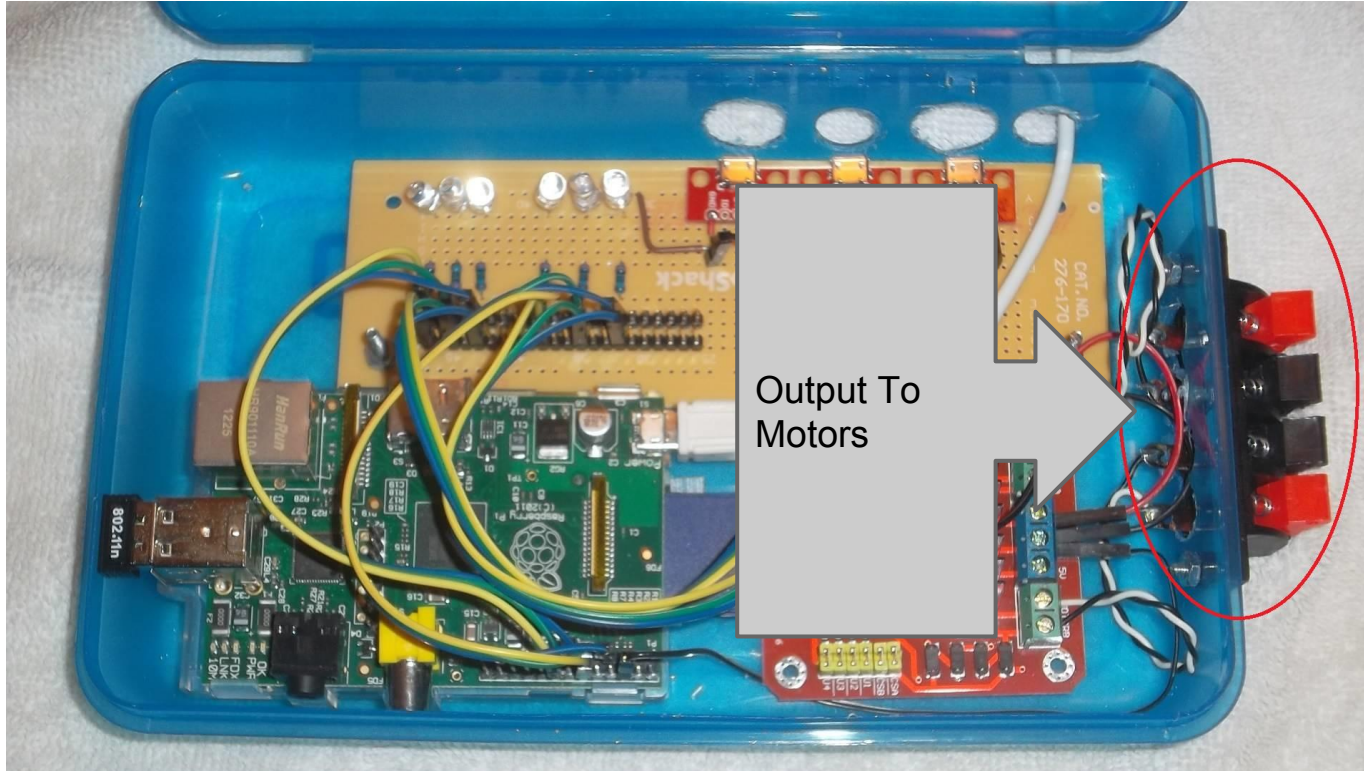


# Connectors and Power

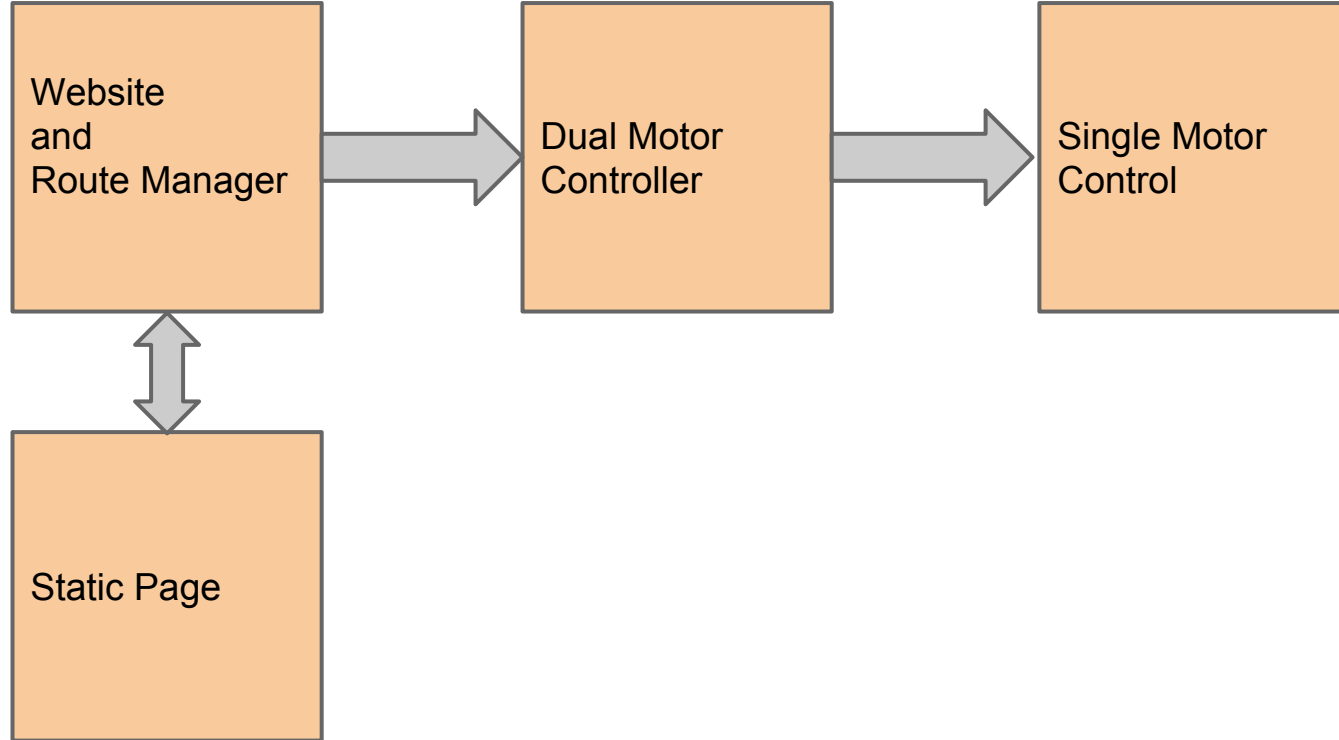




# Output to Motors



# Software High Level





# Website

Python Website using

FLASK

<http://flask.pocoo.org/>



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*Flask is a microframework for Python based on Werkzeug, Jinja 2 and good intentions. And before you ask: It's [BSD licensed](#)!*

Flask is Fun

*Latest Version: [0.10.1](#)*

```
from flask import Flask
app = Flask(__name__)

@app.route("/")
def hello():
    return "Hello World!"

if __name__ == "__main__":
    app.run()
```

# Static Responsive Page

- Display motor controls
- Select routes

Bootstrap

JQuery

```
<!DOCTYPE html>
<html>
<head>
  <title>Robot Control</title>
  <link rel="stylesheet" type="text/css" href="bootstrap/css/bootstrap.min.css">
  <script src="jquery-2.1.1.min.js"></script>
  <script>

    $("").keyup(function() {
      $('#controlFrame')[0].src="/clear";
    });

    $( " " ).keydown(function( event ) {
      if (event.which==65) $('#controlFrame')[0].src="/rotateleft";
      if (event.which==83) $('#controlFrame')[0].src="/left";
      ...
    });
  </script>

```

# Dual Motor Controller

## Python

```
import motor
....
def movement(action):
    print "MotorAction ",motoractionname(action)
    if action == MotorsAction.Left:
        moveleft()
    if action == MotorsAction.Right:
        moveright()
    if action == MotorsAction.Reverse:
        movereverse()
....
```

# Single Motor Control

## Python

```
import RPi.GPIO as GPIO
```

```
....
```

```
def motormovementname(movement):  
    if movement == MotorMovement.Forward:  
        return "Forward"  
  
    if movement == MotorMovement.Reverse:  
        return "Reverse"  
  
    if movement == MotorMovement.Stop:  
        return "Stop"  
  
    if movement == MotorMovement.Clear:  
        return "Clear"
```

```
class MotorPins:
```

```
    EnL = 4
```

```
    IAL = 17
```

```
    IBL = 18
```

```
    EnR = 21
```

```
    IAR = 22
```

```
    IBR = 23
```

```
def setup():
```

```
    GPIO.setmode(GPIO.BCM)
```

```
    GPIO.setup(MotorPins.EnL, GPIO.OUT)
```

```
    GPIO.setup(MotorPins.IAL, GPIO.OUT)
```

```
....
```

# Putting it Together

- Launch website on PI
- Start Skype on tablet
- Start Skype on PC
- Load website in Browser
- See where you're going with Skype
- Control the rover with the website

# Useful Links and Parts

## Flask

<http://flask.pocoo.org/>

## Banana Robotics - Motor Controller

Banana Robots - Motor Controller <https://www.bananarobotics.com/shop/L298N-Dual-H-Bridge-Motor-Driver?search=L298%20Dual%20H-Bridge>

## Actobotics / ServoCity - wheel parts

<http://www.servocity.com/html/actobotics.html>

## Amazon - motors

dc motor 12v



**HOSSEN® 30RPM Mini Gear Box Electric Motor 12V DC 37MM High Torque** by Nextrox

**\$14.00** ✓Prime

Only 10 left in stock - order soon.

More Buying Choices

**\$14.00** new (3 offers)

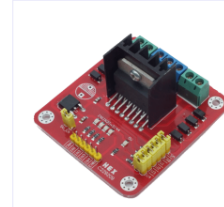
★★★★★ (17)

Product Features

30RPM; 12V DC

Industrial & Scientific: See all 3,477 items

### L298N Dual H-Bridge Motor Driver



Brand: Banana Robotics  
Product Code: BR010001  
Availability: In Stock

**Price: \$9.99**

Qty:

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and stuff from around the house, the hardware store, radio shack and sparkfun....