

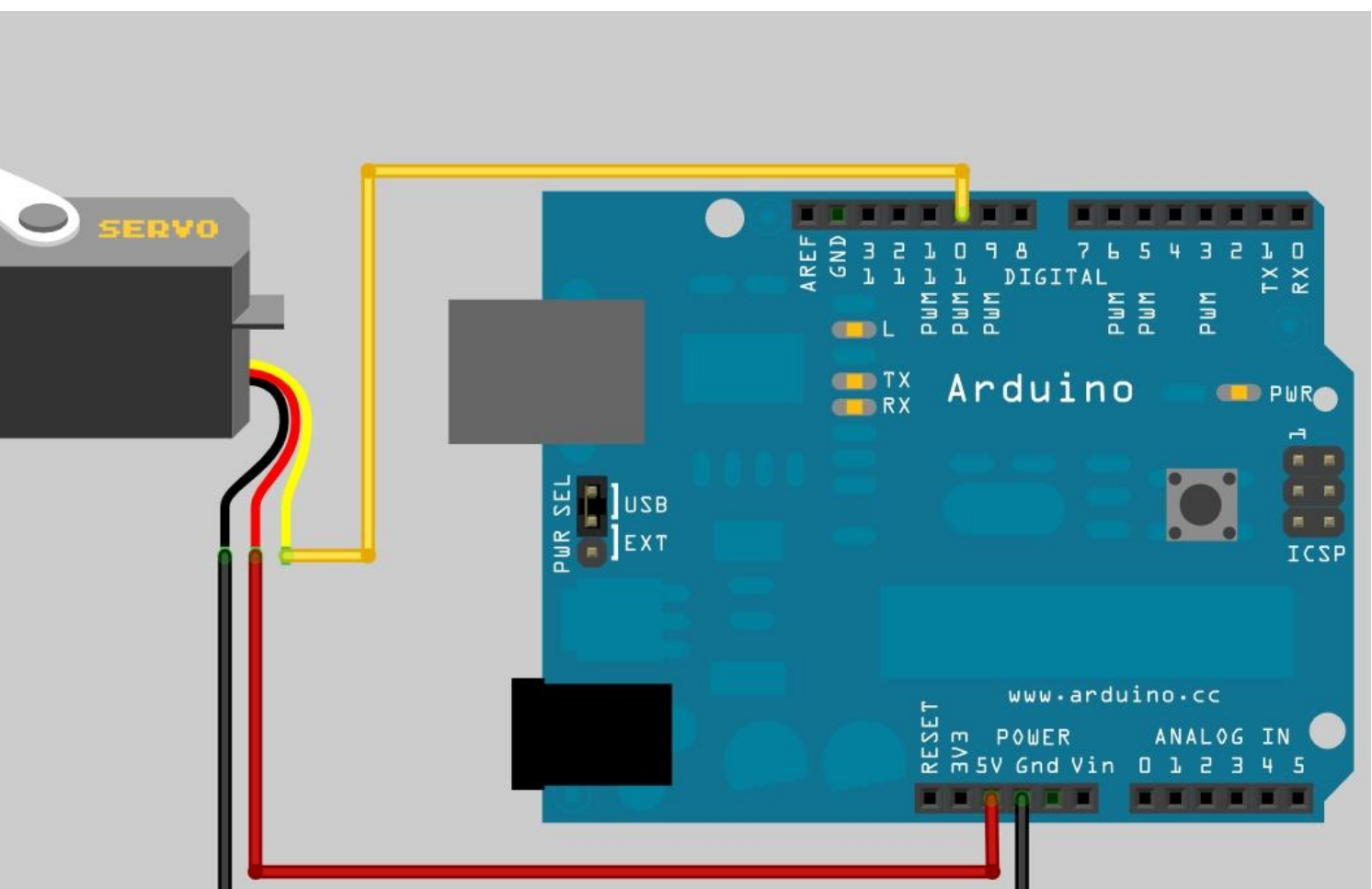
## Email Message

Dear All,

Our work this week was focused on the linear actuator. We ended up buying a new linear actuator, the L16 micro actuator by Actuonix, because its specifications better fit our design. It is smaller and a lighter weight than the previous one, which is important because the idea is that it will be attached to the patient's belt/pants, and it is still powerful enough to move the syringe. This actuator is actually the one we had wanted from the start; however, it had been unavailable up to this point. Our new actuator no longer needs a relay board so it is connected directly to the Arduino. This also meant that we needed to rewrite the Arduino code and that was the bulk of the work this week. You can see the updated code as well as the new circuit diagram in the attached notebook.

Thank you,

Kyle Sachdev, Brian Dallesasse, Taylor Hughes



Project created on 06.09.2016 02:03.

# Report for project Senior Design

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Task created on 26.01.2017 19:17.

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## Parts

*No due date*

*No description*

Task tags: *No tags*

\* Created by Kyle Sachdev on 10.02.2017 02:04.

- Ordered and received linear actuator (\$60)
  - Windynation linear actuator with 6" stroke length
  - size of the device is too large
  - There is a picture in the image section
- Ordered new linear actuator (\$60)
  - ECO-WORTHY Heavy Duty 330lbs Solar Tracker Linear Actuator Multi-function
  - 4" stroke length
  - smaller size than previous one
- Actuonix linear Actuator
  - This is the linear actuator we had wanted originally but it had been sold out since we started looking for parts
  - its lighter weight than the one we had previously been working with which is important because it will be on the patients belt
  - 4" stroke length
  - it works like a servo motor so it can be connected directly to the arduino and can both expand and contract
  - The relay board it no longer necessary
  - equal in price to the previous actuator + relay board

 Comments for result

*No comments*

Task created on 10.02.2017 03:09.

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## Arduino and Circuit

*No due date*

*No description*

Task tags: *No tags*

 New Actuator Circuit Diagram [ *arduino\_servo\_sketch.jpg* ]

Uploaded by Kyle Sachdev on 24.03.2017 03:41.

Comments for result New Actuator Circuit Diagram

*No comments*

\* Updated Arduino Code Created by Kyle Sachdev on 24.03.2017 00:54.

# include

```
Servo myServo;
```

# define PIN\_SERVO (8)

```
void SetStrokePerc(float strokePercentage) { if ( strokePercentage >= 1.0 && strokePercentage <= 99.0 ) { int usec = 1000 + strokePercentage * ( 2000 - 1000 ) / 100.0 ; myServo.writeMicroseconds( usec ); } } void SetStrokeMM(int strokeReq,int strokeMax) { SetStrokePerc( ((float)strokeReq) / strokeMax ); }
```

```
void setup() { myServo.attach(PIN_SERVO); }
```

```
void loop() { int d = 10; int delayMS = 1500; int i = 0; for ( i = 1; i < 99; i += d ) { SetStrokePerc(i); delay(delayMS); } for ( i = 99; i > 1; i -= d ) { SetStrokePerc(i); delay(delayMS); } }
```

Comments for result Updated Arduino Code

*No comments*

\* Created by Kyle Sachdev on 24.03.2017 00:54.

- Previous circuit diagram is now incorrect
- The new actuator can be connected directly to the arduino board
- No relay board is necessary

Comments for result

*No comments*