



ENGT 4050

Senior Technology Capstone

Fall 2014

Group A-5



LifeSweeper Technologies

Group A-5

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Overview

- What have we done?
 - Scrapped Ideas
- Where are we now?
- Where are we going?
- Q&A



What Have We Done?

- Program Arduino
 - Servo
 - Motor control
- Mock Up Car





What Have We Done?

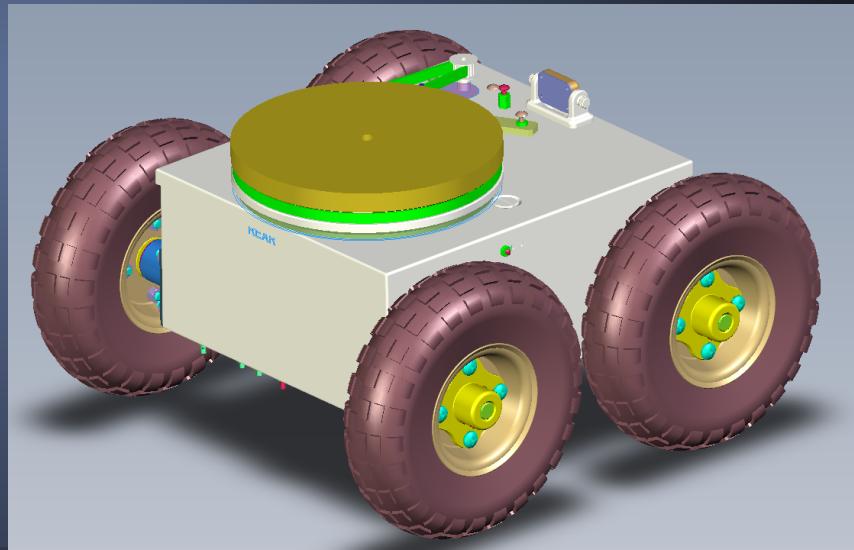
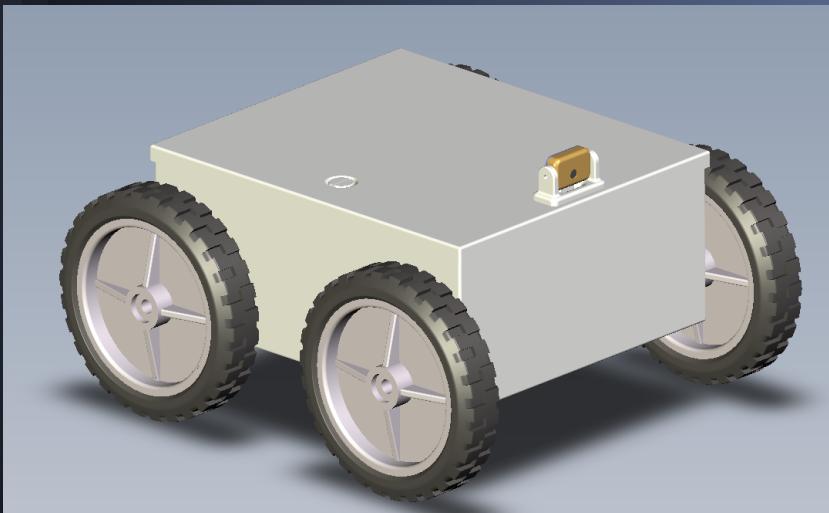
- Scrapped Ideas
 - Android App
 - Spray Paint
 - Treads





The Vehicle

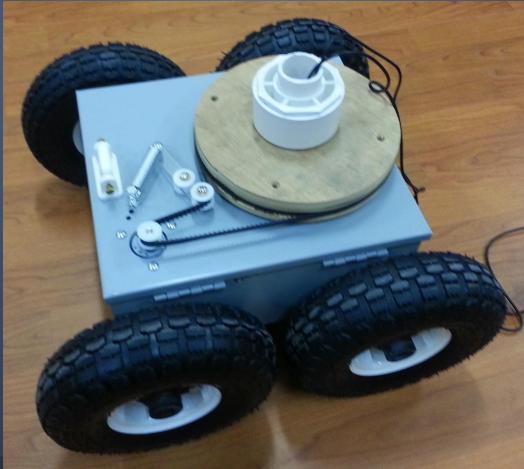
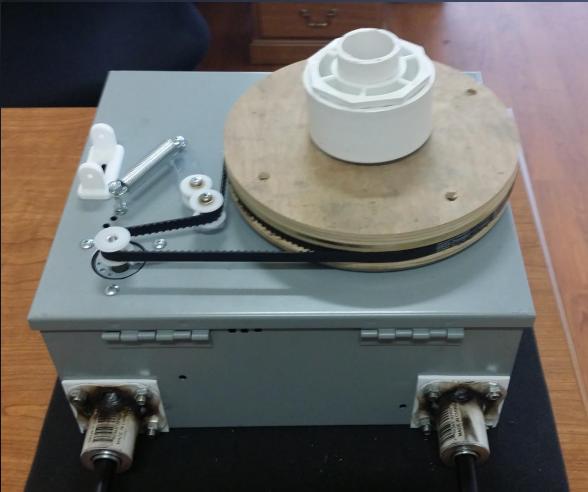
- Old Design vs New Design





The Vehicle

- Current State
 - Metal Chassis
 - Boom Arm





3D Printed Parts

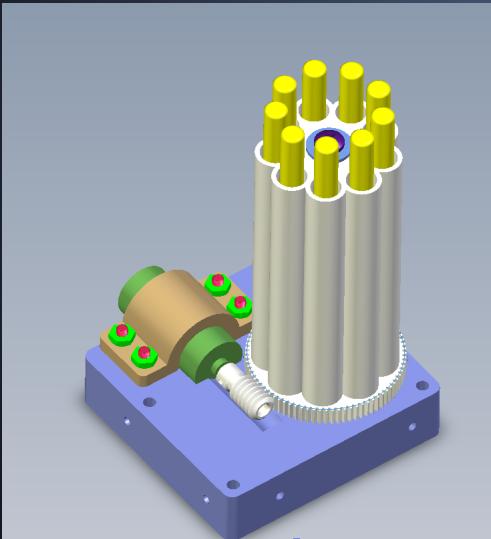
- Wheel Mounts
- Motor Mounts





3D Printed Parts

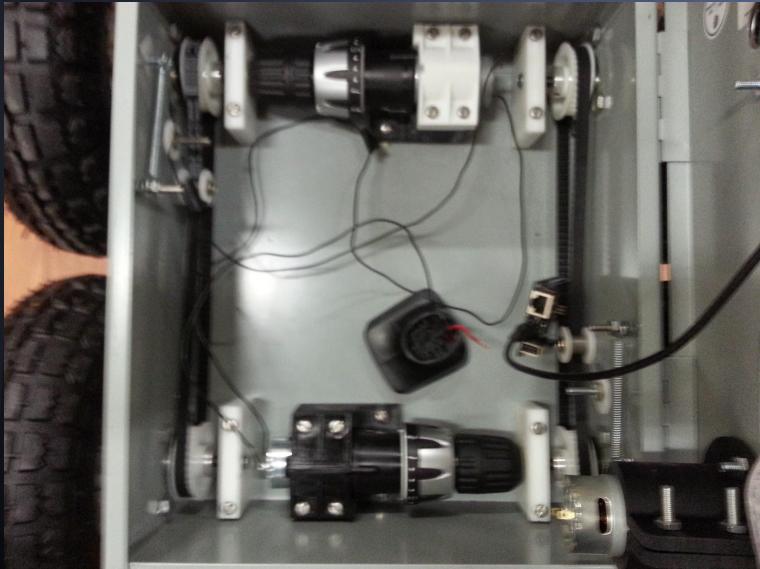
- Marking System





Motors

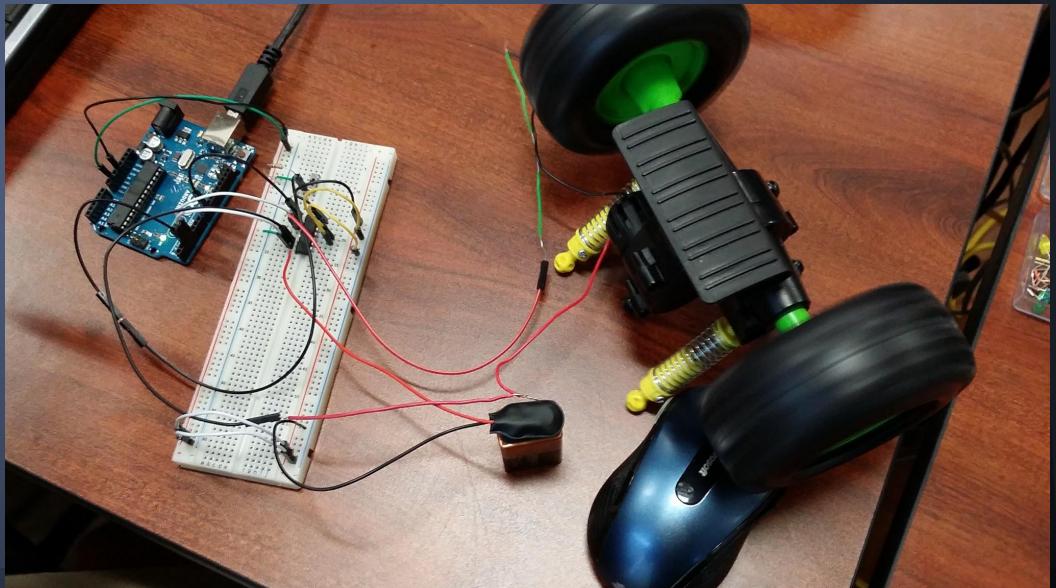
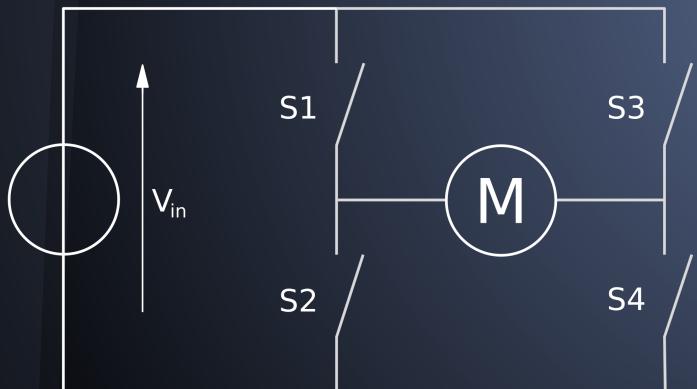
- 2 x 18V drill motors
- 12V Drill Motor





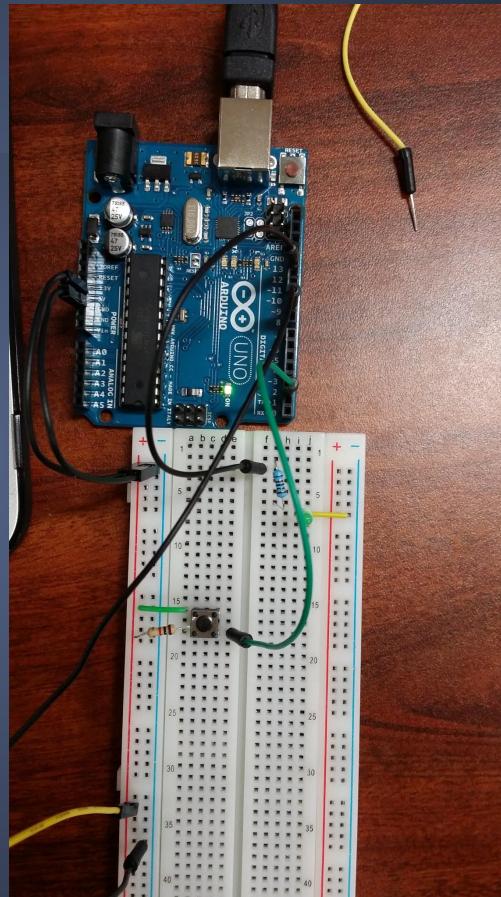
Motors

- H-Bridge
- Fwd/Rrv
- Turning



Controls

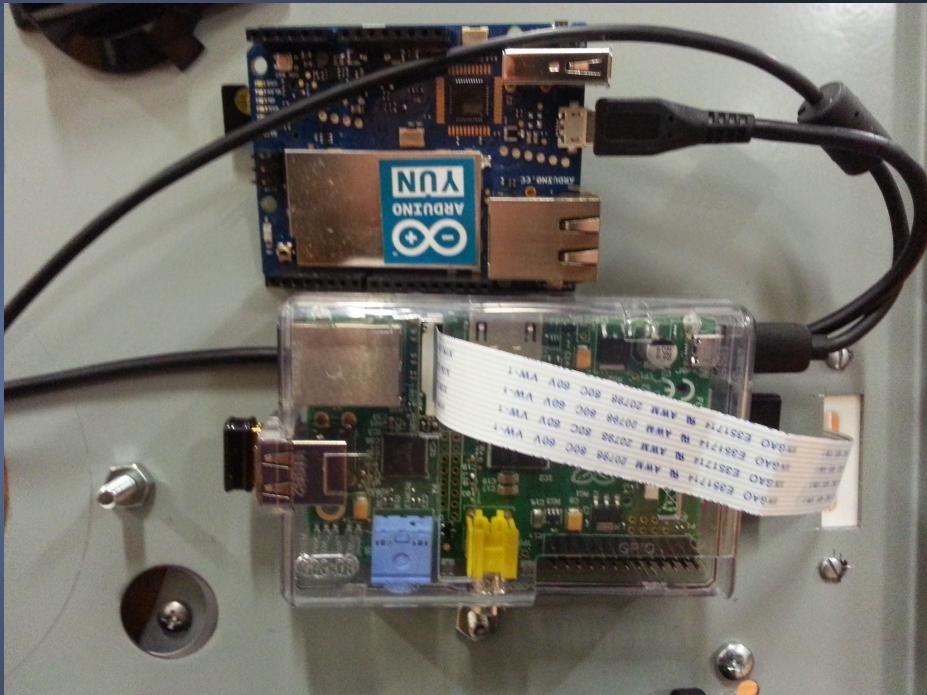
- Arduino Yun
- Turning
- Motor control





Video Stream

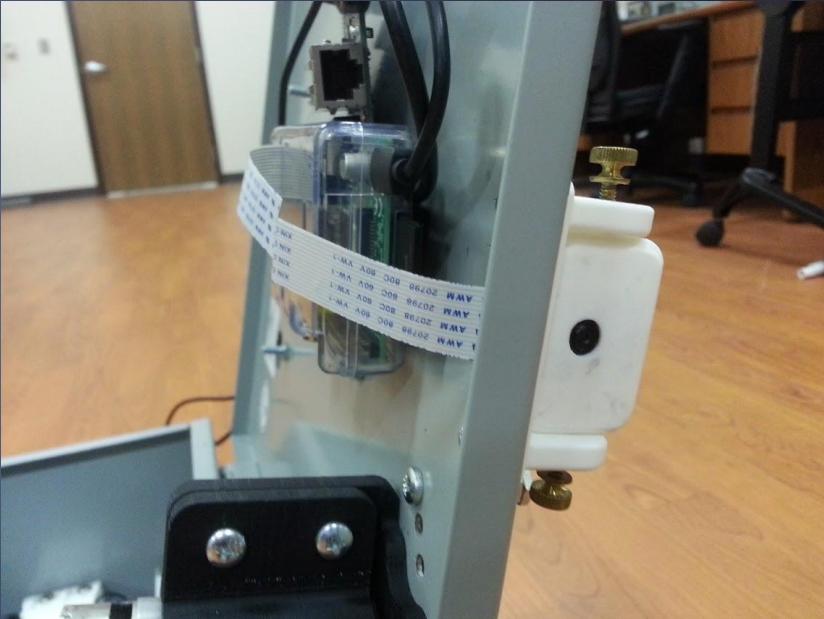
- Raspberry Pi
 - Wifi Module, Camera
 - ffmpeg, nginx, flash
- The Network
 - Arduino AP
 - Static Addressing





Difficulties

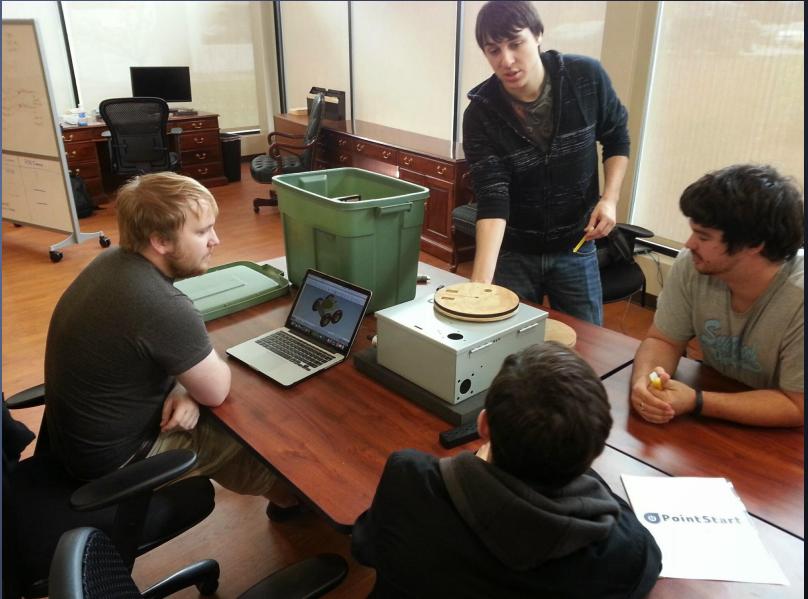
- Originally used Motion
 - Made for security cameras
 - Low FPS, High latency
 - Low Quality
- Switched to ffmpeg/nginx
 - RTMP Protocol
 - Low Resources and Latency





Managing

- Deadline
- Scheduling
- Fun





The Web

A screenshot of a web browser window displaying the website lifesweeper.me. The browser interface includes standard controls (red, yellow, green buttons, back/forward, search, refresh, and download) and a tab bar.

The website has a dark gray background. At the top left is the logo "LifeSweeper Technologies" featuring a stylized robot head icon. The top navigation bar contains links: Home, About Us, Our Project, The Development Process, Powerpoint Presentations, and Our Sponsors.

The main content area features the heading "LifeSweeper Technologies" and the subtext "Safely scanning a path to efficient IED detection." Below this is a large, empty white rectangular area.

In the bottom left corner of the white area, the text "Who we are" is visible. At the very bottom of the page, a small line of text reads: "We are a group of college seniors collectively working on our senior capstone".



Web Integration

- REST API - HTTP
- Javascript + PHP + HTML + CSS
- Hosting on the Yun

```
},
slice: function(idx){
    return idx === -1 ? this.slice(idx) : this.slice(idx, + idx + 1)
},
first: function(){
    var el = this[0]
    return el && !isObject(el) ? el : $(el)
},
last: function(){
    var el = this[this.length - 1]
    return el && !isObject(el) ? el : $(el)
},
find: function(selector){
    var result, $this = this
    if (!selector) result = []
    else if (typeof selector == 'object')
        result = $(selector).filter(function(){
            var node = this
            return emptyArray.some.call($this, function(parent){
                return $.contains(parent, node)
            })
        })
    else if (this.length == 1) result = $(zepto.qsa(this[0], selector))
    else result = this.map(function(){ return zepto.qsa(this, selector) })
    return result
},
closest: function(selector, context){
    var node = this[0], collection = false
    if (typeof selector == 'object') collection = $(selector)
    while (node && !collection ? collection.indexOf(node) >= 0 : zepto.matches(node, selector))
        node = node == context && !isDocument(node) && node.parentNode
    return $(node)
},
parents: function(selector){
    var ancestors = [], nodes = this
    while (nodes.length > 0)
        nodes = $.map(nodes, function(node){
            if ((node == node.parentNode) && !isDocument(node) && ancestors.indexOf(node) < 0) {
                ancestors.push(node)
            }
        })
    return node
}
```



What's Next?

- Finish and Integrate
- Testing
- Paperwork

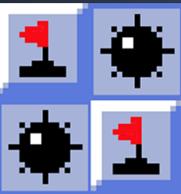


Conclusion

- Car is almost finished
- Working on controls/integration
- Website
- Preparing for Expo



Questions?

 LifeSweeper
Technologies