Building a replica Predator costume

by **Honus** on July 12, 2013

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I'm a former bicycle industry designer turned professional jeweler. I like working with my hands and am happiest when I'm in the shop building my creations. If you need help with your project just let me know!

Intro: Building a replica Predator costume

In 1987 Stan Winston Studios created one of the most iconic creatures to grace the silver screen- the Predator. An actor named Kevin Peter Hall played the Predator - and now twenty six years later his nephew Jamie Hall would pay tribute to Uncle Kevin and once again bring this beloved creature to life.

Originally this was going to be much shorter and titled "Predator backpack and animatronic cannon" as that is what the majority of this instructable is about, but that would be a disservice. This is really a story of how a few members of a Predator fan group, known as The Hunter's Lair, came together to create what we hoped would be the best replica Predator costume ever made- an accurate replica of the costume Kevin Peter Hall wore in the first Predator film. This was an enormous collaborative effort, and while this instructable will focus primarily on the creation of the backpack and cannon it wouldn't be right to not tell the whole story and give credit to all of the extremely talented individuals involved in the creation of this costume of this wonderful film creature.

A seed is planted...

At the Monsterpalooza 2012 convention there was a panel that was devoted to the 25th anniversary of the first Predator film and many of the original artists from Stan Winston Studios that worked on the film were there to talk about the making of the film. Several members of The Hunter's Lair attended as did one very special individual- Jamie Hall.

After speaking with Jamie, two of the Lair members by the names of Gene Emory and Damon Silva had the idea of meeting up at Monsterpalooza the following year and creating a replica suit for Jamie to wear. The goal would be to make a replica of the Predator suit Jamie's uncle wore and have Jamie wear it around the convention hall. Matt Winston of Stan Winston School of Character Arts later had the idea that it would be really cool if several members of the original film crew could again return and then suit up Jamie just as they had with his Uncle Kevin 25 years ago. Jamie was thrilled with the idea and what would be known as the "Jamie Hall Predator Suit Homage Project" was born.

But first we need to back up a few years...

Video of the finished backpack/cannon-

Update- Jamie as the Predator takes on Wolverine in Super Power Beat Down!

Image Notes
1. Jamie Hall as the Predator

Image Notes
1. Jamie with original Stan Winston Studios crew members Steve Wang, Matt Rose, Tom Woodruff Jr., Shannon Shea and Alec Gillis. Also on stage are Matt Winston and members of The Hunter's Lair involved in the construction of the Predator suit

Image Notes
1. The completed cannon and backpack with the cannon in the lowered
position

Step 1: Sculpting the backpack
It was August 2007 and I was just beginning to incorporate electronics in costumes-

Predator costumer Carl Toti contacted me via the Hunter's Lair, wanting to know if it was possible to add animatronics to a replica Predator backpack and cannon he was creating. I believed it could be done so we began collaborating on the project and we've been friends ever since.

Carl is an extremely talented sculptor and an absolute perfectionist. He didn't just want to make a replica backpack and cannon- he wanted them to be as accurate and faithful to the original movie items as possible- which proved to be a tall order. The Predator backpack and cannon are pretty complex movie props and there really wasn't a lot of documentation available concerning how the original props were made, let alone any really good close up photos of the original props. Carl would spend nearly five years on his quest for Predator nirvana, gathering bits of information as it became available, constantly re sculpting to make it more accurate to the original. But there were always areas of his sculpt that were questionable because he could never find photos of the original backpack and cannon taken from the right angles that would show him what he needed to see.

Then..... pay dirt!

Fast forward a few years. Carl got a lucky break- two individuals happened to be in the right place at the right time. Art Andrews (he runs The Replica Prop Forum- better known as The RPF, as well as The Hunter's Lair and The Dented Helmet) and friend George Frangadakis were able to obtain multiple photos of the original props and supply them to Carl. The photos revealed an enormous amount of detail he hadn't seen before and while it would require an extensive overhaul of his sculpt, it would be worth the effort.

When I received the backpack I couldn't believe it- it really was one of the most impressive prop replicas I had ever seen. The photos just don't do it justice.

Here's how Carl created the backpack-

Tools and Materials

Crock pot
Clay sculpting tools
Foam core
Home built roto-caster

15 lbs. of Chavant Medium NSP clay (most of the sculpt volume being taken up by the lighter foam core)
http://www.amazon.com/Chavant-NSP-Medium-Tan-Case/dp/B005V0WEDU
2 gallons of Smooth-On Stroke tin based silicone
http://www.smooth-on.com/index.php?cPath=2_1113_1135
2 gallons of Smooth-On Plasti-Paste II for the mother mold
http://www.smooth-on.com/Urethane-Plastic-a/c5_1120_1346/index.html

1 gallon of Smooth-On Smooth-Cast 300 casting resin
http://www.smooth-on.com/Urethane-Plastic-a/c5_1120_1209/index.html

From Carl:

"The sculpt started with a dense foam pull of the torso armor which had to be sculpted and cast first (naturally). I then constructed a foam core and hot glue core skeleton which clay sticks to very nicely. I used Chavant medium NSP clay which comes in 10 lb. blocks which I melt in my crock pot. The physical property of the clay is such that it is easy to work with when warm, and feathers nice. As it cools, it becomes harder, which makes it ideal for machine-like parts because you can actually carve lines and grooves into it, etc.

I populated the sculpt with "greeblies" (a term in the prop building world for small detail items) I obtained from model tank kits, as well as having a lot of them custom printed from Scott Andrew's 3D printer to exactly match the ones I couldn't find, as seen in the reference photos. Above all, the backpack and cannon had to be screen accurate. I molded the backpack in place on my mannequin with brush-on silicone, followed by a Plasti-Paste mother mold on top of that.

If that wasn't enough, I then had to figure out how to build a roto-caster large enough to cast the darn thing!"

Chavant NSP is a sulphur free clay- if your clay has sulphur in it and it comes into contact with a silicone mold material the silicone mold will not cure. So once the sculpt

is finished you have to mold it. For large items like this backpack a mother mold is the way to go as a large box mold would be impractical- a box type mold would use an enormous amount of silicone molding compound and it would be extremely heavy. A mother mold is a type of mold that has a silicone layer surrounded by a rigid backing (often called a jacket)- sometimes the backing is fiberglass or plaster but in this case Plasti-Paste was used as a large plaster backed mold can be really heavy.

To make the mold first parting lines are created on the sculpt using card stock or thin wood pieces- this helps divide the mold into multiple sections that can be bolted together. Next silicone molding compound is brushed onto the sculpt- it begins with a thin layer followed by a heavier layer (a thickening agent is added to the silicone.) The thin layer is brushed on first so it will capture all of the tiny details in the surface of the sculpt. The thin layer will allow air that is trapped to escape in the form of bubbles- if you brush on a thick layer the air can't escape and you can end up with a lot of surface imperfections in your cast part. While the silicone is curing small chunks of silicone from old molds are stuck onto the surface, forming keys. These keys will help hold the silicone in place against the rigid backing so everything lines up just right when you go to cast resin in the mold.

Once the silicone has cured a rigid backing material is applied to it. After the backing has cured additional sections of the sculpt are molded using the same process. When molding the additional sections a mold release agent (in this case Vaseline) needs to be applied to the mold parting lines as silicone will stick to itself. Once all the sections have been molded holes are drilled through the rigid backing so bolts can be used to hold all of the mold sections together. Next a hole is cut into the mold so the resin can be poured in- the backpack casting uses approximately 96 oz of casting resin. After this is done the mold can be taken apart and the sculpt is removed from the mold and the mold is ready for casting in the roto-caster.

The roto-caster was needed because there is no way to slush cast it- the mold is simply too big and too heavy to try and hold in your hands- the mold ready to cast weighs over 50 pounds. The roto-caster spins the mold in a frame-within-a-frame assembly so once you pour the resin in you spin the mold and you get a nice even resin wall thickness in your finished casting. The backpack and cover for the med kit area were done using separate molds. The backpack is entirely hollow to reduce weight and allow room for electronics as well as a future screen accurate med kit.
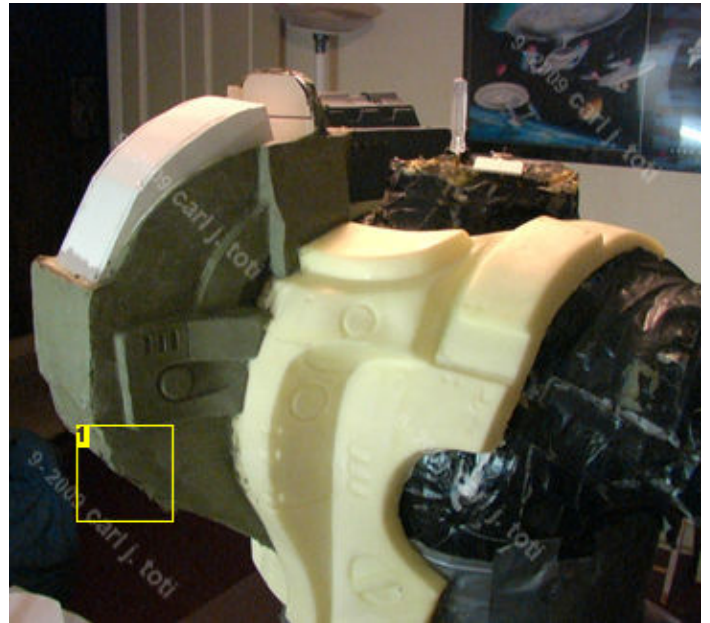
Image Notes
1. Beginning to get the general proportions/shape

Image Notes
1. Foam core skeleton- this is cut roughly in the shape of the backpack to save clay
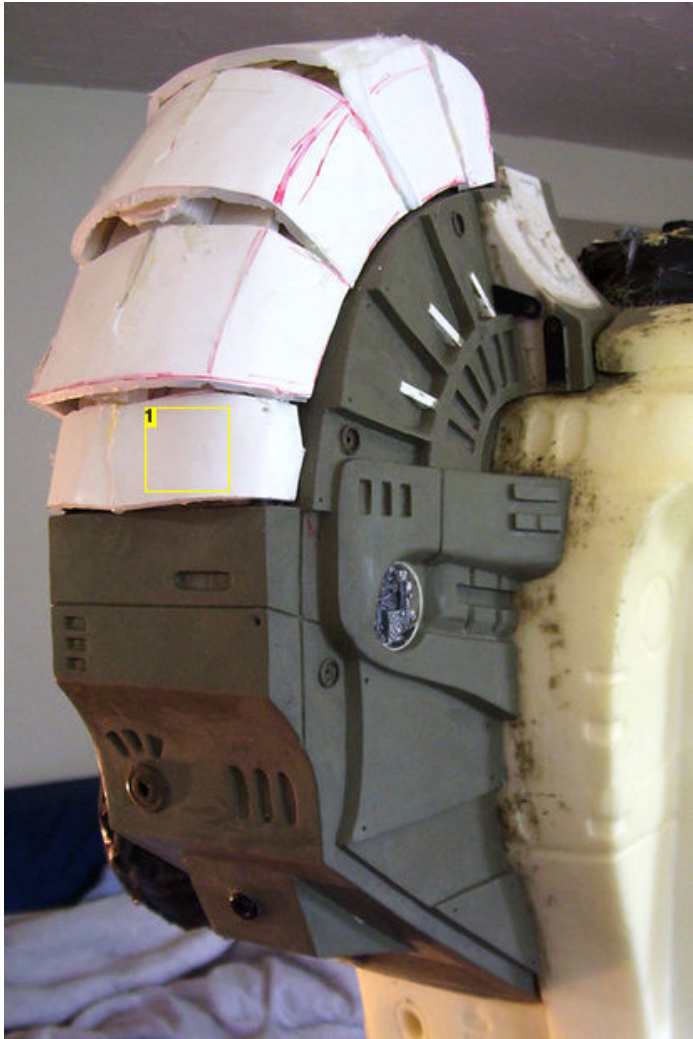2. Foam torso armor

Image Notes
1. Refining the overall shape

Image Notes
1. More detail work...

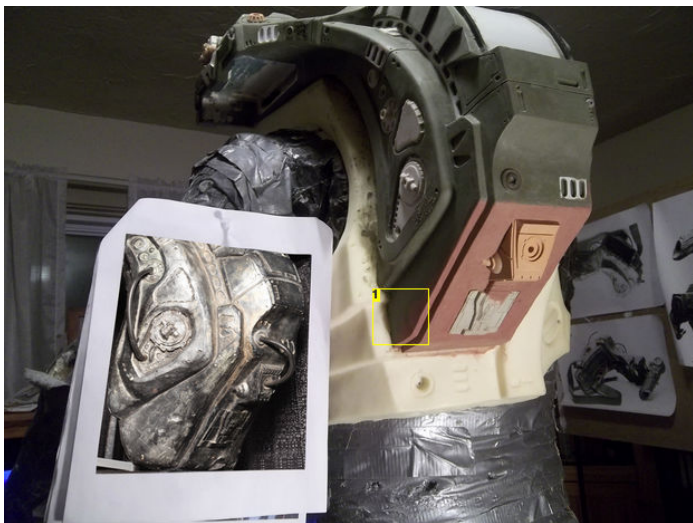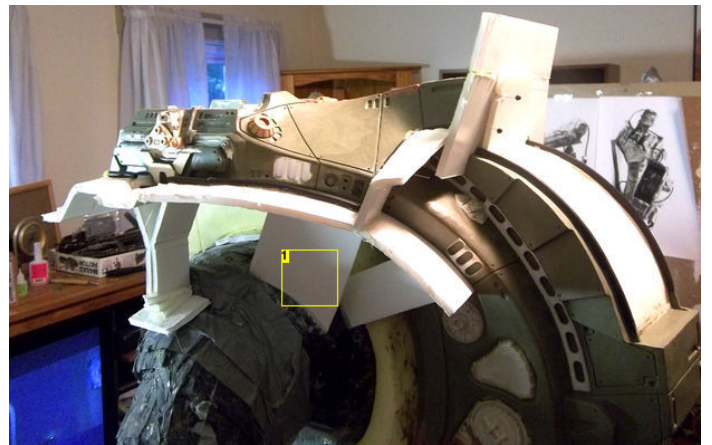
Image Notes
1. Getting ready for molding

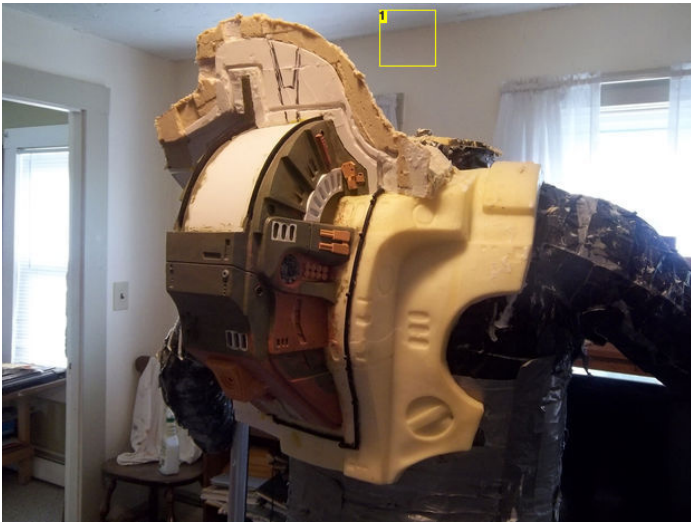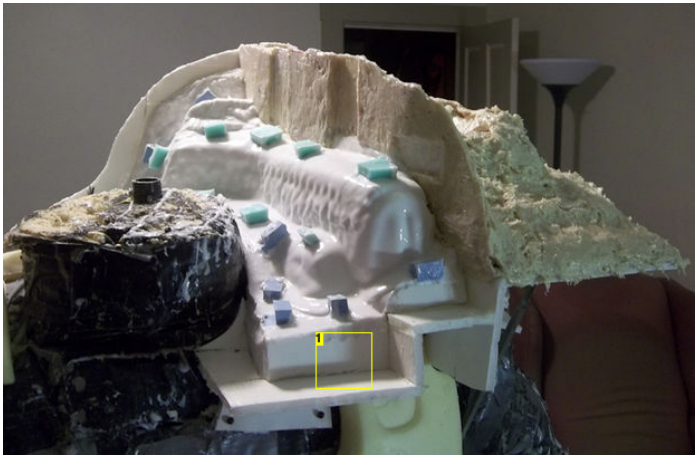**Image Notes**
1. Creating the jacketed mold

Image Notes
1. Mold construction- note the chunks of silicone that form mold keys

Image Notes
1. The little blocks of silicone material are keys for the reinforcing mold jacket
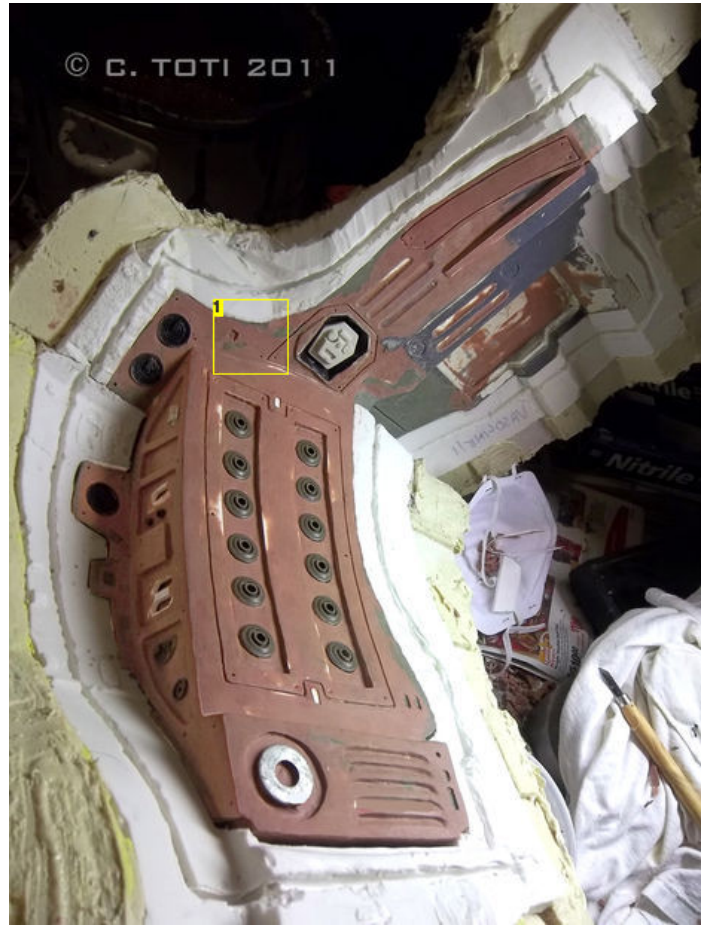

Image Notes
1. This shot shows the parting lines for the mold

Image Notes
1. The Plasti-Paste mold jacket is applied

Image Notes
1. This view shows the underside of the backpack

Image Notes
1. Cleaning clay out of the mold using sculpting tools

BACKPACK MOLD

MEDKIT COVER MOLD
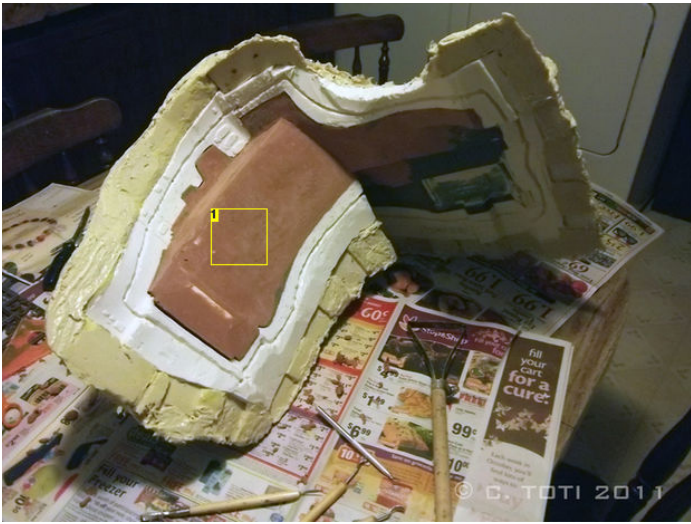
Image Notes

1. Mold for the medkit clam shell cover

BACKPACK BOTTOM MOLD HALF

BACKPACK TOP MOLD HALVES

Image Notes
1. Inside of the backpack mold

Image Notes
1. Inside of the top of the backpack mold showing the cannon platform

Image Notes
1. Homemade roto-caster

Image Notes
1. Finished backpack and cannon resin castings

Image Notes
1. Carl at work

Step 2: Creating the cannon
Now Carl needed a new cannon to go with his awesome backpack-

Carl had already made a cannon- but armed with his new reference material he knew it could be much better. There was one issue with the new cannon reference material- something wasn't right. One side of the cannon looked misshapen and looked like it was missing details. It clearly didn't look right and Carl ended up using his best judgement to determine how it should have looked. This turned out to be a good move.

At the 25th Predator anniversary, Carl struck up a conversation with Richard Landon. Richard was one of the members of the Stan Winston Studios crew that worked on the original film. Carl had presented members of the original film crew with a trophy made from his then new cannon. Richard was really impressed by the detail and Carl asked him about the misshapen movie cannon. Richard laughed and told him a story about how they were filming the movie in the jungle and it was extremely wet at the time. As it turns out, the movie cannon was fitted with squibs that were fired off in sequence to simulate cannon fire during filming. Because it was so wet, multiple squibs happened to fire all at once- kablamm! The entire side of the cannon had blown apart!

The crew spent a lot of time scouring the jungle floor for the cannon remains and having found the missing pieces, Richard got some pantyhose and superglue and pulled the pantyhose over the reconstructed cannon and coated the assembly with superglue to hold it together. A quick paint job and they were back in business. So that's why the movie cannon looked misshapen on one side.

Creating the cannon-

Whereas the previous cannon had been sculpted by hand, the new cannon and cannon arm would be modeled on the computer and printed using a 3D printer . Carl's friend Scott Andrews runs LightBeam 3D and was able to help him prep the model for printing and then print it in a proprietary UV cured plastic paste using his EnvisonTec Perfactory 3D printer. Scott also printed some of the small "greeblies" for the backpack sculpt.

Carl then assembled the printed cannon model, smoothed the seams and molded it for resin casting using Smooth On Mold Max tin based silicone in a box mold. A box mold is a one piece mold where the item to be molded is placed in a box and silicone molding compound is poured around it. If an item is really small the box mold can be poured in one shot and the model can be cut out. In this case the cannon is a too big for this so the mold is made in two halves. A clay bed is built up around one half of the cannon and piping was run around it to form a mold lock and then silicone molding compound was then poured over the cannon. After the silicone has cured the clay is removed and a mold release is applied to the first mold half. Now silicone is applied over the second half of the mold and allowed to cure. Once the silicone has cured the mold can be split in two and the model is removed. Now resin is poured into the mold and is slush cast- the mold is moved around in multiple directions so the resin forms an even coating inside the mold.

Because the sculpting, molding and casting process was much more complex for the backpack the cannon was actually finished well before the backpack.The backpack molds were being finished up around the same time that everything was coming together for the Jamie Hall Homage Suit Project. The project had been on the back burner from the previous year and no one was really sure if it was going to come together. Now it was officially a "go." This is when I received a call from Carl asking me if he was able to get the castings to me would I be able to add the animatronics in time? I think I thought about it for maybe five seconds- I said ship it over as soon as you can.

This meant that once I ordered and received the necessary electronic and mechanical parts I had four nights and one day to build the animatronic mechanism and electronic control system with sound effects.
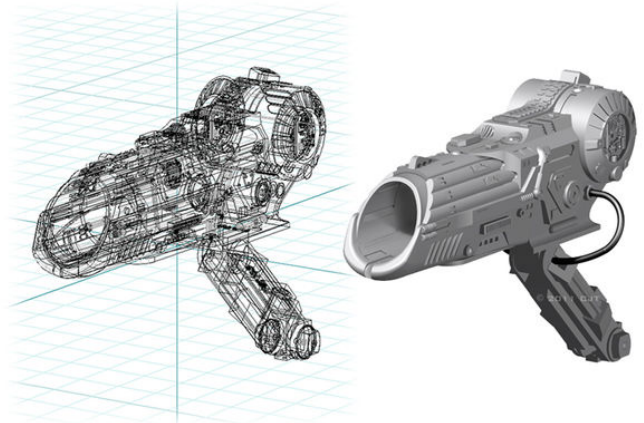
What had I just gotten myself into...
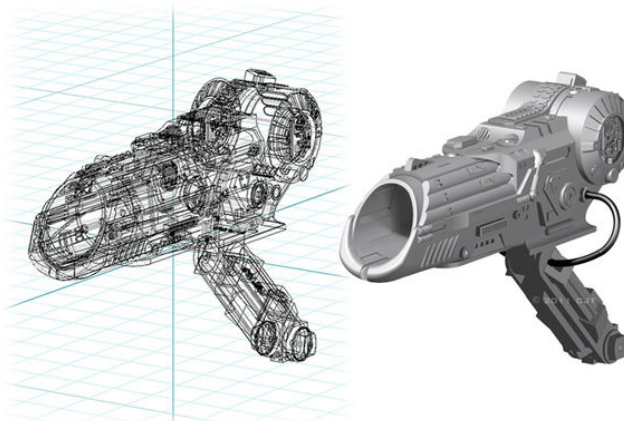
WIRE FRAME & RENDERED VIEWS OF PREDATOR CANNON
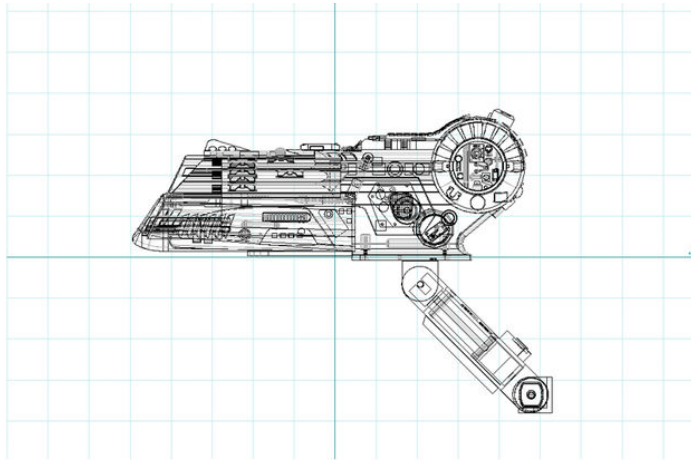100% DIGITALLY BUILT IN FORMZ
CARL TOTI - MAY 2011

Steve Wang's Original Sculpt

My 3D Model Build in Form Z

Wire Frame & Rendered Views of Predator Cannon
100% Digitally Built in FormZ
Carl Toti - May 2011

Wire Frame Profile View of Predator Cannon
100% Digitally Built in FormZ
Carl Toti - May 2011

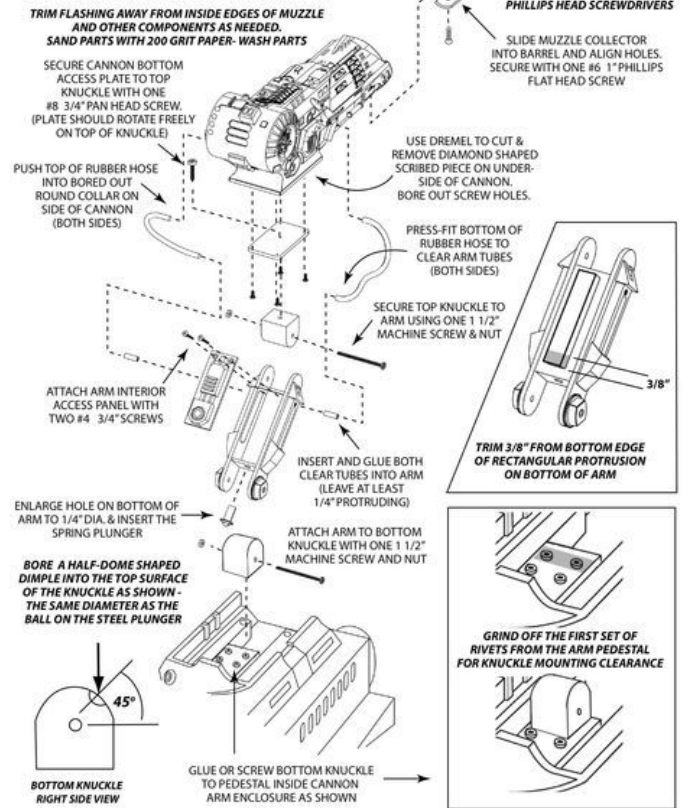My 3D Rendered Model Built in FormZ

Steve Wang's Original Sculpt

ACCURIZED P1 CANNON GEN 3
FINAL OUTPUT

Image Notes
1. Carl's instructions that he made for his resin cast cannon kit- this was promptly ignored since it was going to be animatronic and the entire arm assembly would be replaced. :)

Image Notes
1. EnvisionTec Perfactory 3D printer

http://www.instructables.com/id/Building-a-killer-Predator-costume/

Step 3: Animatronics
Burning the midnight oil-

Having a tight deadline means you really need a solid plan so right after I got off the phone with Carl I did several sketches and had the animatronic mechanics roughly worked out so I could order materials as soon as possible. I wanted to keep the mechanics as simple as possible because there wouldn't be time to start over if something didn't work. The idea of using the head tracking cannon system that I had previously built was thrown out- it was deemed too complex and I wouldn't be at the convention to help set it up and troubleshoot it if something went wrong. I also wanted to use as many readily available parts as possible so if something broke replacement parts could be more easily obtained. After speaking with Carl and discussing our options we decided that having the cannon move through a programmed sequence would be best.

The original movie cannon worked using RC control and it raised and lowered the the cannon via a cable chain/gear drive system. We didn't want to use RC control because we didn't want to have Jamie followed around the convention hall by a radio operator. This meant that the entire control system had to be self contained and it would need to be very easy to operate by Jamie while wearing the suit. The system ended up using three finger tip control buttons- one button for the cannon movement sequence and the other two buttons for different Predator sound effects.

Building the cannon mechanism-

Materials-

Aluminum sheet, plate and angle- I used metal that I already had on hand but Online Metals will ship you whatever you need, cut to size.

6" x 1/4" Diameter stainless steel rod
http://www.servocity.com/html/1_4__precision_shafting.html

1/4" ID x 3/8" OD bronze bushing- I already had this on hand but places like McMaster-Carr sell it
http://www.mcmaster.com/#bronze-sleeve-bearings/=nmiu7b

4 Aluminum standoffs
http://www.servocity.com/html/6-32_aluminum_standoffs__round.html

1 1/2 inch bore clamping hub
http://www.servocity.com/html/0_770__clamping_hubs.html

1 1/2 inch bore flat bearing mount
http://www.servocity.com/html/1_2__bore_flat_bearing_mount__.html

1 Servo shaft attachment 1/2" (Hitec)
http://www.servocity.com/html/servo_shaft_attachment___500__.html

1 48T 32 pitch nylon gear with 1/4" hub
http://www.servocity.com/html/32_pitch_plain_bore_gears.html

1 12T 32 pitch brass gear for Hitec servo spline
http://www.servocity.com/html/32p_hitec_metal_gear.html

1 HS-485HB servo
http://www.servocity.com/html/hs-485hb_servo.html

2 HS-645MG servos
http://www.servocity.com/html/hs-645mg_ultra_torque.html

1 1/4" Bore set screw hub
http://www.servocity.com/html/set_screw_hubs.html

1 4-40x3/16 inch Nylon ball links (4-Pack)
http://www.servocity.com/html/4-40x3_16__nylon.html

1 4-40x12 inch Stainless steel threaded rod
http://www.servocity.com/html/threaded_rod.html

1 Arduino Wave Shield
http://www.adafruit.com/products/94

1 SD memory card
http://www.adafruit.com/products/102

3 Tactile finger tip switches
http://www.adafruit.com/products/1092

1 Arduino Pro 5V
http://www.sparkfun.com/products/10915

1 Arduino Pro Mini 5V
http://www.sparkfun.com/products/11113

1 FTDI basic breakout 5V
http://www.sparkfun.com/products/9716

1 9V battery- grocery store

4 AA alkaline batteries- grocery store

2 Ethernet jacks
http://www.sparkfun.com/products/643

2 Ethernet jack break out boards
http://www.sparkfun.com/products/716

1 Ethernet cable -came from junk box

1 Blue Luxeon LED
http://www.sparkfun.com/products/9655

1 Buck Toot LED driver
http://www.sparkfun.com/products/9642

1 Barrel jack extension cable
http://www.sparkfun.com/products/11706

1 Barrel jack connector
http://www.sparkfun.com/products/10785

1 Proto board 2" square
http://www.sparkfun.com/products/8811

1 DPDT power switch- I used one from my junk box but something like this switch would work
http://www.sparkfun.com/products/11139

3 TIP120 Darlington transistors
http://www.radioshack.com/product/index.jsp?productId=2062617

3 1K Ohm resistors
http://www.radioshack.com/product/index.jsp?productId=2062343

1 3.3V voltage regulator
http://www.sparkfun.com/products/526

2 Straight break away headers
http://www.sparkfun.com/products/116

2 Female headers
http://www.instructables.com/id/Building-a-killer-Predator-costume/

1 Plastic standoffs
http://www.sparkfun.com/products/10461

Heavy duty servo wire
http://www.servocity.com/html/servo_wire__bulk_.html

1 Small speaker -came from my junk box

Tools-

Portable band saw- I have a DeWalt portable band saw and it's the best thing ever for quickly cutting metals
http://www.amazon.com/DEWALT-DWM120K-5-Inch-Deep-Portable/dp/B001W0ZIK4/ref=sr_1_2?ie=UTF8&qid=1373857233&sr=8-2&keywords=DeWalt+bandsaw

Benchtop lathe with milling attachment- I have a small Taig benchtop lathe and it's probably the best buy there is for a small lathe
http://www.cartertools.com/specific.html

Drill press

Soldering Iron

Allen wrenches

Screwdrivers

Drill bits

4-40 and 6-32 taps for threading holes
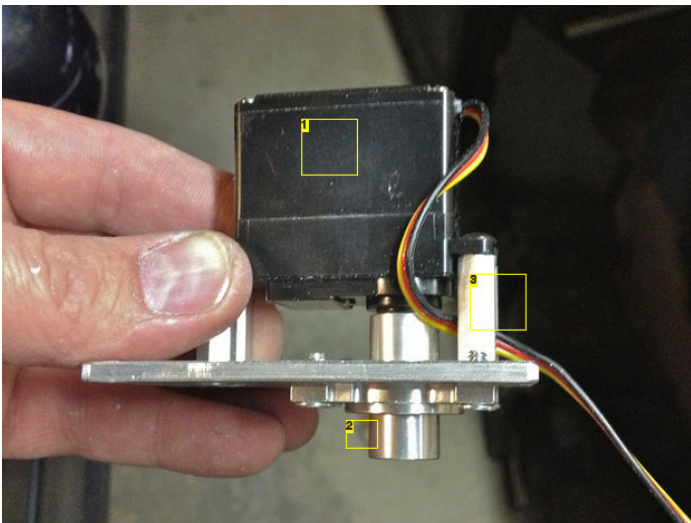

The cannon rotation system-

I began by making the mount for the servo that would sit inside the cannon and allow it to rotate right and left. I made the base plate from 1/8" thick Aluminum sheet and mounted the HS-485HB servo using 4 Aluminum standoffs. I drilled a hole in the base plate that would allow the 1/2" diameter servo extension to stick through and then I supported the extension using a 1/2" bore bearing mount. This bearing mount would take any large side loads off the servo. I also cut a slotted hole so the servo lead wires could stick through the base plate.

The cannon arm-

I decided to make the cannon arm from a single piece of Aluminum. I happened to have a big 1" thick Aluminum plate section on hand so I cut a large bar from it using my portable band saw. I drew lines on the Aluminum and rough cut out the notched ends and a "U" shaped pocket for the upper pivot servo (Hitec 645MG) and then finish cut them using my lathe. I located the pivot holes on each end of the arm and drilled them using a 1/4" drill with my drill press. Then I notched the side of the arm where the servo arm would be positioned and mounted the servo using four socket head screws. I had to mill out a small pocket on the underside of the arm so the servo lead would clear. I then cut a relief in the top of the arm so I could attach the resin detail plate from Carl's resin cast cannon arm.

Next I made the upper pivot. The pivot bracket was made from 1" Aluminum angle. Bolted to the top of the angle is a 1/2" bore clamping hub- this is what attaches to the cannon pivot servo. Bolted to the side of the angle bracket is a 1/4" bore set screw hub. A 1/4" Stainless steel rod was cut to use as the pivot and a bronze bushing was slid over it, sandwiched in between the 1/4" hub and the cannon arm. There is a washer on the opposite side of the Aluminum bracket that keeps it rubbing against the cannon arm. When the hub set screw is tightened the pivot is fixed in place and cannot move from side to side. The Aluminum bracket was now attached to the servo using a linkage made from a pair of 4-40 swivel ball links and a short length of 4-40 stainless threaded rod.

Finally I made the main pivot bracket. This was made from a 1/2" thick piece of Aluminum plate rough cut with the bandsaw and then milled using the lathe. There is a 3/8" diameter hole near the top of the bracket and a bronze bushing was pressed into the hole- the bronze bushing supports the 1/4" diameter stainless pivot rod. The main pivot bracket has another HS-645MG servo mounted to it. The servo has a 12T gear mounted to it that drives a 48T gear that is bolted to the cannon arm. The 1/4" stainless pivot rod is fitted through the hole in the left side and then slid through the bronze bushing and the hole in the right side of the cannon arm and is press fit into the hole in the 48T gear. A small Aluminum plate was then bolted to the bottom of the main pivot bracket- the entire assembly was then ready to be fit to the backpack.

Image Notes
1. Cannon rotation servo
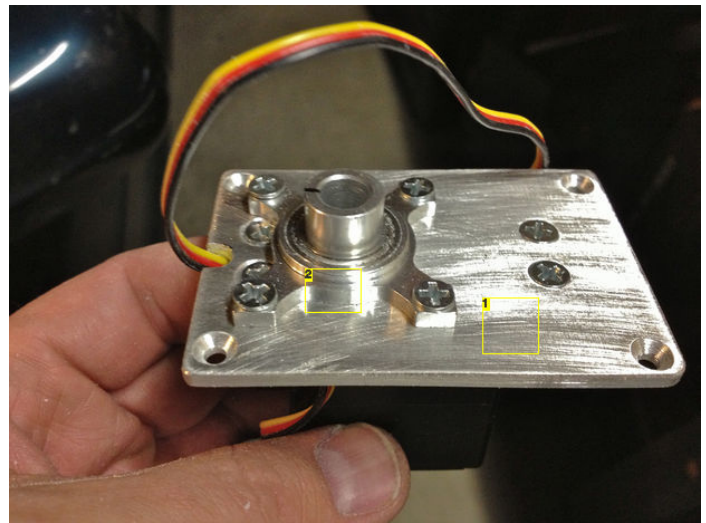
Image Notes
1. Cannon servo base plate

2. Servo shaft extension supported supported by bearing plate
3. Aluminum stand offs

2. Bearing plate

Image Notes
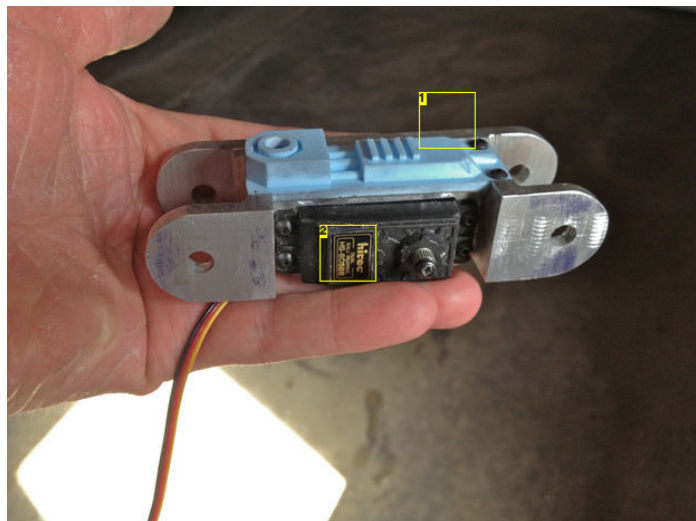1. Base plate fitted to cannon- note the notch for the servo lead

Image Notes
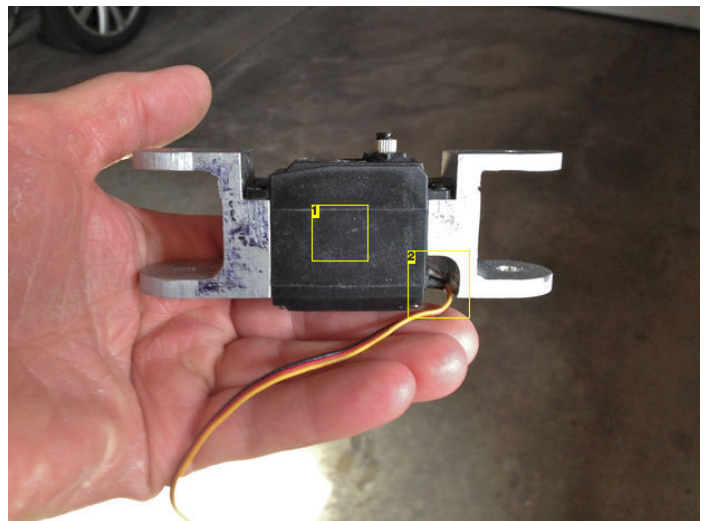1. 1" thick Aluminum plate used to make the cannon arm

Image Notes
1. Portable band saw- this has become one of my favorite tools ever. :)
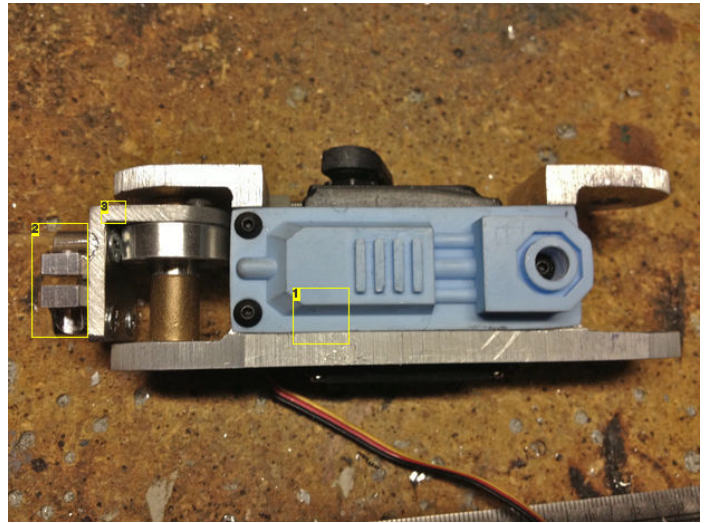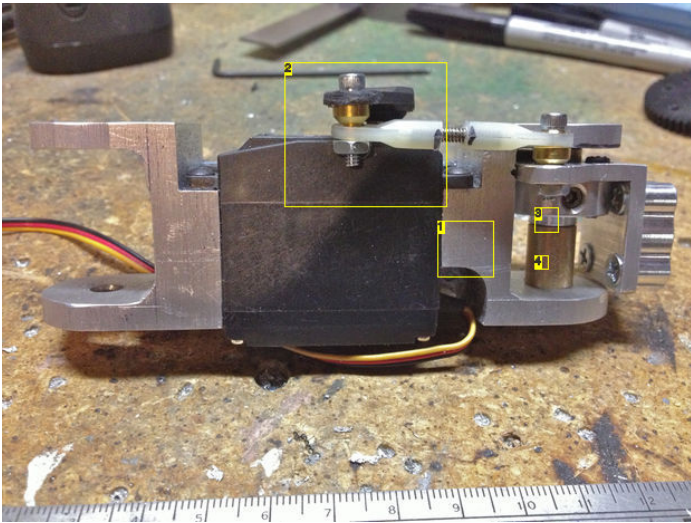

Image Notes

Image Notes

1. Blue resin detail plate came from Carl's cannon arm casting
2. Upper pivot servo

1. Bottom of cannon arm showing servo that moves upper arm joint
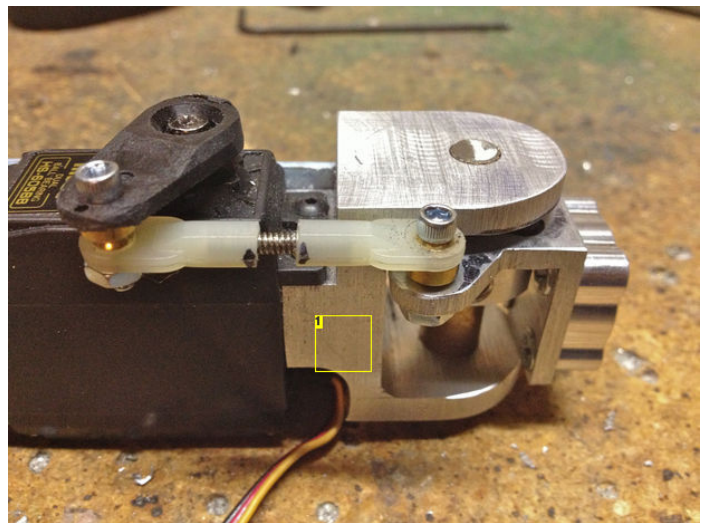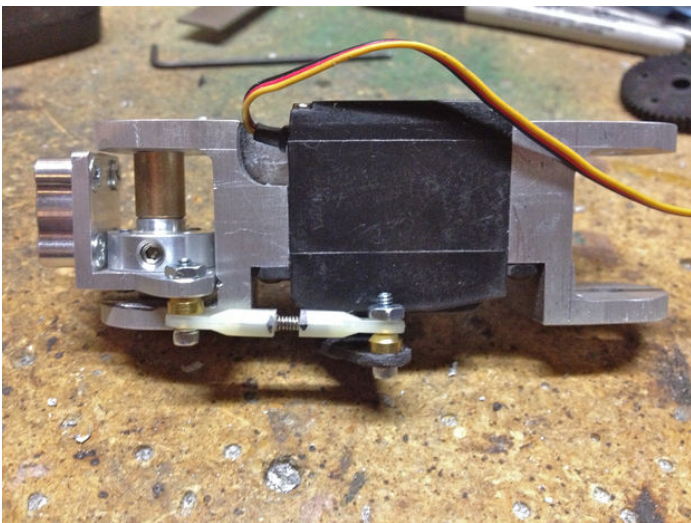2. Notch milled out for servo lead

Image Notes
1. Cannon arm fitted with upper arm joint
2. 4-40 ball link
3. 1/4" set screw hub
4. Bronze bushing

Image Notes
1. Top view of cannon arm
2. 1/2" bore clamping hub
3. Bracket made from 1" Aluminum angle

Image Notes
1. Closeup of upper arm joint
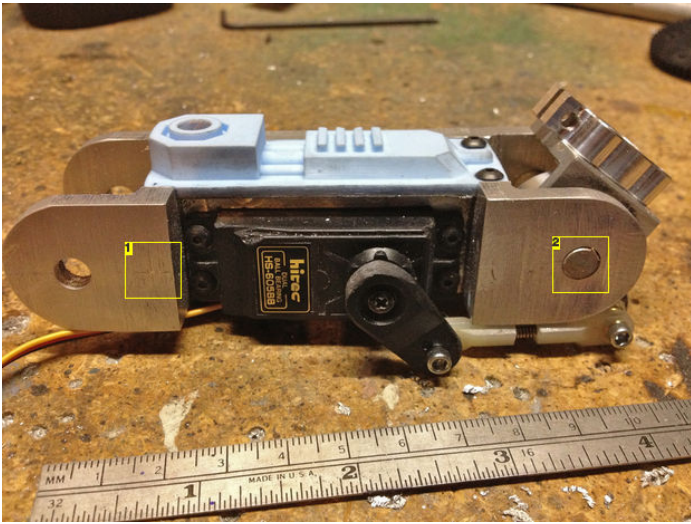
Image Notes
1. Right hand side of cannon arm
2. Upper arm pivot
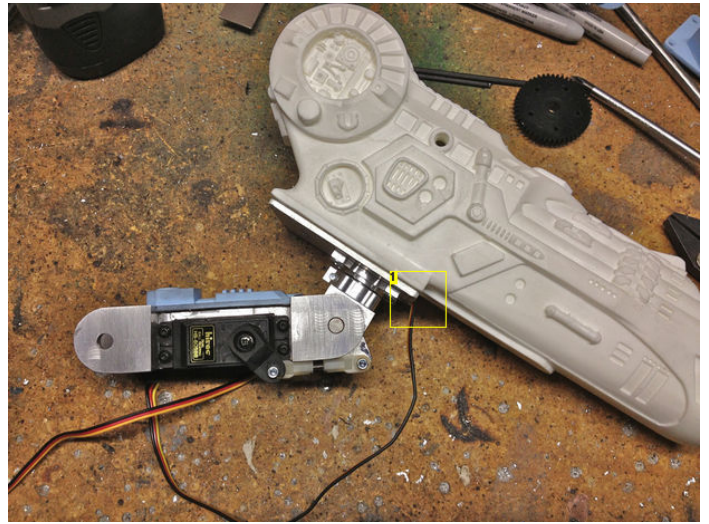
Image Notes
1. Upper arm joint attached to cannon servo base plate
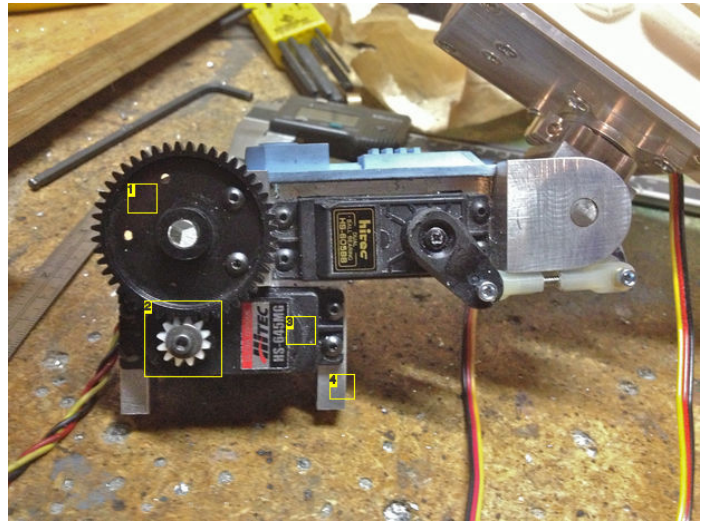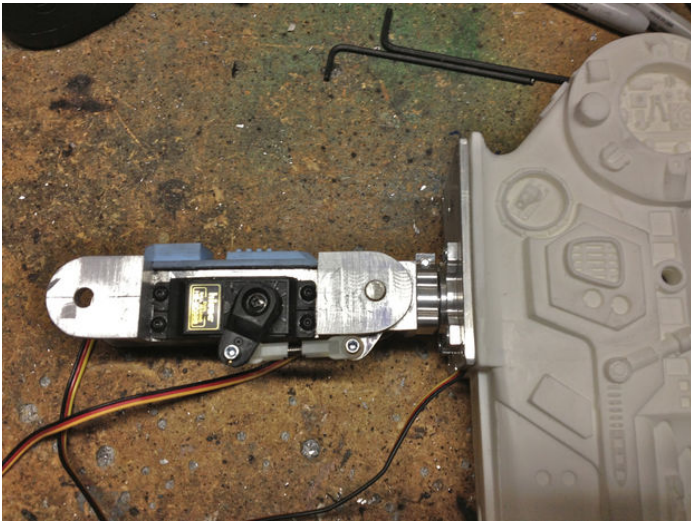
Image Notes
1. 48T gear is bolted to the cannon arm
2. 12T servo drive gear
3. Servo mounted to the main pivot bracket
4. The main pivot bracket bolts to a flat Aluminum plate that sits in the cannon platform on the backpack
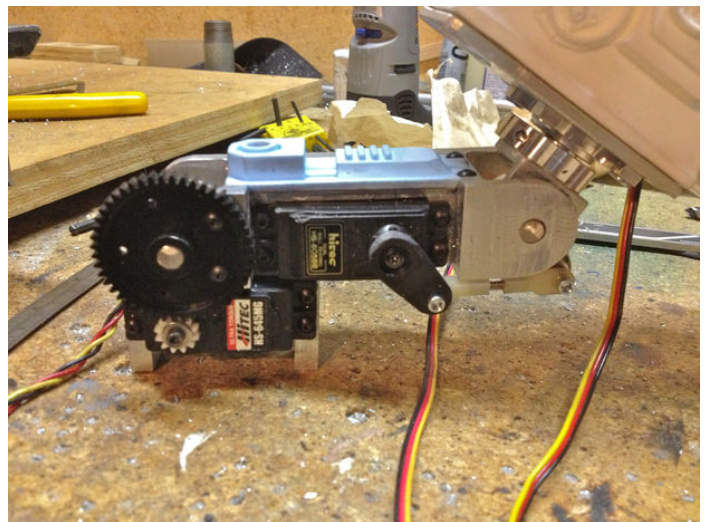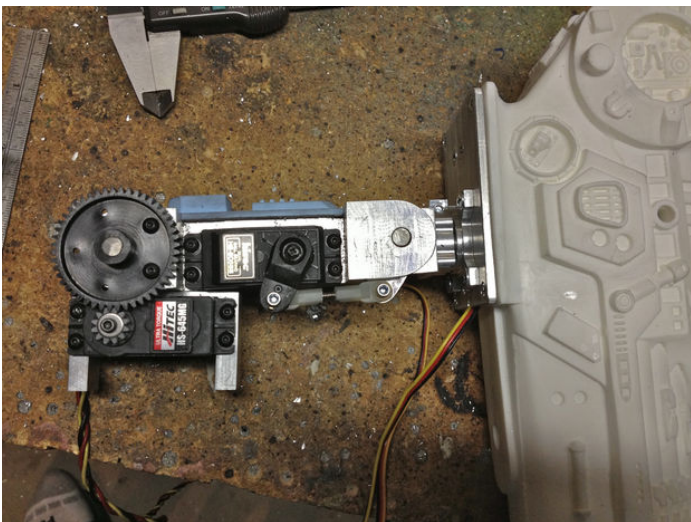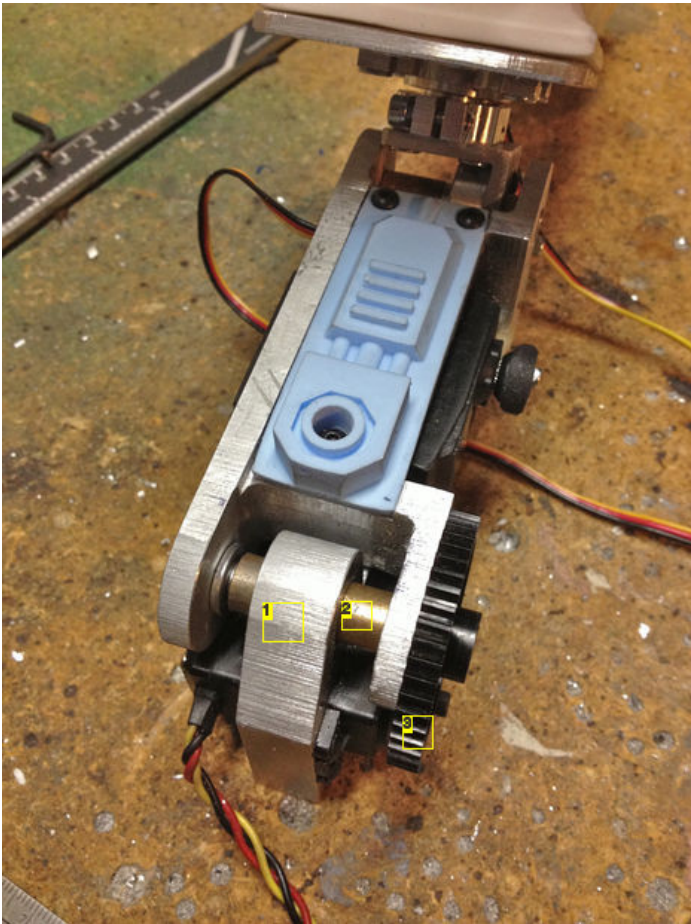
Image Notes
1. Main pivot bracket
2. Bronze bushing
3. 48T gear bolted to cannon arm
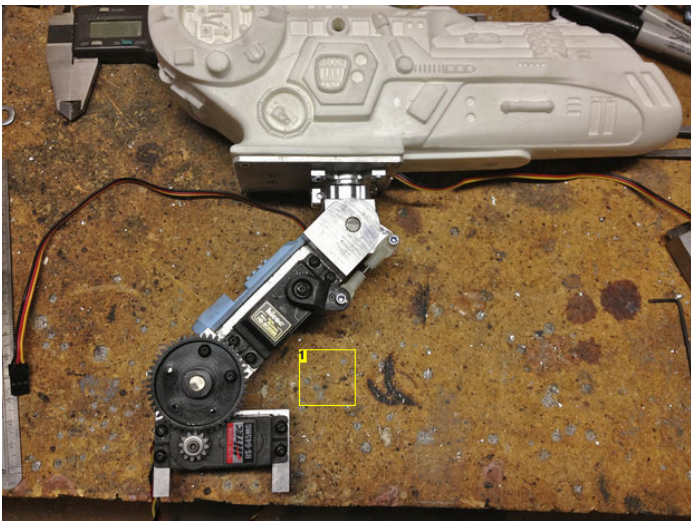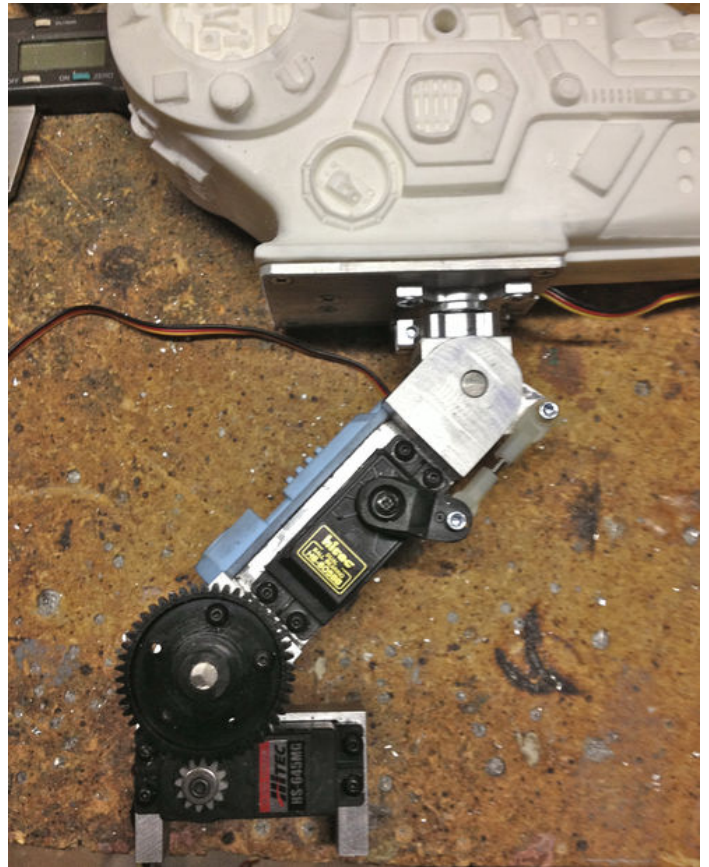
Image Notes
1. The completed cannon assembly

Image Notes
1. Taig mini lathe with milling attachment- I made a pretty big pile of metal shavings making the cannon arm

Step 4: Electronics and programming

Adding a brain and sound effects-

Now that I had the mechanics done I needed to make it move. I used an Arduino Pro Mini to handle the inputs and servo movements and and an Arduino Pro with an Adafruit Wave Shield to handle the sound effects. There is a small board that has three transistors on it- the transistors turn on the helmet laser sight and trigger the cannon LED and sound effect. The board also has a 3.3V regulator to provide power for the helmet laser sight.

The cannon LED is a bright blue Luxeon that is driven by a constant current "Buck Toot" driver. In order to avoid any servo noise issues the Arduinos are powered by a 9V battery and everything else is powered by four "AA" alkaline batteries. I could have used NiCad, NiMH or LiPo batteries but since we were on such a tight schedule I didn't want the guys to have to worry about specialized battery packs or long charge times- they could get replacement batteries in any grocery store.

Control inputs would be three small finger tip tactile switches. The switches are on/off so if Jamie pushed one of them a sound would repeat itself over and over until it was turned off. Likewise the cannon would continue to move through it's programmed sequence until it was turned off. The finger tip switches were connected to the backpack using an ethernet cable that would be run down the length of Jamie's arm and the switches would sit inside the glove fingers.

The electronics were mounted to a 1/8" thick Aluminum plate using plastic standoffs and 4-40 screws.

The complete wiring diagram is shown and I've included the sound files- one sound is for the cannon, one is the Predator "clicking" sound and the last sound is the Predator roar.

The Arduinos are programmed using a FTDI basic breakout. I wrote up a guide to programming the Arduino here- http://www.instructables.com/id/Arduino-animatronics-make-your-awesome-costumes-m/step3/Getting-started/

Here's the code for the Arduino Pro Mini - this controls the cannon movements:

```
#include <Servo.h> // include the servo library

Servo servo1; // creates an instance of the servo object to control a servo
Servo servo2;
Servo servo3;


int servoPin1 = 9; // control pin for servo
int servoPin2 = 8;
int servoPin3 = 7;


int ledPin1 = 11; // control pin for LED
int ledPin2 = 12; // control pin for laser sight
int soundPin1 = 10; // control pin for sound board

void setup() {

servo1.attach(servoPin1); // attaches the servo on pin to the servo object
servo2.attach(servoPin2);
servo3.attach(servoPin3);

pinMode(ledPin1, OUTPUT); // sets the LED pin as output
pinMode(ledPin2, OUTPUT);
pinMode(soundPin1, OUTPUT); // sets the sound pin as output
digitalWrite(ledPin1, LOW); // sets the LED pin LOW (turns it off)
digitalWrite(ledPin2, LOW);
digitalWrite(soundPin1, LOW);
}

void loop() {

digitalWrite(ledPin2, HIGH); // sets the LED pin HIGH (turns it on)


servo3.write(170); //raises cannon arm
servo1.write(140); //rotates cannon upward

delay(2000);

servo2.write(40); //rotates cannon away from head

delay(2000);

servo2.write(110); //rotates cannon toward head
digitalWrite(ledPin1, HIGH);
digitalWrite(soundPin1, HIGH);
delay(10);
digitalWrite(ledPin1, LOW);
digitalWrite(soundPin1, LOW);

delay(4000);

servo2.write(60); //rotates cannon away from head
servo1.write(120); //rotates cannon upward
delay(1000);
digitalWrite(ledPin1, HIGH);
digitalWrite(soundPin1, HIGH);
delay(10);
digitalWrite(ledPin1, LOW);
digitalWrite(soundPin1, LOW);
```

```
delay(3000);

servo2.write(120); //rotates cannon toward head
servo1.write(150); //rotates cannon downward
delay(2000);
digitalWrite(ledPin1, HIGH);
digitalWrite(soundPin1, HIGH);
delay(10);
digitalWrite(ledPin1, LOW);
digitalWrite(soundPin1, LOW);
delay(1000);
servo1.write(140);

delay(3000);

servo1.write(170);
delay(500);
servo2.write(90);
delay(1000);
servo3.write(10);
digitalWrite(ledPin2, LOW);

delay(5000);

}
```

Here's the code for the Wave Shield- (courtesy of Adafruit)

```
#include <FatReader.h>
#include <SdReader.h>
#include <avr/pgmspace.h>
#include "WaveUtil.h"
#include "WaveHC.h"


SdReader card; // This object holds the information for the card
FatVolume vol; // This holds the information for the partition on the card
FatReader root; // This holds the information for the filesystem on the card
FatReader f; // This holds the information for the file we're play

WaveHC wave; // This is the only wave (audio) object, since we will only play one at a time

#define DEBOUNCE 100 // button debouncer

// this handy function will return the number of bytes currently free in RAM, great for debugging!
int freeRam(void)
{
extern int __bss_end;
extern int *__brkval;
int free_memory;
if((int)__brkval == 0) {
free_memory = ((int)&ree_memory) - ((int)&_bss_end);
}
else {
free_memory = ((int)&ree_memory) - ((int)__brkval);
}
return free_memory;
}

void sdErrorCheck(void)
{
if (!card.errorCode()) return;
putstring("\n\rSD I/O error: ");
Serial.print(card.errorCode(), HEX);
putstring(", ");
Serial.println(card.errorData(), HEX);
while(1);
}

void setup() {
// set up serial port
Serial.begin(9600);
putstring_nl("WaveHC with 6 buttons");

putstring("Free RAM: "); // This can help with debugging, running out of RAM is bad
Serial.println(freeRam()); // if this is under 150 bytes it may spell trouble!

// Set the output pins for the DAC control. This pins are defined in the library
pinMode(2, OUTPUT);
pinMode(3, OUTPUT);
pinMode(4, OUTPUT);
pinMode(5, OUTPUT);

// pin13 LED
```

```
pinMode(13, OUTPUT);

// enable pull-up resistors on switch pins (analog inputs)
digitalWrite(14, HIGH);
digitalWrite(15, HIGH);
digitalWrite(16, HIGH);
digitalWrite(17, HIGH);
digitalWrite(18, HIGH);
digitalWrite(19, HIGH);

// if (!card.init(true)) { //play with 4 MHz spi if 8MHz isn't working for you
if (!card.init()) { //play with 8 MHz spi (default faster!)
putstring_nl("Card init. failed!"); // Something went wrong, lets print out why
sdErrorCheck();
while(1); // then 'halt' - do nothing!
}

// enable optimize read - some cards may timeout. Disable if you're having problems
card.partialBlockRead(true);

// Now we will look for a FAT partition!
uint8_t part;
for (part = 0; part < 5; part++) { // we have up to 5 slots to look in
if (vol.init(card, part))
break; // we found one, lets bail
}
if (part == 5) { // if we ended up not finding one :(
putstring_nl("No valid FAT partition!");
sdErrorCheck(); // Something went wrong, lets print out why
while(1); // then 'halt' - do nothing!
}

// Lets tell the user about what we found
putstring("Using partition ");
Serial.print(part, DEC);
putstring(", type is FAT");
Serial.println(vol.fatType(),DEC); // FAT16 or FAT32?

// Try to open the root directory
if (!root.openRoot(vol)) {
putstring_nl("Can't open root dir!"); // Something went wrong,
while(1); // then 'halt' - do nothing!
}

// Whew! We got past the tough parts.
putstring_nl("Ready!");
}

void loop() {
//putstring("."); // uncomment this to see if the loop isnt running
switch (check_switches()) {
case 1:
playcomplete("SOUND1.WAV");
break;
case 2:
playcomplete("SOUND2.WAV");
break;
case 3:
playcomplete("SOUND3.WAV");
break;
case 4:
playcomplete("SOUND4.WAV");
break;
case 5:
playcomplete("SOUND5.WAV");
break;
case 6:
playcomplete("SOUND6.WAV");
}
}

byte check_switches()
{
static byte previous[6];
static long time[6];
byte reading;
byte pressed;
byte index;
pressed = 0;

for (byte index = 0; index < 6; ++index) {
reading = digitalRead(14 + index);
if (reading == LOW && previous[index] == HIGH && millis() - time[index] > DEBOUNCE)
{
// switch pressed
```

```
time[index] = millis();
pressed = index + 1;
break;
}
previous[index] = reading;
}
// return switch number (1 - 6)
return (pressed);
}


// Plays a full file from beginning to end with no pause.
void playcomplete(char *name) {
// call our helper to find and play this name
playfile(name);
while (wave.isplaying) {
// do nothing while its playing
}
// now its done playing
}

void playfile(char *name) {
// see if the wave object is currently doing something
if (wave.isplaying) {// already playing something, so stop it!
wave.stop(); // stop it
}
// look in the root directory and open the file
if (!f.open(root, name)) {
putstring("Couldn't open file "); Serial.print(name); return;
}
// OK read the file and turn it into a wave object
if (!wave.create(f)) {
putstring_nl("Not a valid WAV"); return;
}

// ok time to play! start playback
wave.play();
}
```
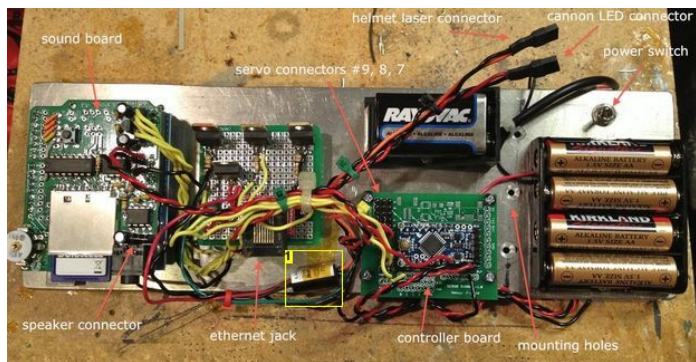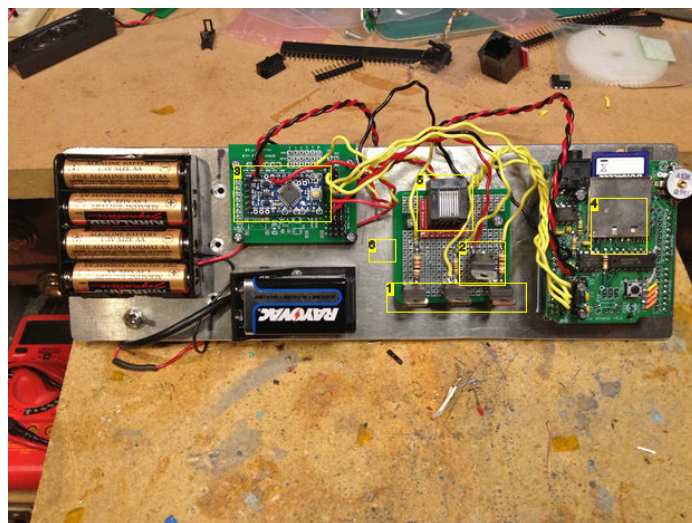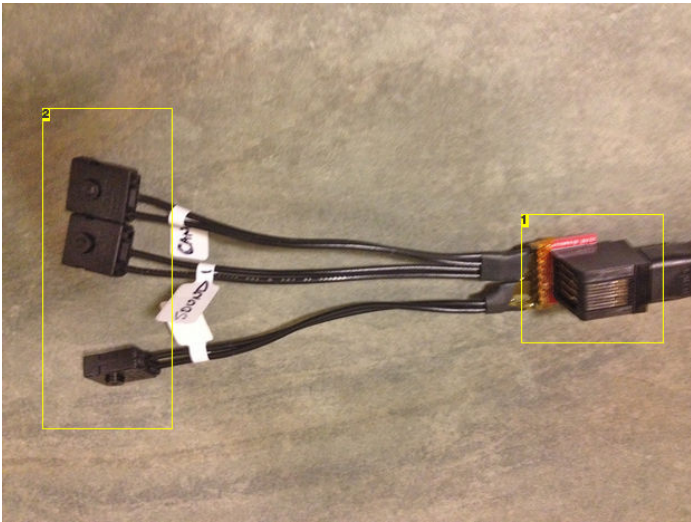

Image Notes
1. "Buck Toot" LED driver

Image Notes
1. TIP 120 transistors
2. 3.3V regulator
3. Arduino Pro Mini
4. Adafruit Wave Shield on top of Arduino Pro
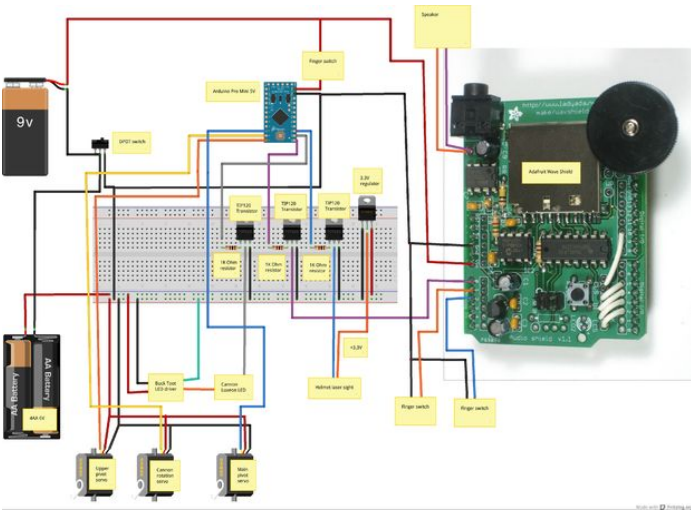5. Ethernet jack
6. 2" square proto board

Image Notes
1. Ethernet jack on breakout board
2. Finger tip switches

Image Notes
1. Finger tip switch- these are super nice!

File Downloads

Sound3.WAV (335 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'Sound3.WAV']

Sound2.WAV (98 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'Sound2.WAV']

Sound1.WAV (199 KB)
[NOTE: When saving, if you see .tmp as the file ext, rename it to 'Sound1.WAV']

Step 5: Backpack and cannon assembly

Putting it all together-

The cannon was mounted to the backpack by bolting the main pivot assembly to an Aluminum plate on the underside of the cannon platform- this way the entire cannon mechanism could be easily removed if it was ever damaged. Holes were drilled through the backpack and the servo leads and cannon LED leads were fed through.

Holes were then drilled through the backpack for the helmet laser sight power cord and the ethernet cable that connected the finger tip buttons. For the bio helmet laser sight power cord I used a barrel jack extension cord and cut off the female end. The male end connects to a matching barrel jack mounted in the side of the bio helmet. With this setup the cord just provides power to the helmet laser sight- just unplug the cord at the helmet in order to take the helmet off.

The electronics board was then installed by mounting it to a wood block that was secured inside the backpack. A small speaker was then attached inside the backpack and connected to the sound board. The servo cables, ethernet cable, helmet laser sight cable and cannon LED cables were then all labeled and connected and the system was powered up.
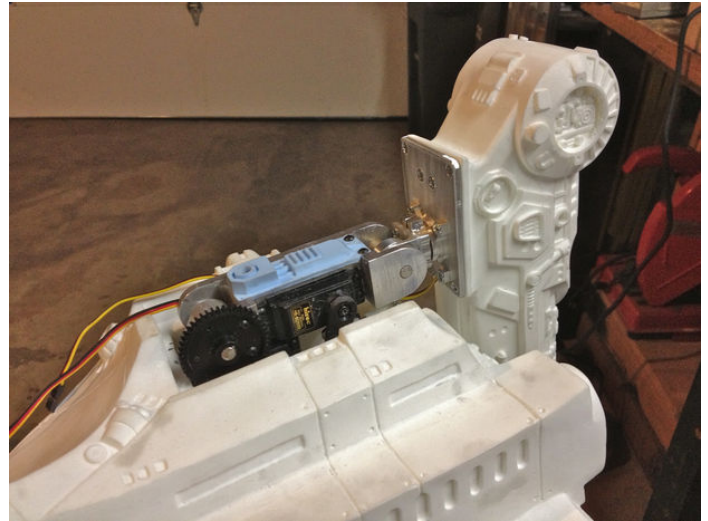
Lucky for me it powered up and ran perfectly through its motions first try- it was now very late the night before it had to ship! Woohoo! I made a few adjustments to the

movements in the code to get it dialed in just right, added the small hoses that ran from the cannon to the arm and boxed it up for overnight shipping.

That night I had a hard time sleeping- would it arrive safe and sound? Would it perform as it should? I wasn't going to be there to fix it if something went wrong...

While I was pondering these questions Gene and Damon were working like madmen to finish the rest of the suit....

Aluminum base plate underneath cannon platform - 2 rearmost screws spaced wide apart will allow entire cannon assembly to be removed
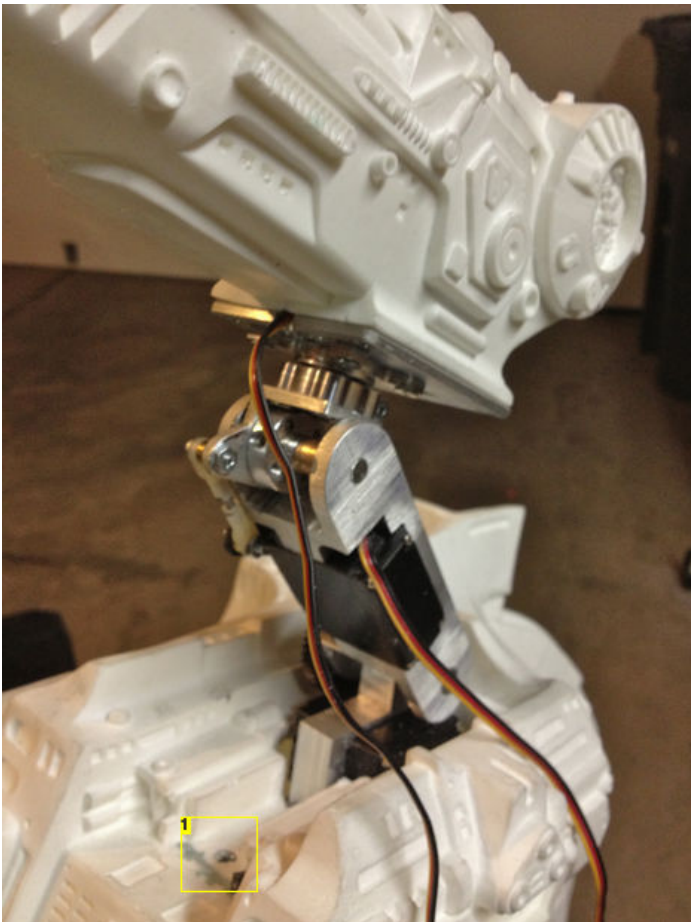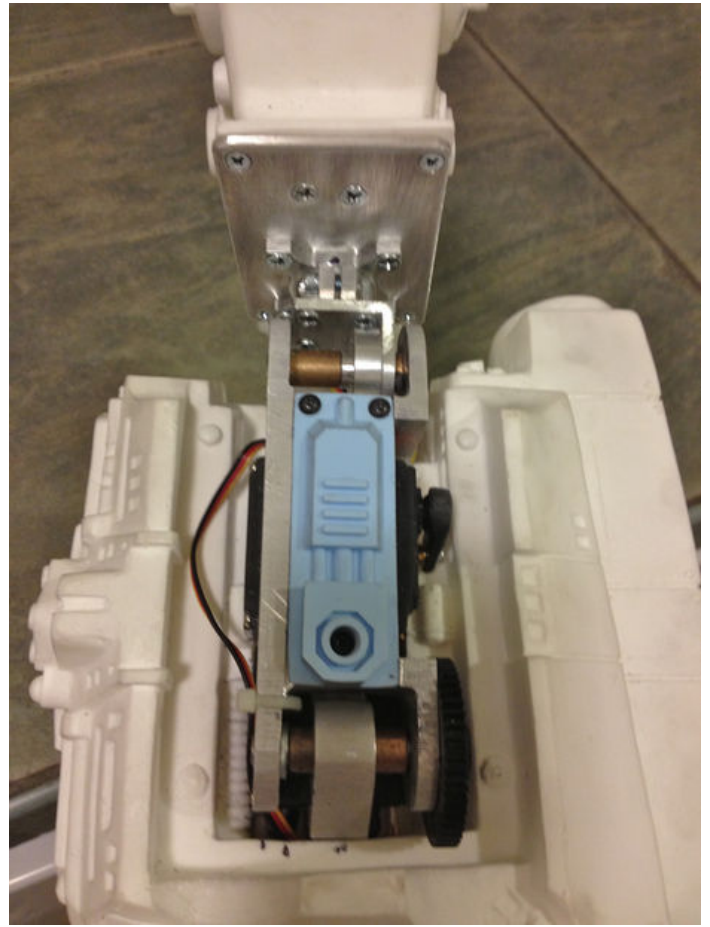
1. Mounting screw for the cannon arm base plate
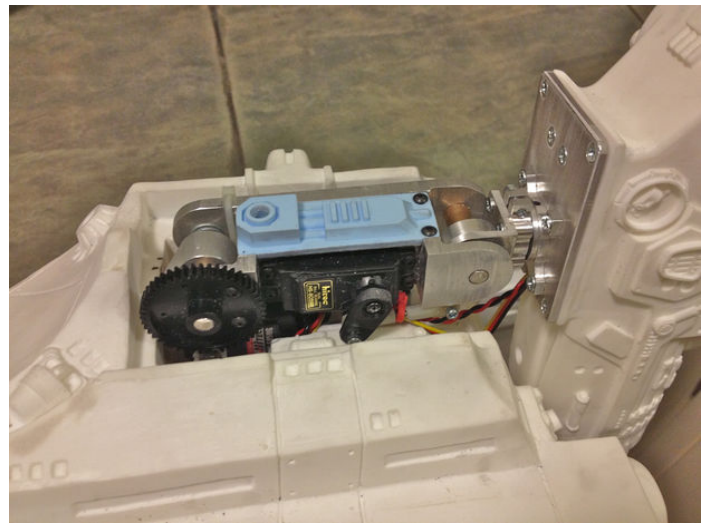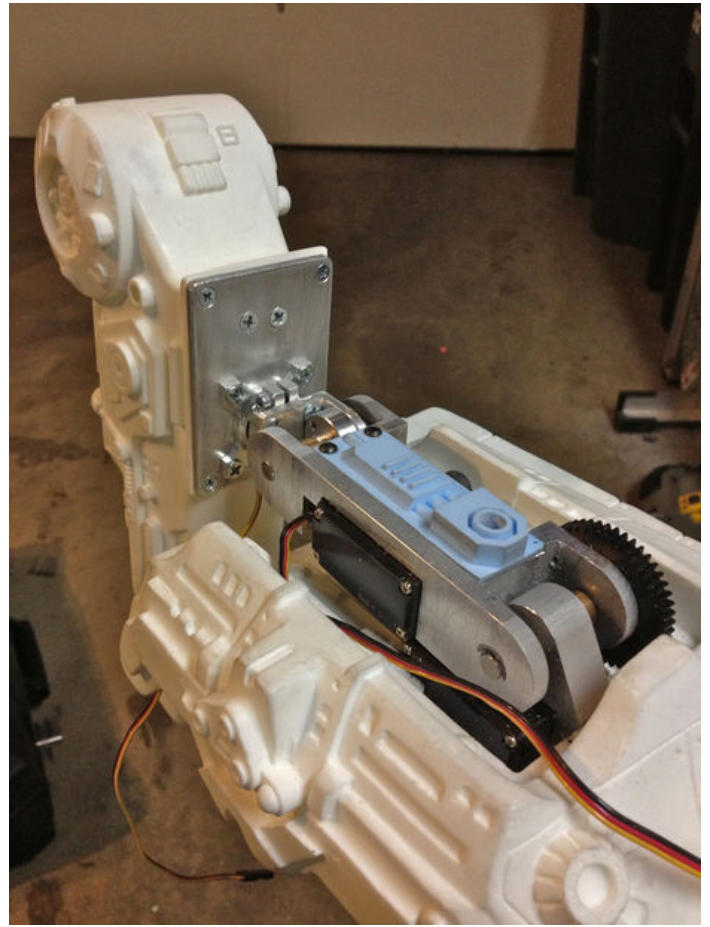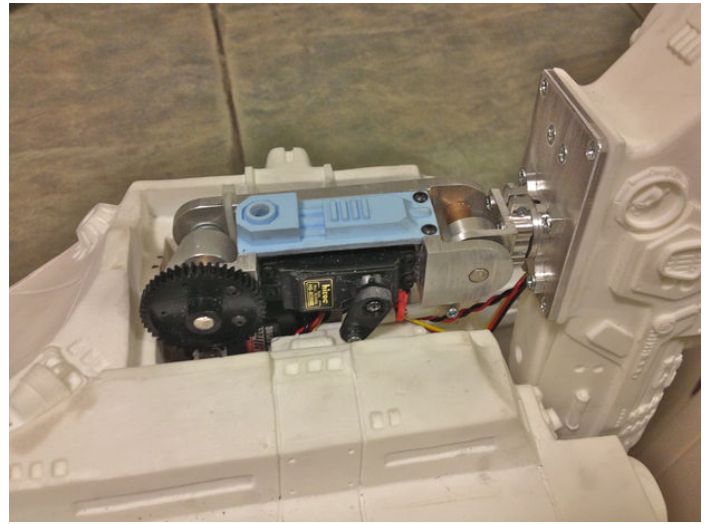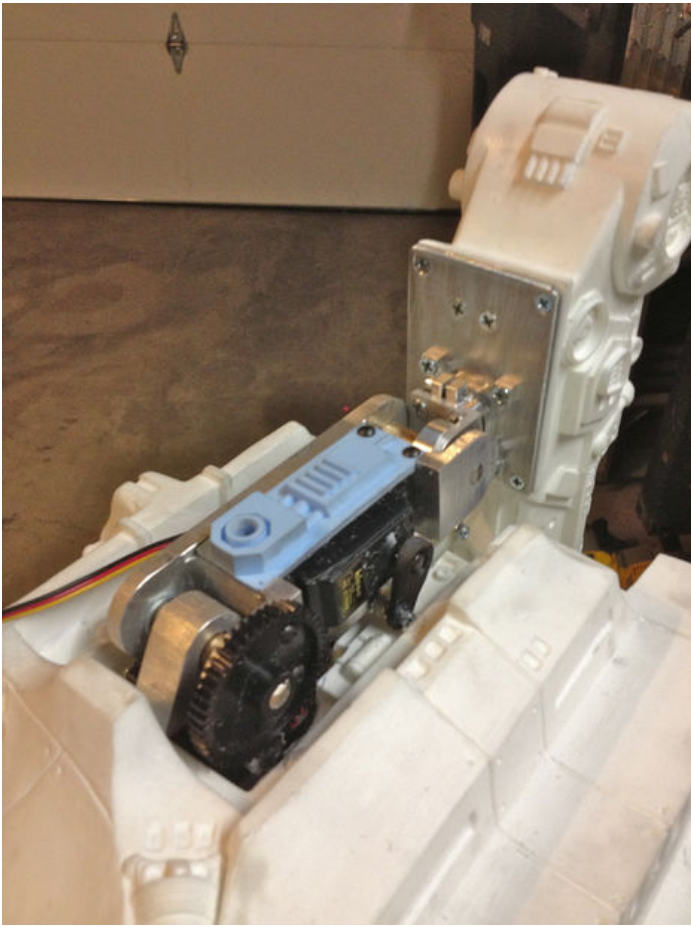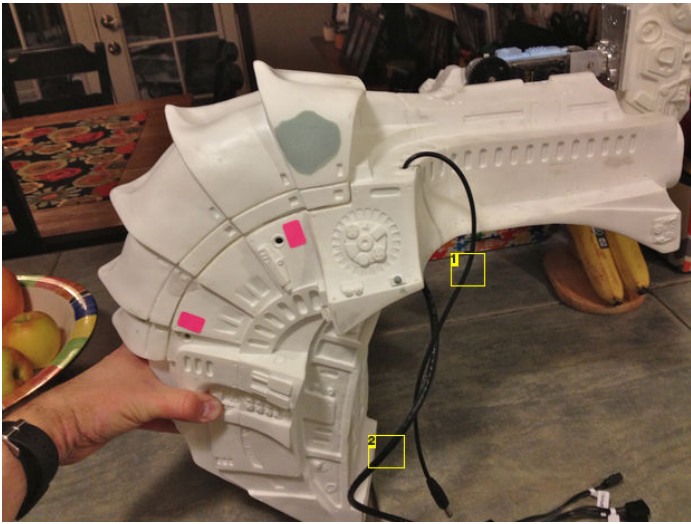
Image Notes
1. Helmet laser sight power cable
2. Ethernet cable to finger tip buttons
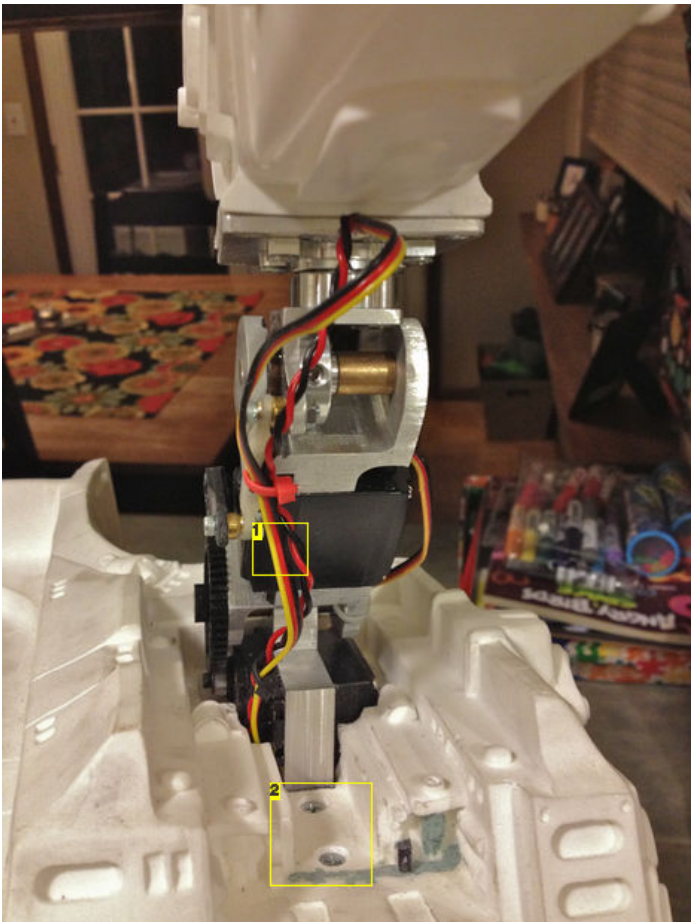
Image Notes

1. Servo and LED wires
2. Base plate mounting screws

Image Notes
1. The completed cannon and backpack with the cannon in the lowered position

Image Notes
1. Cannon in firing position

Image Notes
1. Wire to helmet laser sight
2. Servo connectors
3. Wires to speaker
4. Ethernet cable to finger switches

Image Notes
1. Power jack for the helmet laser sight. The helmet is a resin slush casting- it's cast using the same method as the cannon.

Image Notes
1. Mesh screen for the eyes is held in using epoxy putty.
2. Power jack for laser sight wiring.

Image Notes
1. Wiring to the laser sight.
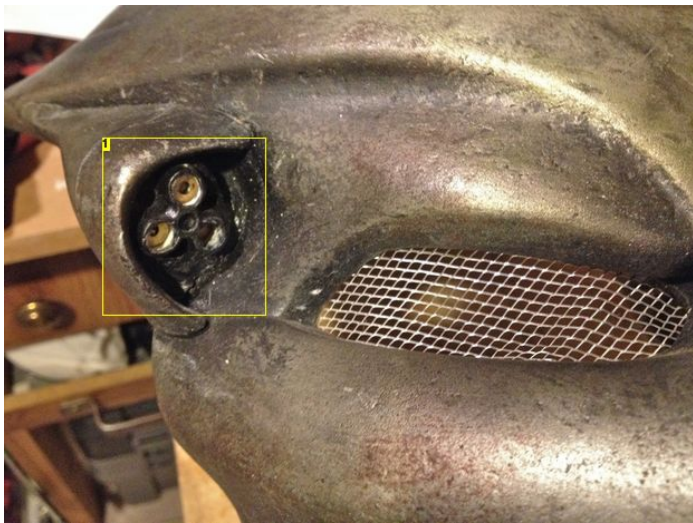
Image Notes
1. Laser sight- this is made using red laser pointers. Red LEDs could also be used.

Step 6: Suit construction- and a small problem
A great suit is the backbone of any Predator costume-

Gene was handling the creation of the suit and mask and Damon would assist him with assembly and painting. How Gene sculpt, molded and cast the entire suit and mask in just a few weeks I'll never know. And this is considering the suit was sculpted to fit 6' 7" tall Jamie, who wasn't even there at the time. Gene had taken Jamie's measurements the previous year and the fact that he was able to fit the suit to Jamie so well and have it look so spectacular is just, well, epic. There were also two masks that were made- one is a half mask that is worn under the Predator bio helmet and one is a full mask with mandibles. Gene and Damon also did a stellar paint job on the backpack and cannon, which is incredible given they were already buried with work just getting the suit ready.

From Gene:

"The suit up was scheduled for early to mid April, and we didn't have anything except for this gauntlet, Carl's cannon and backpack probably, and Clay Williams was making good progress on dreads, so there were about 8 weeks to get a finished product for Jamie to wear. As luck would have it, in January I bought some videos on the Stan Winston School of Character Arts site, specifically the sculpting techniques and textures, the making a creature suit, and the mask painting by Steve Wang, so I figured I had all the info I needed to make a suit and mask. NOT! I've had limited sculpting experience using fingers, wood sticks and credit cards, but the videos showed techniques, tools and explained the process, so the thought was it will make sense once I get started.

In early February I made armatures out of PVC pipe, fiberglass, foam and duct tape, then bought a lot of plastilina clay.
After a couple days of putting clay on armatures, shaping body parts and armor, I remember thinking to myself I DO NOT KNOW what I am doing! Which is fine if you have a few months to figure it out, but my timeline was to have these finished and molded the first week of March.

The head I left for last, as I figured I would refine the techniques on the torso and legs first, then be able to detail the head better. That worked out great, as I learned a lot with the torso and legs trying new techniques and learning how alcohol and mineral spirits work to smooth things out, and the power of the "X" as Don Lanning explains it. Having the Neca 1/4 scale was invaluable and I used that for 95% of the sculpt reference.

Next was molding, i used silicone since plaster inside the house was not going to be an option.The shins I only had a few days to sculpt, mold and cast so I rushed through them (and caught up on season 1,2 and 3 of the Walking Dead!) They were cast in TC 280, a flexible urethane foam that has some good rigid properties for

armor. Most of the parts were cast around April 3-5, giving us about a week to trim, prep and paint everything. On the torso I cut a piece of plastic with several rare earth magnets attached for the backpack, and foamed it in.

Had to take a lot of shortcuts due to time, the zipper was only super glued on, which I knew would fatigue later and did. Some of the seam work was rushed and not detailed as much as i like. All the parts were painted in 2-3 days, so I didn't put as much details in as usual. The bio, backpack and cannon arrived Thursday afternoon so those were rushed and painted in less than an hour. I was lucky to have my wife Adriana do much of the prep work while I was casting parts and painting. She cast and painted dreads, cast feet, head and legs, and several other things. Damon helped with a lot as well, cleaning parts, casting dreads, gauntlets, etc.

Estelle (another Lair member) supplied the spine prop in time and it worked great to hide the zipper and add to the overall accuracy. Julie's countdown and gauntlet lid worked flawlessly, with comments by the entire Predator crew how impressed they were with it."

The Hunter's Lair member Julie Spehar created the electronics for the Predator bomb-gauntlet. Julie's electronics work really shined and helped bring the Predator to life. Her gauntlet electronics are the simply the best there is. It's the details like her work that can really set a costume apart.

A small problem-

I received a message from Gene after the backpack had arrived- the box was pretty banged up and as a result the servo linkage that controlled the cannon up/down movement had a broken ball link. I kicked myself for not including an extra link as I had several sitting at home. Carl had already arrived in Burbank and he and another Lair member Glen were running errands around town. Carl was able to go to a local hobby shop that George Frangadakis had recommended and procure another ball link to replace the broken one. Carl used the store clerk's cell phone to send me a photo of the ball link to make sure it would fit properly.

Everything was starting to come together....

Image Notes
1. Sculpting the torso

Image Notes
1. Molding the torso

Image Notes
1. Cast suit pulled from the molds

1. Trimming the cast torso

Image Notes
1. Gene painting the suit

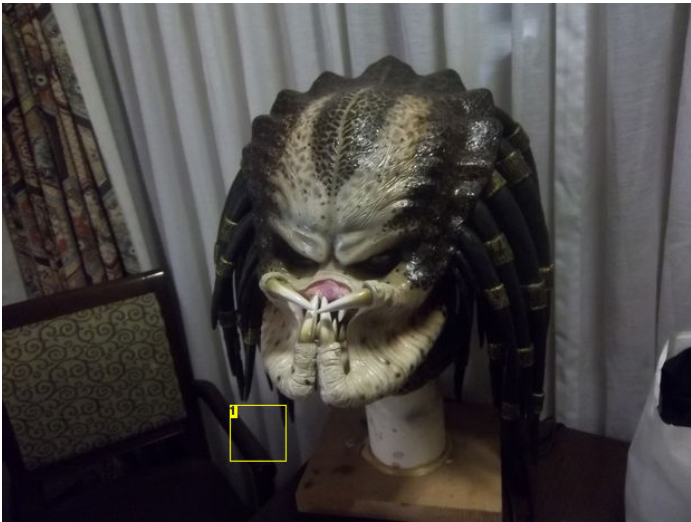**Image Notes**
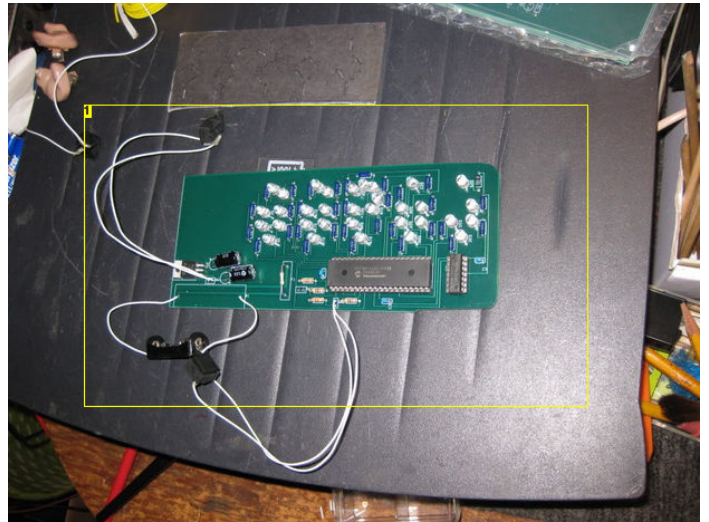1. Painted suit with netting applied

Image Notes
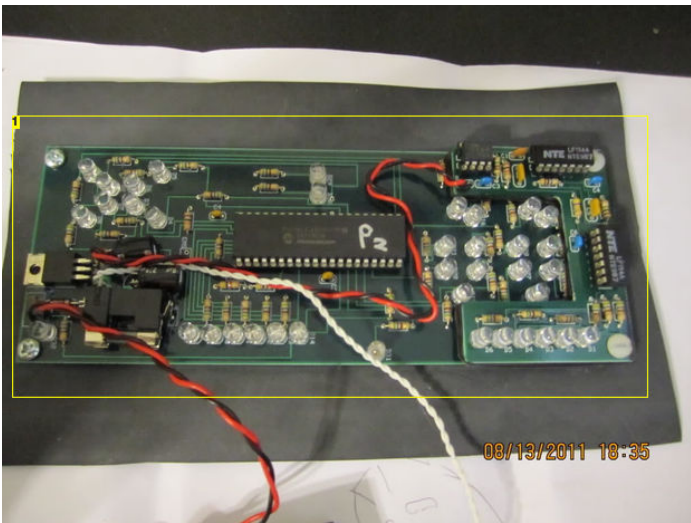1. The beginning of a Predator head mask

Image Notes
1. Painting the mask

Image Notes
1. The finished mask

Image Notes
1. Gauntlet electronics supplied by Julie

Image Notes
1. Gauntlet electronics supplied by Julie- you can tell she's a pro at this!

Image Notes
1. The finished gauntlet lit up

Image Notes
1. The countdown timer animation

Step 7: Final assembly and test fitting
The clock was ticking...

It was now the night before the event. Late that night everyone was at the hotel in Burbank for the test fitting. I was told Jamie could barely contain his excitement as he had only seen pictures of some of the costume pieces until now. Costume pieces still had to be glued together, hoses needed to be attached, the eye mesh needed to be glued in the helmet and the backpack had to be attached to the suit- there was still an awful lot of work to do.

From Carl:

"Friday was the day Gene was driving up to meet us in my hotel room. As the day wore on, Gene's arrival got later and later as he was still working on the suit. I broke the news to everyone that it was going to be an all-nighter to get that suit finished for 10:00 a.m. Sat morning. No one complained. I fired up the coffee pot, drank some Red Bull, and we went to work. Glen & Emily put together the slideshow that accompanied the presentation that morning, Gene and I did a bunch of things, Shawn went to work fixing the backpack, and there was Jamie----sitting in the middle of it all with a Cheshire cat grin, marveling at us working like bees in a hive until we were finally able to do the test-fitting. There we were all working together, sharing laughs and gettin' it done. For me, THAT was the highlight of the whole trip. A bunch of us pred-heads in room 318 at the Ramada Inn, up till 4:30 a.m……. I wouldn't trade it for the world."

The small problem with the backpack turned out to be a much bigger problem. Once the backpack was attached to the suit it was powered up and it worked great- once. It turns out the damage the backpack sustained during shipping was much greater than was immediately visible. The servo gear for the gear drive that raised the cannon arm had cracked. This wasn't a part you could just run down to the local hardware store and buy. Luckily another Lair member, Shawn Lindemood, was also in the room helping out.

Shawn is a wiz with servos and mechanics- he has a ton of experience with RC equipment. Shawn was able to replace the previously broken servo ball link and now he would disassemble the cannon arm mechanism and remove the drive gear and try to fix it. He was able to superglue the cracked gear but it was too far damaged and soon failed after it was reassembled. Shawn was however able to rig the arm so it would stay fixed in the upright position.

Next up- Monsterpalooza!

Image Notes
1. Carl shows Jamie the bio helmet and half mask

Image Notes
1. Those are some serious rat stompers, mister

Image Notes
1. Fitting the torso

Image Notes
1. Fits like a glove!

Image Notes
1. The broken ball joint link and its replacement
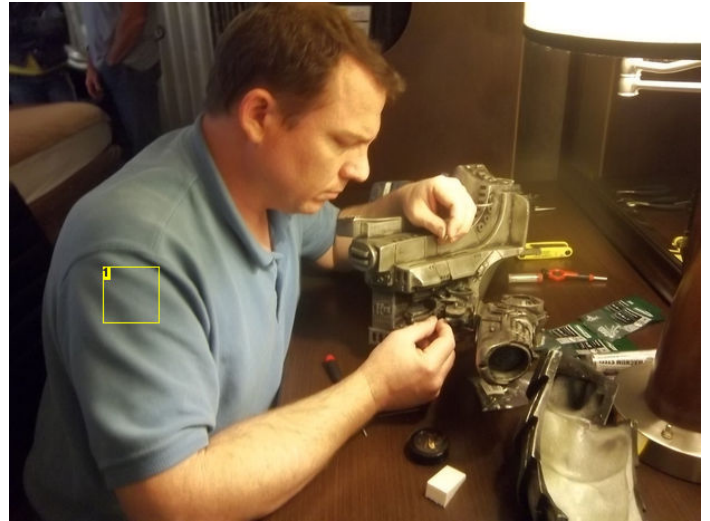
Image Notes
1. Shawn to the rescue!
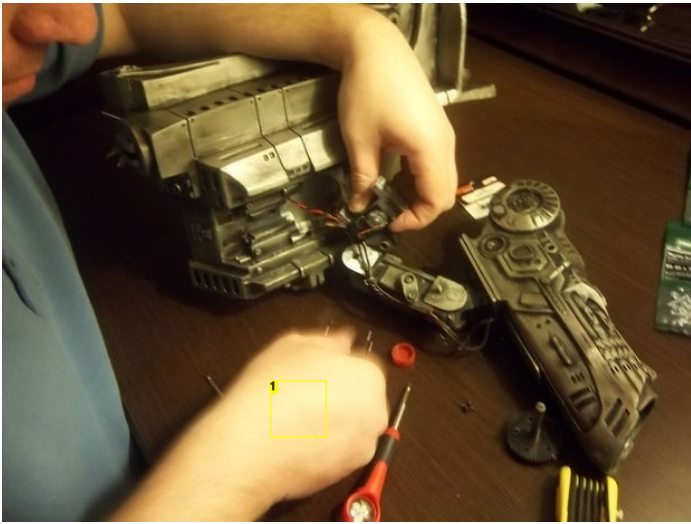
Image Notes
1. Shawn repairing damage as a result of USPS destructive testing

Image Notes
1. A happy Jamie wearing the half mask

Image Notes
1. Glen holding the finished painted backpack
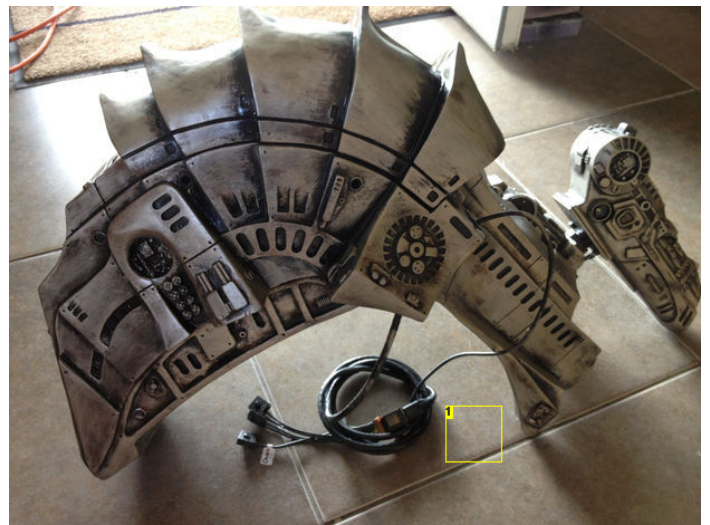
Image Notes
1. The finished backpack

1. Fitting the backpack

Image Notes
1. Jamie does a quick test of the cannon animatronics
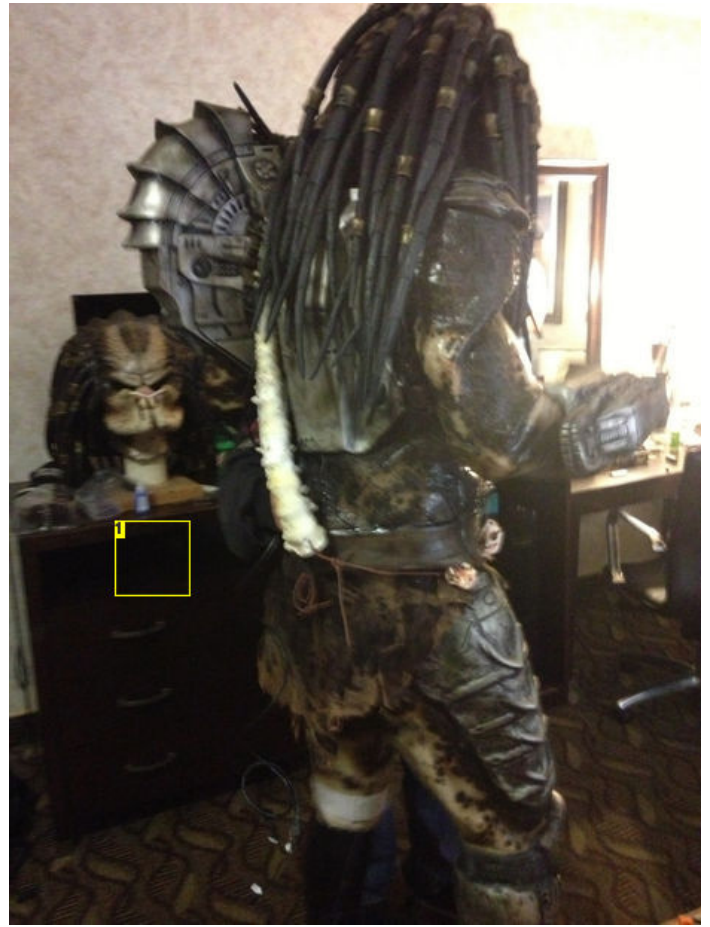
Image Notes
1. Back shot showing the dreds and spine

Image Notes
1. All suited up and ready to hunt

Step 8: Monsterpalooza 2013- the suit up!
Showtime!

I was really nervous on Saturday- I was dying to know how the event was going. As it turns out there was another problem with the backpack. The backpack was held to the suit using rare earth magnets embedded in the suit. Carl told me when Jamie went to give his sister a hug the backpack became detached and crashed to the floor, landing right on the cannon. I was mortified. Carl assured me that it was OK since it happened after the suit up on stage and it in no way affected the outcome of the event. Other than a bent bracket there didn't appear to be any other damage.
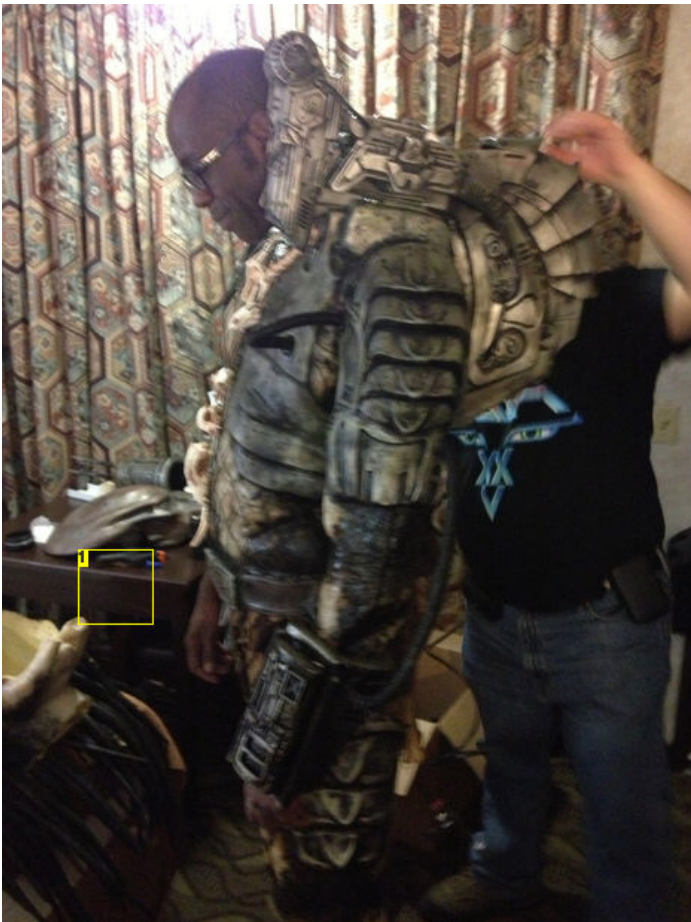
From Carl:

"We were all up by 8:00, ran over to the Marriot, skipped breakfast, and started setting up the room. The sound man had the Predator music Jamie gave him, the video and still camera crew were in place, and the suit was ready to go. Before long Alec Gillis, Tom Woodruff, Shannon Shea, Matt Rose and Steve Wang had entered the room and were loving all of the pred parts gathered on the stage. I remember remarking to Alec that I had a new-found appreciation for the long hours he and his compatriots have put in on projects over the years.

Matt Winston was our emcee, as he and the rest of the guys recounted their experiences with Kevin Peter Hall. They were great. They truly are the salt of the earth. Jamie talked about his uncle and his desire to help boost awareness of the Predator. With that wish, he was in good company. Lastly, Gene and Damon took the mic and described the genesis of the Jamie Predator Homage Suit Project, followed by my involvement, with shout outs to Julie, Clay, and Jerome who couldn't be there…and of course, Andrew - who started this crazy place (The Hunter's Lair) where members come together to make lasting impressions like this one. Then, it was time to get Jamie dressed. But, it wasn't going to be just us, Matt had the FX guys help out, reliving their experiences helping KPH get dressed 26 years ago! It was awesome.

After the ceremony, Jamie - still fully dressed, couldn't take two steps without getting swarmed by people and cameras. Sure there were some really good costumes and made-up people walking around, but when the 6' 10" Jamie-Predator came into view, that's all she wrote. "Look! The Predator!" Hearing little kids go, "Wow! Look Dad!" was as gratifying as it gets.

The other noteworthy event was when Jamie approached the Stan Winston Studios booth and Matt announced to the crowd, "This is Kevin Peter Hall's nephew Jamie Hall, following in his foot steps - as the Predator!" The crowd cheered. In those hours at Monsterpalooza all of the work, the scheduling, the running around, etc. was worth it all."

From Gene:

"It all came down to teamwork, and desire to see Jamie's dream become a reality, which everyone here on the Lair is a part of. For me it was amazing to be in the company of these Icons of FX, Matt Rose, Steve Wang, Shannon John Shea, Tom Woodruff Jr., Alec Gillis, Matt Winston and of course Jamie Hall. To receive compliments and shake their hands, to see them laugh and have fun with Jamie putting the suit on him, and seeing Jamie transform before our eyes into Predator. Matt Winston didn't stop smiling all day I think, seeing Jamie with his sister who was there with him, and knowing his Aunt was very excited for him since it had been a dream of his since he was a child to wear a suit like uncle Kevin. To see him bring our suit to life was priceless."

We actually pulled it off.

I wish I could have been there to see it. Everyone was just floored by Jamie in the costume. Everyone remarked that when they saw Jamie suited up he was the Predator.

And that is exactly what we were shooting for.

Jamie wrote me:

"I'm blessed to have been given the opportunity to honor and uphold my Uncle Kevin's legacy by performing in this incredible P1 suit that was created by a team of talented craftsman, artists and engineers from across the United States. I will be forever be grateful to each one of them for making my wildest dreams become reality!"

I later exchanged emails with Alec and Tom of Amalgamated Dynamics and they wrote:

"You guys put so much talent and effort into the suit (and you do a lot of the work in your living rooms!). It was really touching to see KPH's nephew climb into that suit, too."

So thank you Carl, Jamie, Gene, Damon, Julie, Shawn and Glen (as well as other Lair members that contributed!) In the end we, as costume creators, can build a costume to the best of our ability. But it is still just a costume- the suit performer is the person that brings the costume to life and by all accounts Jamie excelled in this regard. He made an awful lot of people very happy that day. I think his Uncle Kevin would have been a very proud man watching Jamie on stage and Stan Winston would have been thrilled that his iconic film creature would still inspire so many individuals after all these years.

Image Notes
1. Jamie with original Stan Winston Studios crew members Steve Wang, Matt Rose, Tom Woodruff Jr., Shannon Shea and Alec Gillis. Also on stage are Matt Winston and members of The Hunter's Lair involved in the construction of the Predator suit

Image Notes
1. From L-R: Matt Winston, Matt Rose, Steve Wang, Shannon Shea, Tom Woodruff, Jr., Alec Gillis and Jamie Hall

Image Notes
1. Tom Woodruff, Jr. talks while Shannon Shea helps Jamie get suited up

Image Notes
1. Jamie gets ready to put on the torso

Image Notes
1. Steve Wang helps Jamie get the gloves on

Image Notes
1. Attaching the backpack

Image Notes
1. Putting on the bio helmet

Image Notes
1. Jamie and Matt Winston pose for a photo

Image Notes
1. The smiles say it all

Image Notes
1. Jamie practices his stalking technique

Image Notes
1. All suited up with someplace to go!

Image Notes
1. Jamie Hall as the Predator

Step 9: The story continues...
It's not over yet!

Jamie would continue to stalk in his Uncle's footsteps. After Monsterpalooza Jamie received an invitation to appear in a video by the makers of the popular YouTube series Super Power Beat Down. He would be starring as the Predator in Episode 9: Predator vs. Wolverine!

Given the time frame it was decided to send the backpack to Shawn since he would be involved with the shoot and to have him check it over to make sure it was prepped for filming. Shawn took everything apart and contacted me to tell me the extent of the damage. It turned out the main pivot bracket had cracked during the fall at Monsterpalooza as had the resin piece that held the LED inside the cannon. Shawn had already straightened the bracket that had been bent at Monsterpalooza.

I immediately sent a sketch to Shawn as to what I thought would be the best way to fix the pivot bracket and Shawn got to work and had it ready to go in no time. He also repaired the LED mount and then reported back to me that the cannon was once again working perfectly and he even sent me a nice video of it. It was ready to go for Super Power Beat Down!

After all, a Predator is going to need all the help he can get if he's going to have any chance of taking down Wolverine...

Soon the backpack and cannon will be sent back to me for refurbishment after the wear and tear of filming and I'll fit a new cannon arm that is far more screen accurate-something I wasn't able to do previously due to cost and time constraints. I'll be sure to document it and add to the instructable when that happens.
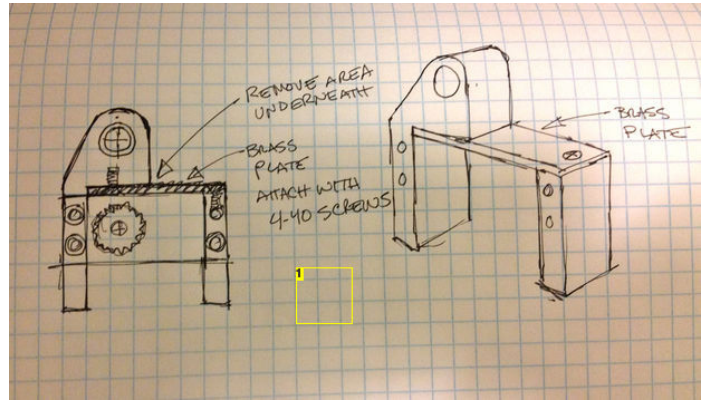

That's all folks!

I hope everyone enjoyed this journey- it was a ton of work but also tremendously satisfying working with such a talented group of individuals. As always, if there are any questions just let me know!

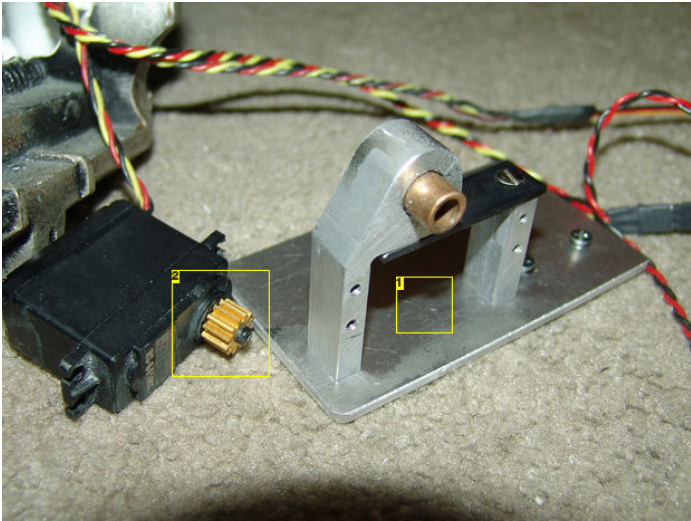Now get together a group of friends and build some awesome costumes!

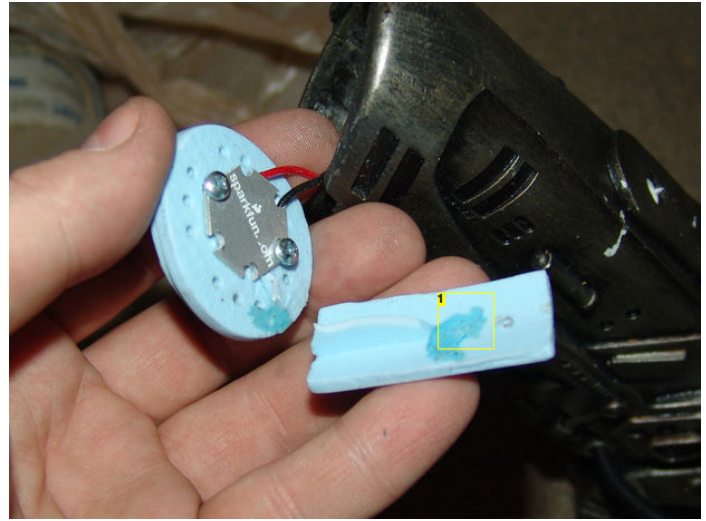**Image Notes**
1. Jamie Hall as the Predator takes on Wolverine!

Image Notes
1. My note to Shawn as to how to repair the broken main pivot bracket

Image Notes
1. The repaired main pivot bracket
2. New brass gear that replaced the cracked nylon gear

Image Notes
1. The broken resin LED mount- Shawn repaired this as well

Step 10: Resources

The Hunter's Lair- http://www.thehunterslair.com

This is the first and last place to go if you're into building a Predator costume.

The Replica Prop Forum- http://www.therpf.com

The RPF is the granddaddy of all movie prop/costuming sites.

Stan Winston School of Character Arts- http://www.stanwinstonschool.com/

Stan Winston School has of video tutorials that teach everything you could ever want to know about creating movie creatures and practical effects. If you haven't checked out their site you don't know what you're missing.

Accurized Hunter Parts- http://www.accurizedhunterparts.com/

Carl's site for his screen accurate Predator replicas.

LightBeam 3D- http://www.lightbeam3d.com

Scott Andrews knows his stuff when it comes to making your 3D design a reality.

Smooth-On- http://www.smooth-on.com/

Smooth-On is your one stop shop for all molding and casting materials and supplies.

Adafruit Industries- http://www.adafruit.com

A great place to purchase electronic components. I cannot say enough good things about this company.

Sparkfun - http://www.sparkfun.com

Another fantastic electronics supplier!

Servocity- http://www.servocity.com

Where I buy all my servos. Great pricing and outstanding customer service.

Online Metals- http://www.onlinemetals.com

Online Metals is a great place to get most any type of metal you want. They cut it to size and ship right to your door.

Related Instructables

Animatronic Tentacles with Arduino by thejuggler

How to create simple animatronics- part one: using the MAKE controller by Honus

Digital Sculpting, 3D Printing and Animatronics by doktorvortexx

Predator's helmet (made with synthetic resin and fiberglass) by M.C. Langer

Epic Tank Girl Cosplay/Photo shoot (Photos) by saxon1014

Learning craft and technology through costuming (video) by Honus

Comments

21 comments   **Add Comment**

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poofrabbit says:
Congratulations on being a finalist in the Halloween costume contest! Can't wait to see if you win good luck!

Nov 22, 2013. 5:34 AM **REPLY**

Honus says:
Thanks!! I have my fingers crossed. :)

Nov 22, 2013. 6:49 AM **REPLY**

---

ecsaul23 says:
awesome! voted

Oct 18, 2013. 7:33 AM **REPLY**

Honus says:
Thanks!!

Oct 23, 2013. 12:05 PM **REPLY**

---

blanthegenius says:
Excellent.

Oct 6, 2013. 1:52 AM **REPLY**

---

dessert hunter predator says:
Thx so awesome this was very important since i was having a Halloween party and I wanted to build a predator costume
Sep 14, 2013. 6:31 AM **REPLY**

Honus says:
Thanks! Be sure to post pics when you're done!
Sep 14, 2013. 3:56 PM **REPLY**

jessyratfink says:
Yay! Can't believe you were able to get it down to 10 steps. Fantastic work :D
Jul 16, 2013. 8:28 AM **REPLY**

Honus says:
Just added the Pred vs. Wolverine video. :)
Aug 7, 2013. 11:36 AM **REPLY**

Honus says:
There's a bit of video of the event here (skip to 2:20 to see where it begins with Jamie)
Jul 21, 2013. 8:27 AM **REPLY**

Honus says:
Thanks! :) Hopefully soon I'll get video of the Monsterpalooza event -it's still being edited. I think the Predator vs. Wolverine video will be released in another week or so.
Jul 16, 2013. 11:23 AM **REPLY**

richb77 says:
Sorry. There isnt a "jaw hitting the floor" smiley.

That is utterly amazing work. words really are failing me to describe how awesome that suit is.

WELL DONE!
Jul 25, 2013. 9:30 AM **REPLY**

Honus says:
Thanks so much! It was a great project to be part of- Jamie really makes it come alive too. :)
Jul 25, 2013. 11:30 AM **REPLY**

ynze says:
Amazing! Great teamwork! Nice to read how it all comes together.
Jul 21, 2013. 5:05 AM **REPLY**

Honus says:
Thanks so much! This was a really important build for everyone involved and just to see the look on Jamie's face when it was done made it worth the effort. He's an incredibly nice guy and he really brought the suit to life- just wait until you see the video. :)
Jul 21, 2013. 6:56 AM **REPLY**

Sam DeRose says:
Wow, what an incredible build. Keep up the great work!
Jul 18, 2013. 10:15 AM **REPLY**

Honus says:
Thanks!!
Jul 21, 2013. 6:37 AM **REPLY**

matson23 says:
Amazing build! Good work sir!
Jul 15, 2013. 12:30 PM **REPLY**

Honus says:
Thank you very much! I'll be sure to pass along any comments to the other guys- I'm sure they'll appreciate the kind words. :)
Jul 16, 2013. 11:26 AM **REPLY**

probetox says:
It is Amazing! Congratulatios
Jul 15, 2013. 12:31 PM **REPLY**

Honus says: Jul 16, 2013. 11:24 AM   **REPLY**
Thanks!