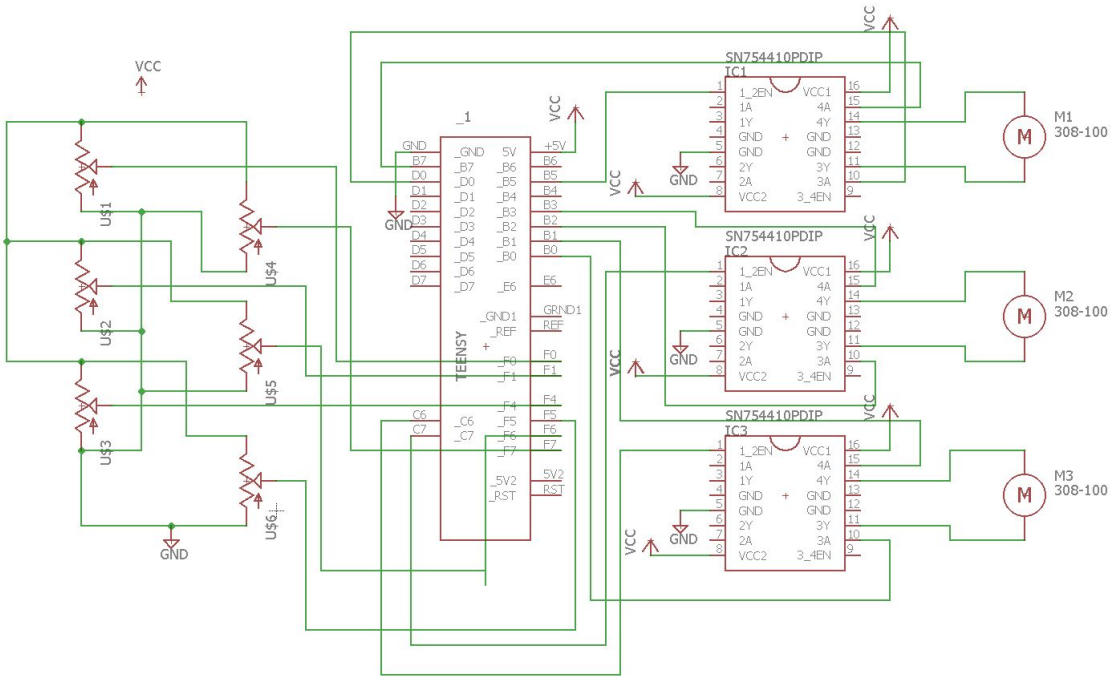
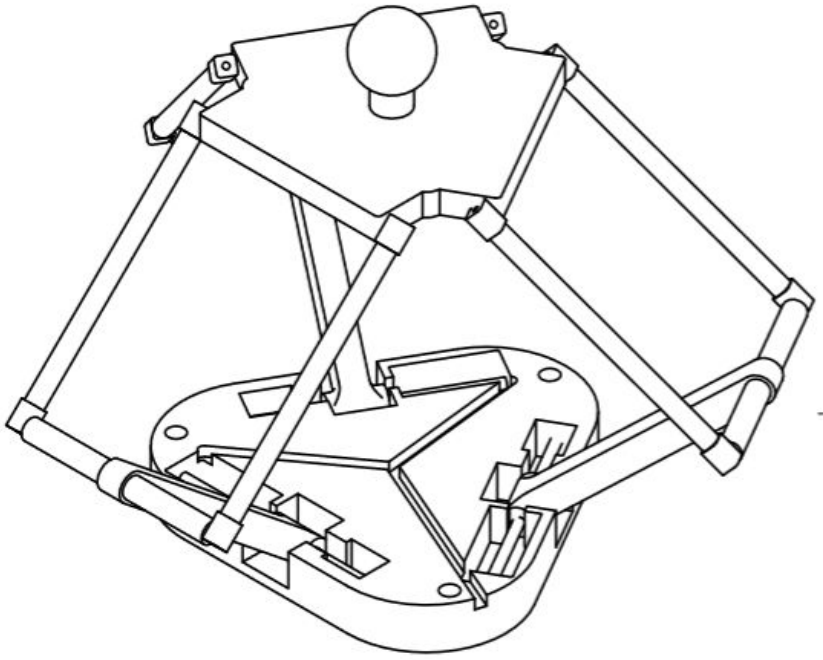
2.1.5 Design a Waldo with two degrees of freedom and discuss it with someone on the teaching staff. We will discuss the sensing side of things in lab 2.2. But we would like you to think about what you want to make now. Our sensing system will have limited range of angular motion, so something like an arm will work, but it doesn't have to be an arm, make something that you can get excited about. Create a design document that includes a mechanical drawing, and lists the mechanical and electrical components, (other than the sensing side of things). For the mechanical side indicate how you will fabricate and attach components together. If you do not have access to the Rapid Prototyping Lab this may be a good time to get trained as this will give you access to tools that will help you Rapidly make Prototypes of the mechanical portions of your projects this semester. When you do have access it is encouraged to try to design parts that can be laser cut instead of 3d printed because this is a much faster process

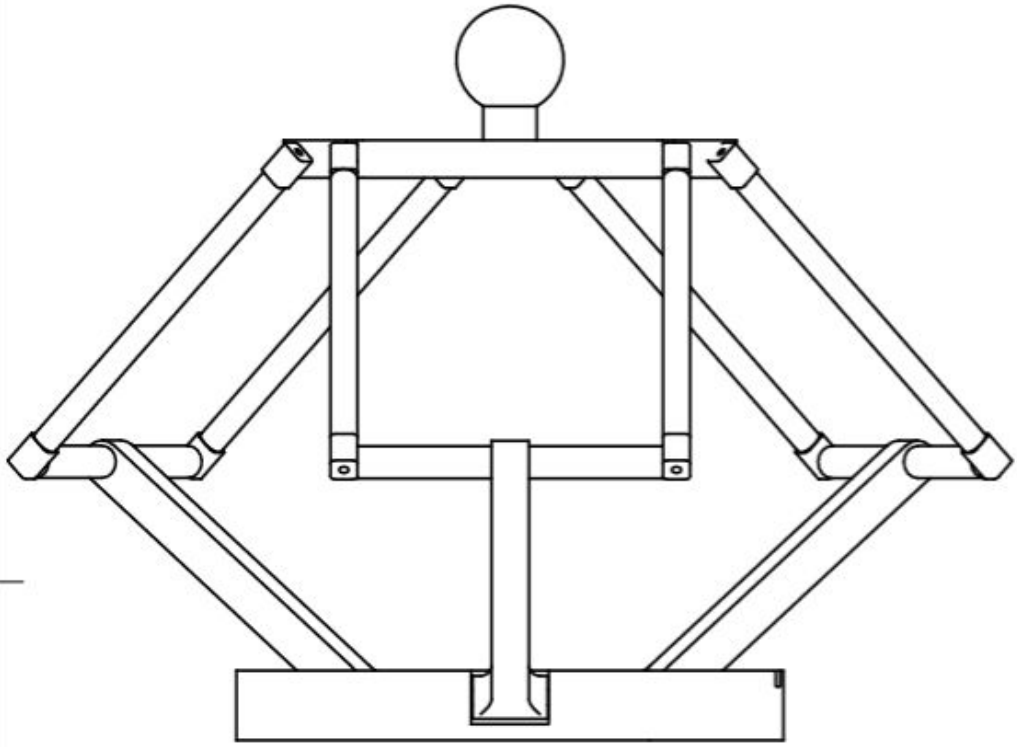
Circuit for motor movement



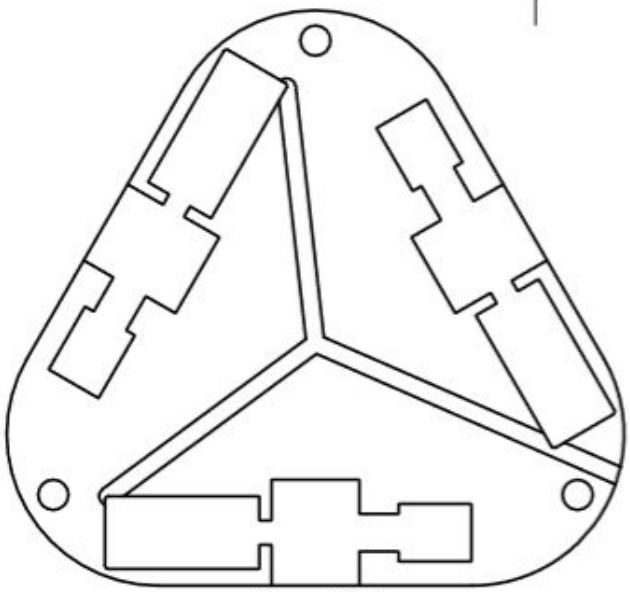
Mechanical design



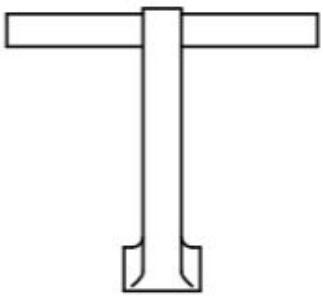
Dept.	Technical reference	Created by	Approved by
IPD		Varun Sanghvi	
		Document type	Document status
		Title: Assembly iso	DWG No.: 1
			Rev.: 1 | Date of issue: | Sheet: 1/3



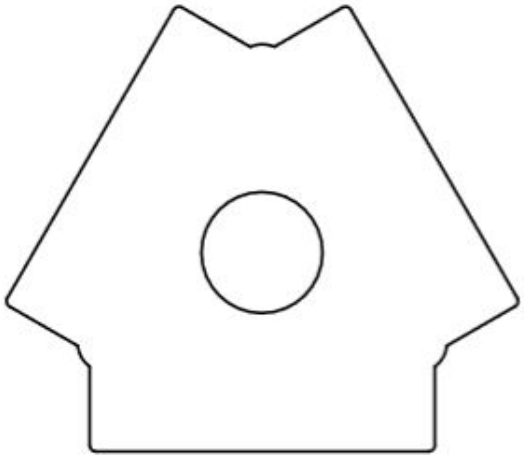
Dept.	Technical reference	Created by	Approved by
IPD		Varun Sanghvi	
		Document type	Document status
		Title: Assembly side view	DWG No.: 1
		Rev.: 1	Date of issue:
			Sheet: 2/3



Base Plate



Lower Joint Arm



Top Plate

Upper joint arm

Dept.	Technical reference	Created by	Approved by	
IPD		Varun Sanghvi		
		Document type	Document status	
		Title: individual components	DWG No.: 1	
			Rev.: 1	Date of issue:	Sheet: 3/3

Fabrication process

The top plate and the base plates are laser cut out of 1/8th mdf
The plates are then cross drilled to accommodate the ball joints
The lower joint and the upper arm are be 3d printed.
The ball joints are used as is (part numberTraxxas 1942).

Sensor side
10 k pots are used to sense the rotation of the lower arm

Repeater side
10 k pots are used inline with motor shaft to sense motor position