

## Individual Lab Report 6

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Team G – Bob's builders

Teammates: Eric Newhall, Michael O'Connor, Christian Heaney-Secord

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## Individual Work:

For this week, I mainly created the code for the current system demo while pitching in for minor assembling of components needed for the system demo and replacing some motors in some of the subsystems. Eric was planning to have the demo code written in his computer. But his computer broke down in the middle of writing out the code. So I had to do it since I was the one with a laptop that is ready to use. The code was implemented through the use of states where each state controlled a single motor. The hard part was figuring out the values of the positions given by the motors such that the subsystem would be properly working. To give a better picture of the code, I attached figure 1 in this report which contains a state diagram of what the demo did.

The arduino mega came in this week. So I was able to see its specifications and establish some sort of standard as to what pins are reserved for motors and magnets. The standard is not finished and may change depending on the situation in the lab. Other than that, I wrote in all the pins that are going to be used as define in the standard into the final code for the project. The pin standard got applied into this week's demo.

## Challenges / Issues:

The main issue for this week which I experience was the tuning of the encoder for the DC motor of the wire cutter. For some unknown reason when the DC motor moves, the encoder starts glitching or giving out erroneous encoder value. For example, suppose we started the DC motor at encoder value 0 when it left the bolt cutter open. If we tell the DC motor to close the bolt cutter, it will move and close it at encoder value 1580. But then when we move it back to the original position, the encoder value will become 640 instead of 0. The terminating encoder value varies with each test, which is a problem. In addition, we currently don't know the source of the error. Eric believes it originates from the software side of the code. In this case, Eric and I plan on trying to figure the source of the error and fix it soon.

## Team Work:

Michael O'Connor and Christian Heaney-Secord worked on parts of the current subsystems used for our demo while also working on the part orientator. In this week, all progress made with the part orientator was not met with success. So near the end, they started considering more different designs that could be done.

Eric helped me write out the code by giving me the high level instructions on what to do on each state. In addition, he helped wire the motors together onto the arduino mega. He also helped replace motors in some subsystems to improve performance.

## Future Plans:

The specification sheet emailed to us for the project demonstration introduces problems with our plans. Currently, our project requires a laptop to perform the vision processing part of our project, which is not allowed. Initially, we used a raspberry pi to do the vision processing. But it suffered a bug where it would take more than one second to send a value through the serial. So for this week, we have to fix this delay in the program or else we would not make the specification. Other than that, we plan to get the part orientator and possibly the hopper going for the next demo. We did not do the flux demo which we planned to do. So we will possibly do it for next week as well.

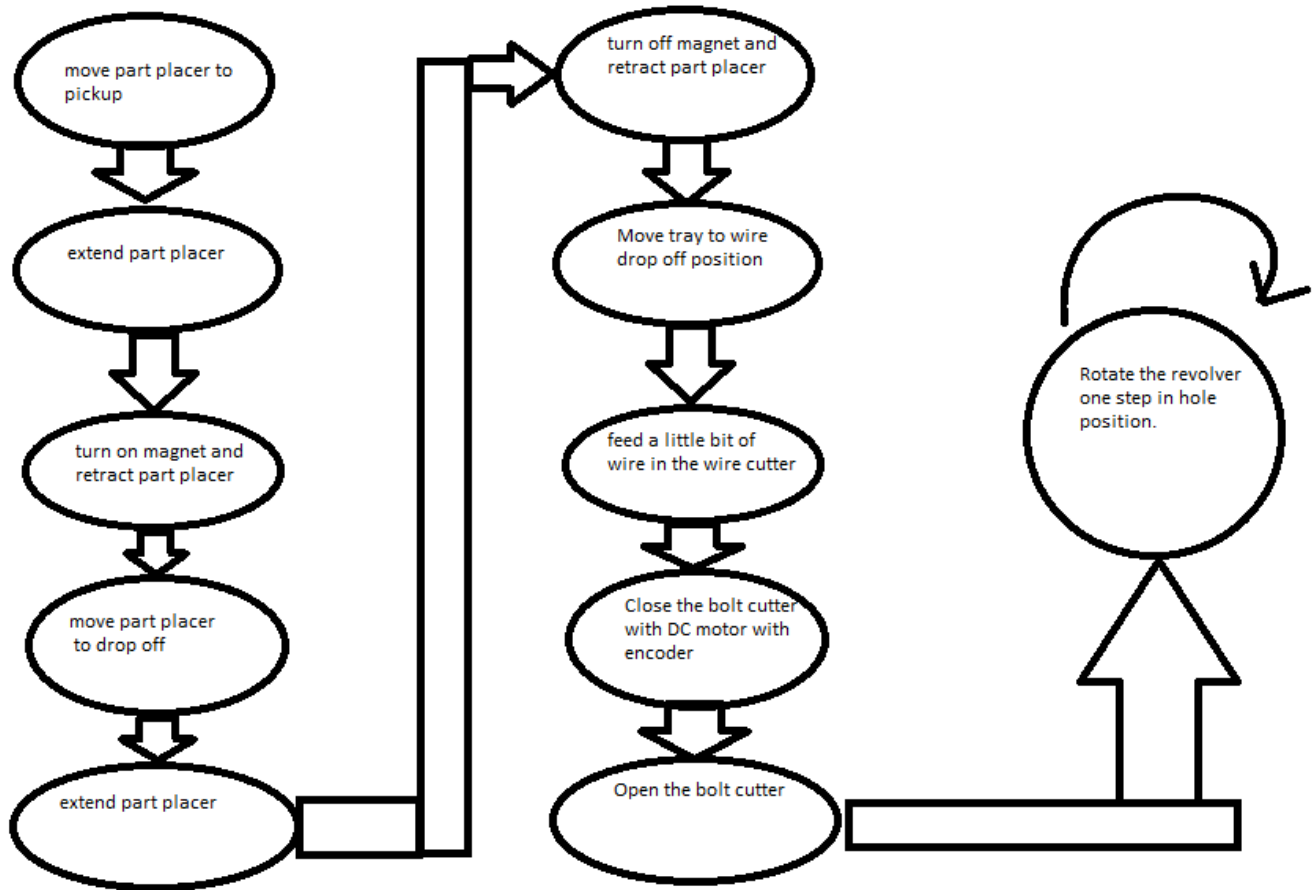


Figure 1: state diagram for system demo 5