# NASA LEC Robotic Mining Competition

Milestone Two Progress Evaluation

# Members:

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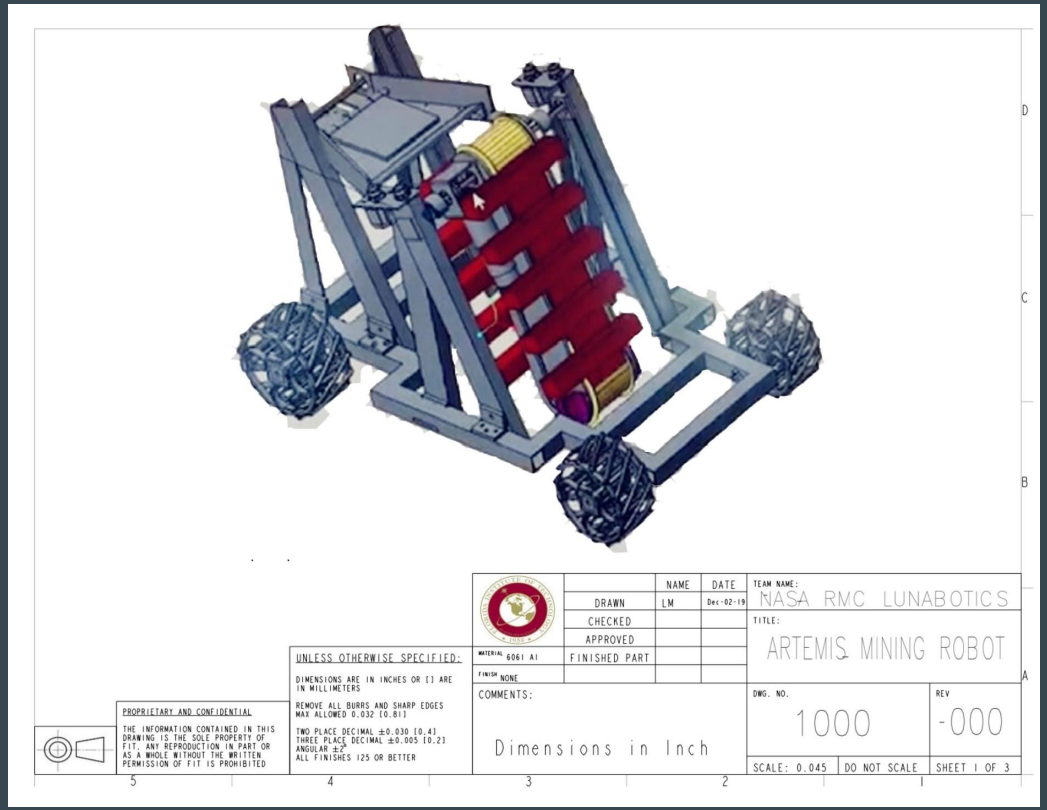
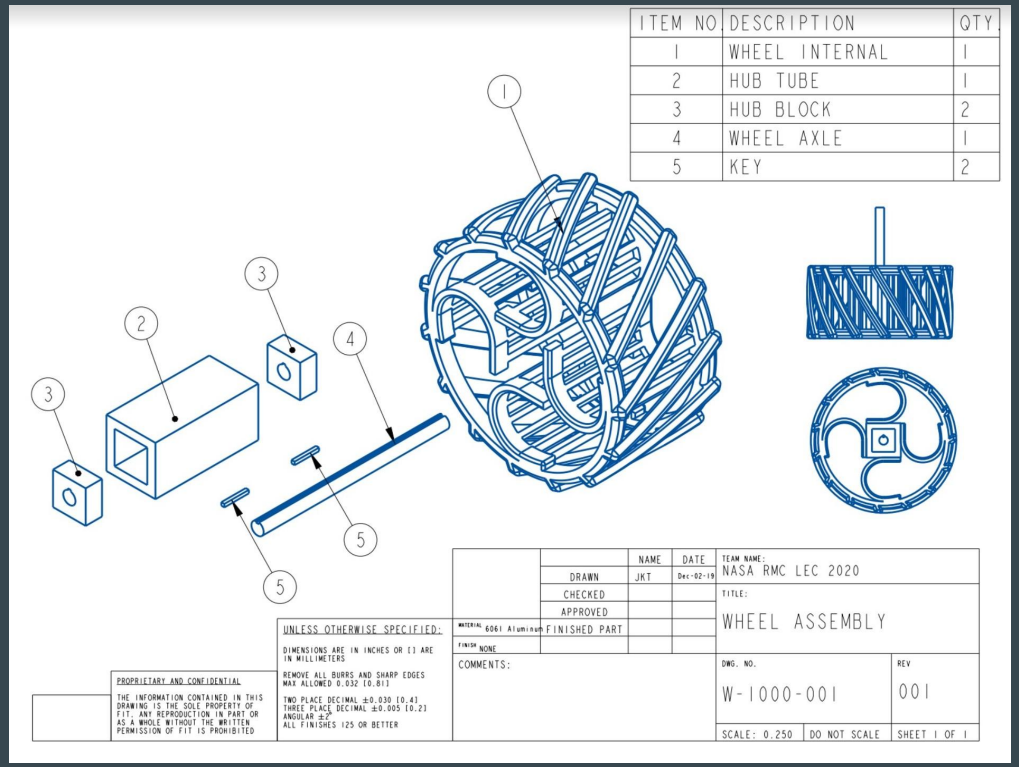
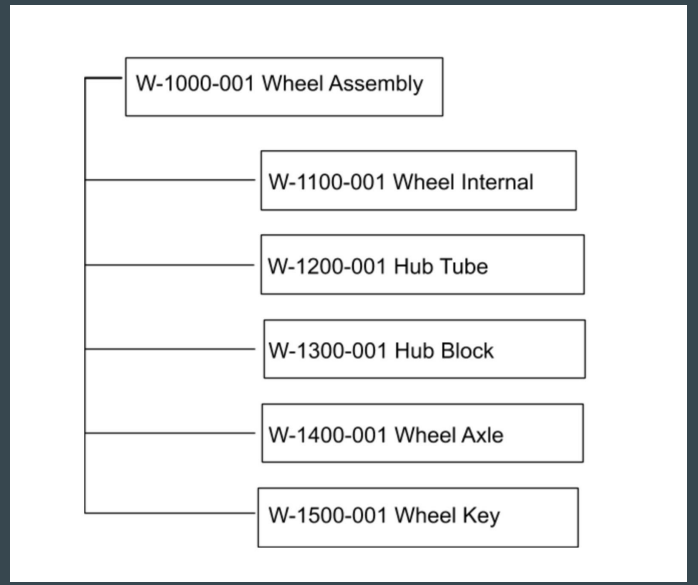
# System Diagram



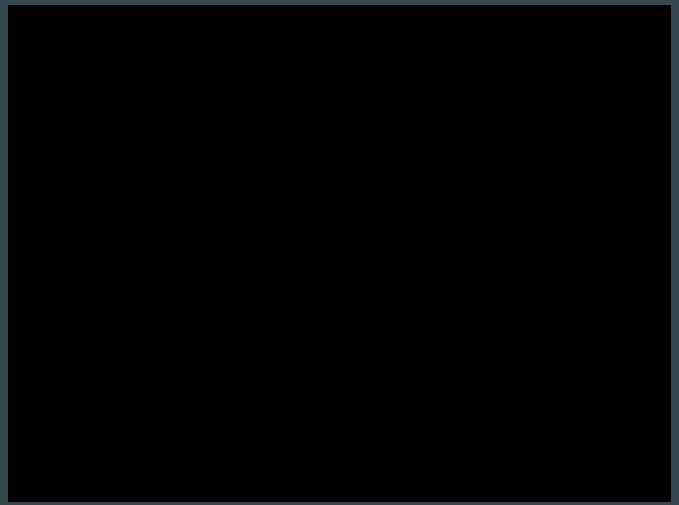
# Accomplished Tasks: Task One

The simulation robot can move when force is applied to the wheels.



# Accomplished Tasks: Task One



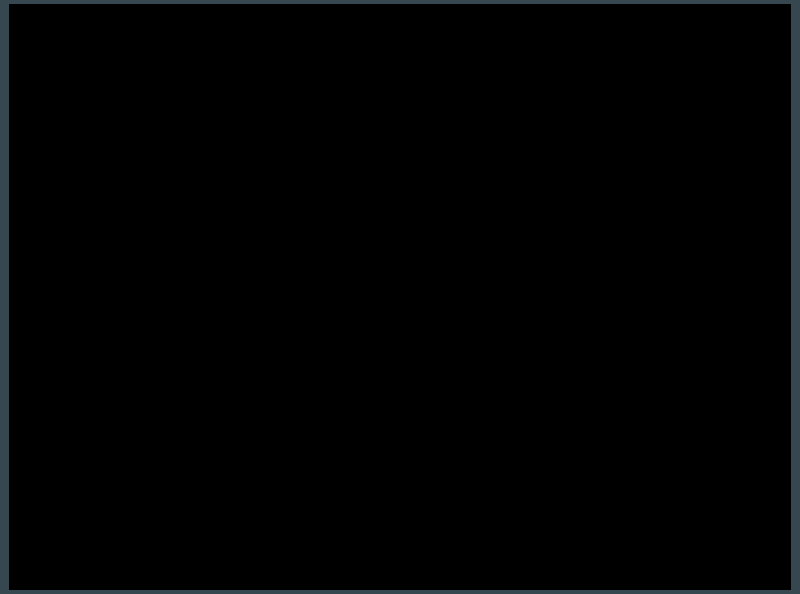
Video demo

# Task One Explained

The simulation model has been adjusted to allow ‘Force’ to be applied to the wheels so that it can move. In the previous design, it did not have joints to connect the wheels to the chassis, so the wheels were not physically attached to the main body of the robot.

Now that the wheels have joints, the robot can move.

# Accomplished Tasks: Task Two



Video demo

# Task Two Explained

The Python controller to manually move the simulation robot has been made so that with key button presses, the robot will move forward, backward, left, or right. The controller automatically adds the proper force to each wheel necessary to make the right action occur with each button press.

Currently the button presses are coming from a keyboard, but we intend to make them be with an Xbox controller soon.

# Milestone Three Plan

Task One: Finish setting up the robot controller so that the robot can move forward, backward, left, and right smoothly.

Task Two: Start using the Zed camera to detect objects.

# Milestone Three Task One Explained

Right now the simulation robot can be used to move forward, backward, left, and right; however, it can not do any of these thing simultaneously. In other words, it cannot be given inputs for going forward while being given inputs for going left or right. This can be changed to make it smoother and not break as easily.

# Milestone Three Task Two Explained

Using the Zed camera is the first step towards automation. Being able to detect object and identify them as obstacles or priority minerals that need to be mined will be key to making the robot move on its own.

We also want to see what Python libraries exist that can be used in coordination with the Zed camera to help make the process go smoothly, or help with the learning of process of how to use the Zed camera in conjunction with Python.

# Milestone Three Future Plans

- There is a chance we switch our Milestone 3 from using the Zed camera to operating the conveyor belt.

- Depending on our next meeting and the consensus of the entire group, a decision will be made about this in our next meeting.

# Dates of Client Meeting:

- October 5th - via Zoom
- October 12th - via Zoom
- October 19th - via Zoom

# Dates of Advisor Meeting:

- October 23rd - via Google Meet