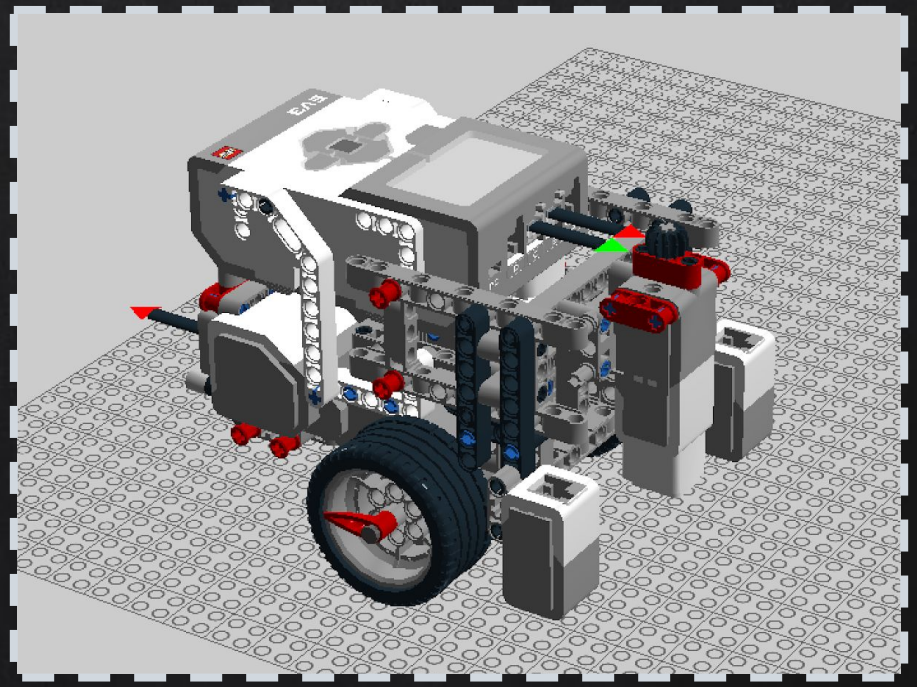
Littleton FLL
Virtual Summer Program 2020

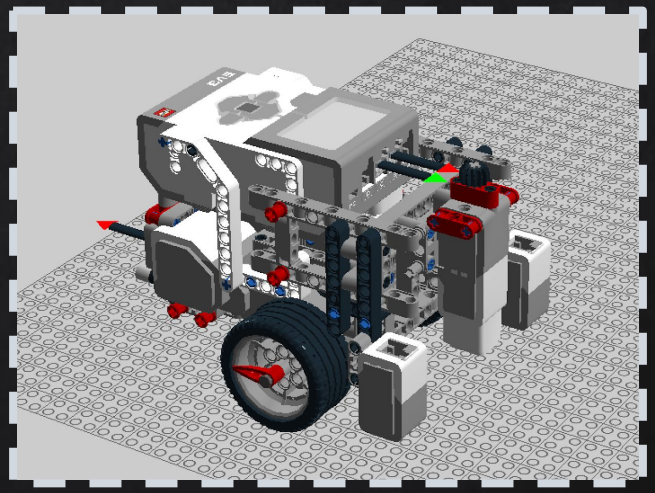
Virtual Robotics Toolkit
Resources Packet #1



6328
MECHANICAL ADVANTAGE
LITTLETON MA

Overview

In order to best help the students using the Virtual Robotics Toolkit (VRT), We will be creating a series of VRT resource packets that go over how to use the software. In packet #1, we will go over how to download the LEGO building software called LEGO Digital Designer, and how to build the base-bot in the software.



6328
MECHANICAL ADVANTAGE
LITTLETON MA

LEGO Digital Designer

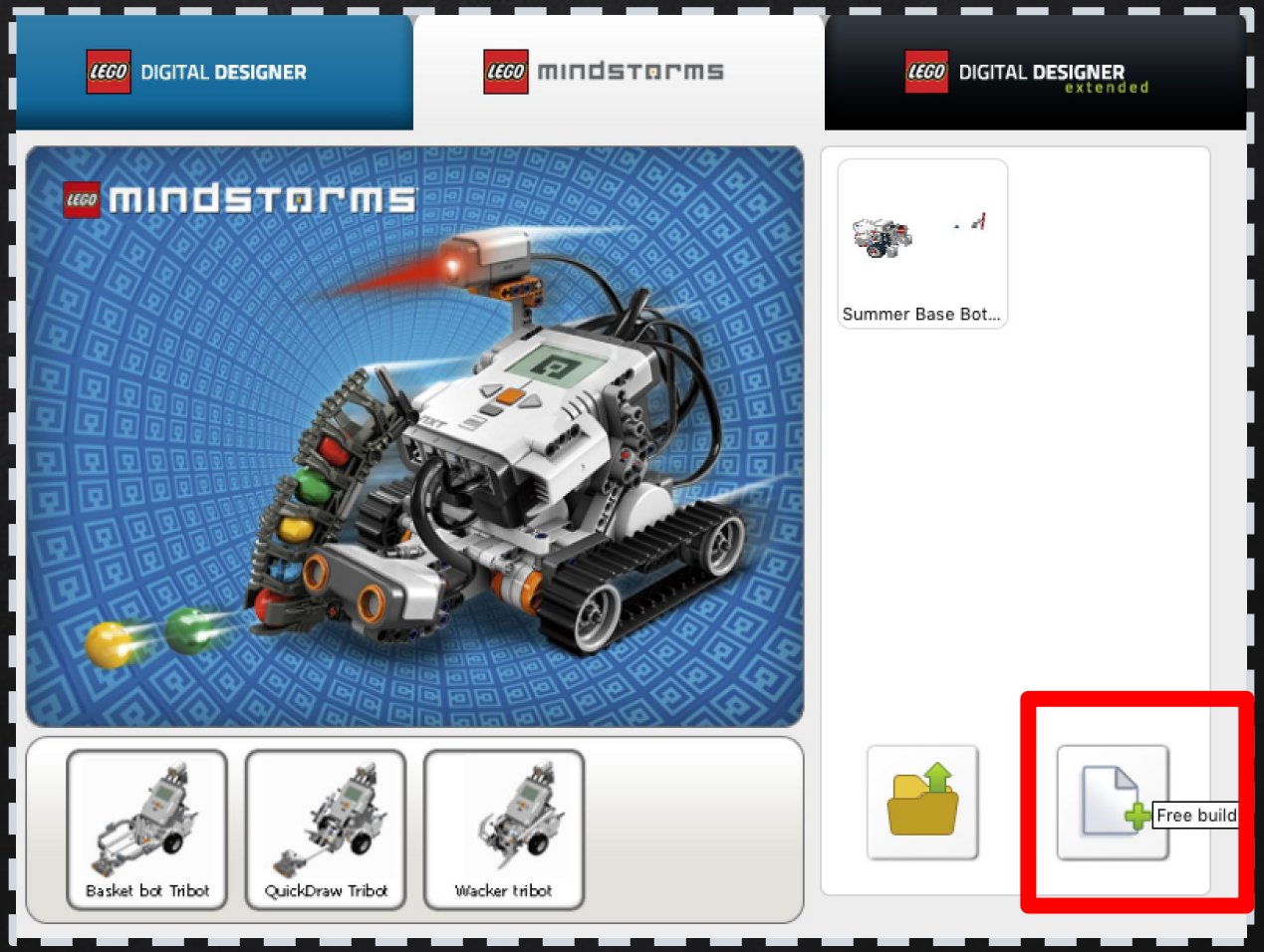
Before you can use the VRT, you need to build your robot in the LEGO Digital Designer (LDD). The LDD is free to download on both Mac OS and Windows machines. You can find the download link below.

https://www.lego.com/en-us/ldd

6328
MECHANICAL ADVANTAGE
LITTLETON MA

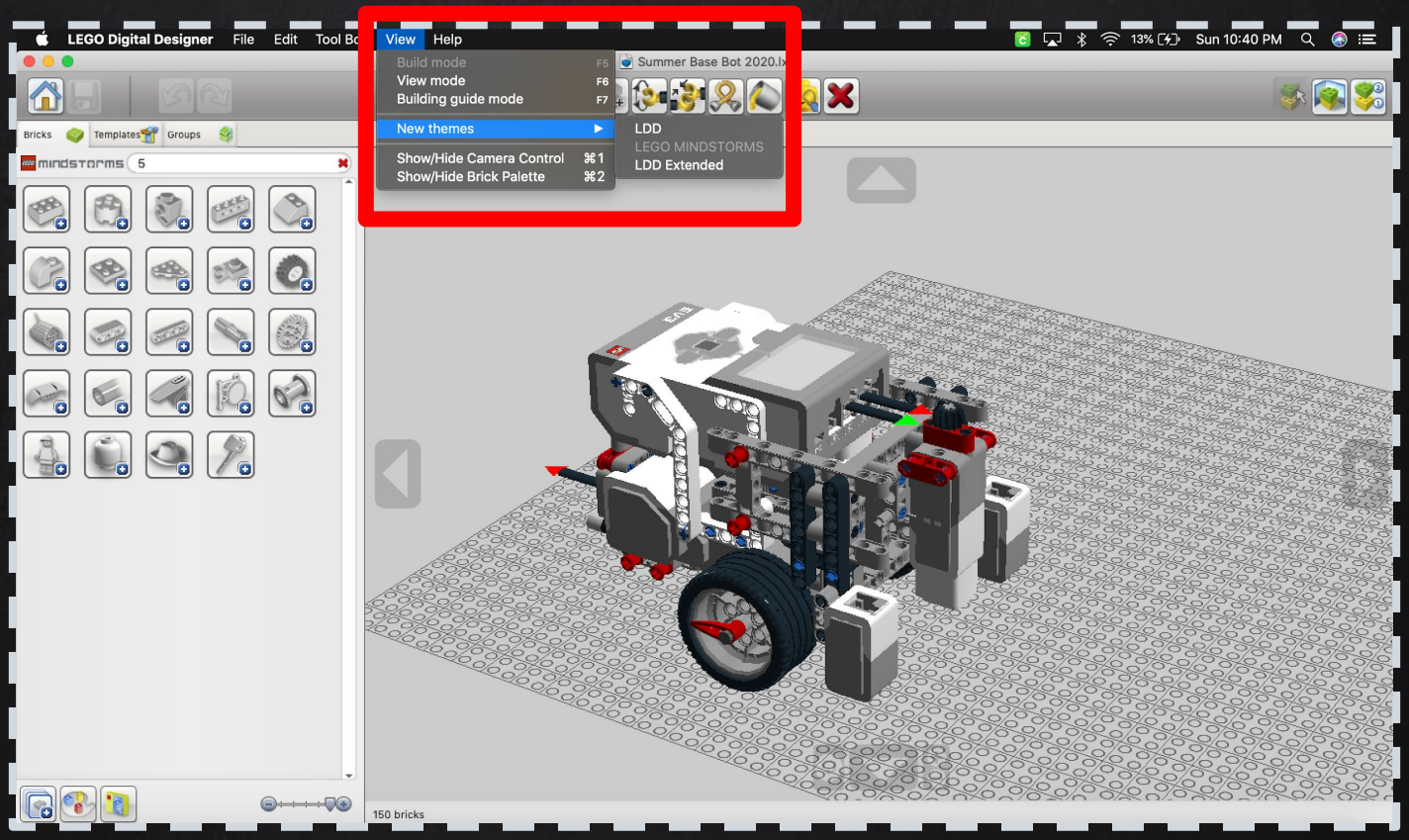
LEGO Digital Designer

Once you install the software, open it and select "free build."



LEGO Digital Designer

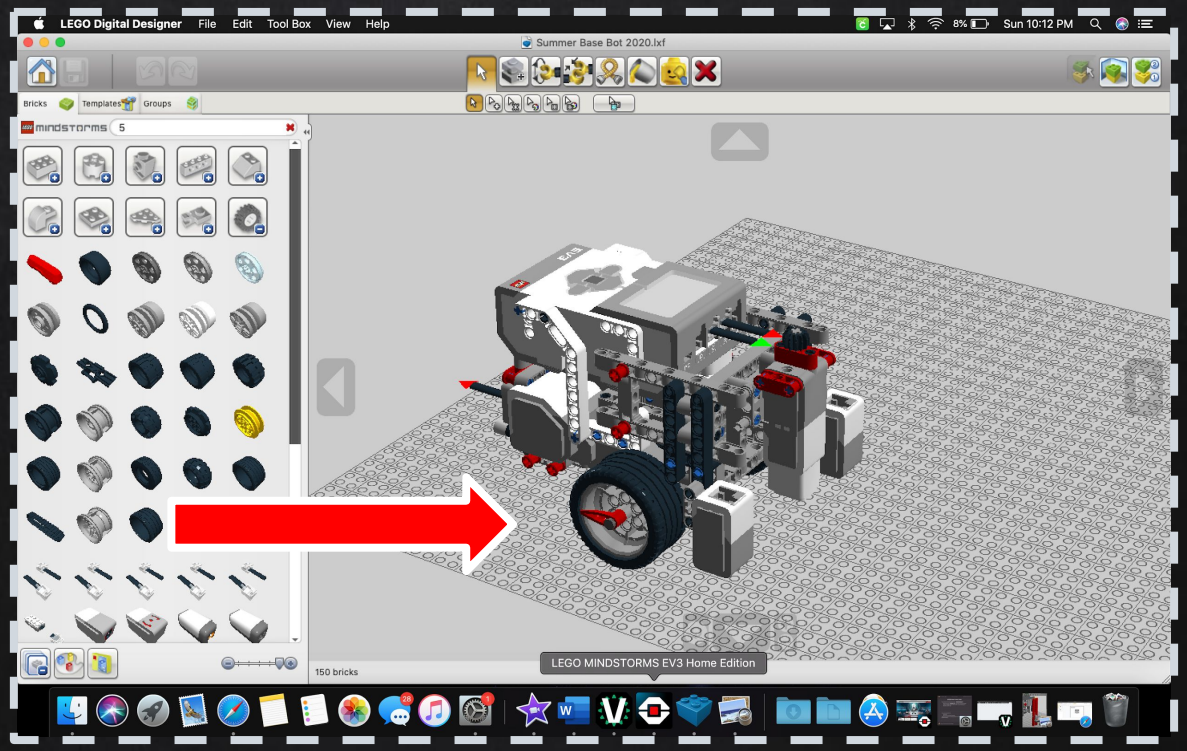
Select, File, Save As and name your file "Summer Basebot Challenge 1." Then select View → New Themes → LEGO MINDSTORMS.



LEGO Digital Designer

Now you are ready to start building your robot! Building in the LDD is simple – all you do is drag parts in from the library on the left screen and place them into the design studio on the right screen. Use the arrow keys to change the orientation of a part. You can rotate your screen by right clicking and holding on a mouse, and you can zoom in and out with a scroll wheel. You can also use the four arrows on the screen to move your view of the robot.

The parts library is broken up into sub-libraries. On the next slides I will show screenshots of where all the different parts are located in the sub-libraries.



LEGO Digital Designer: Parts Library

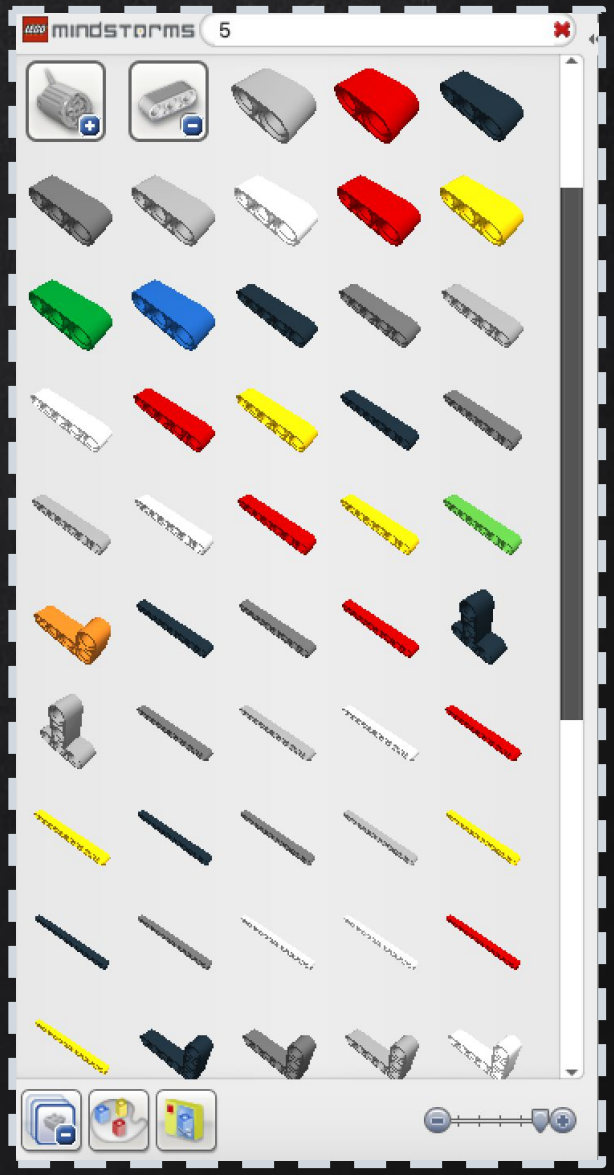
Rubber Bands & Chain

Gears

LEGO Digital Designer: Parts Library

Motors, Sensors & Cables

Beams



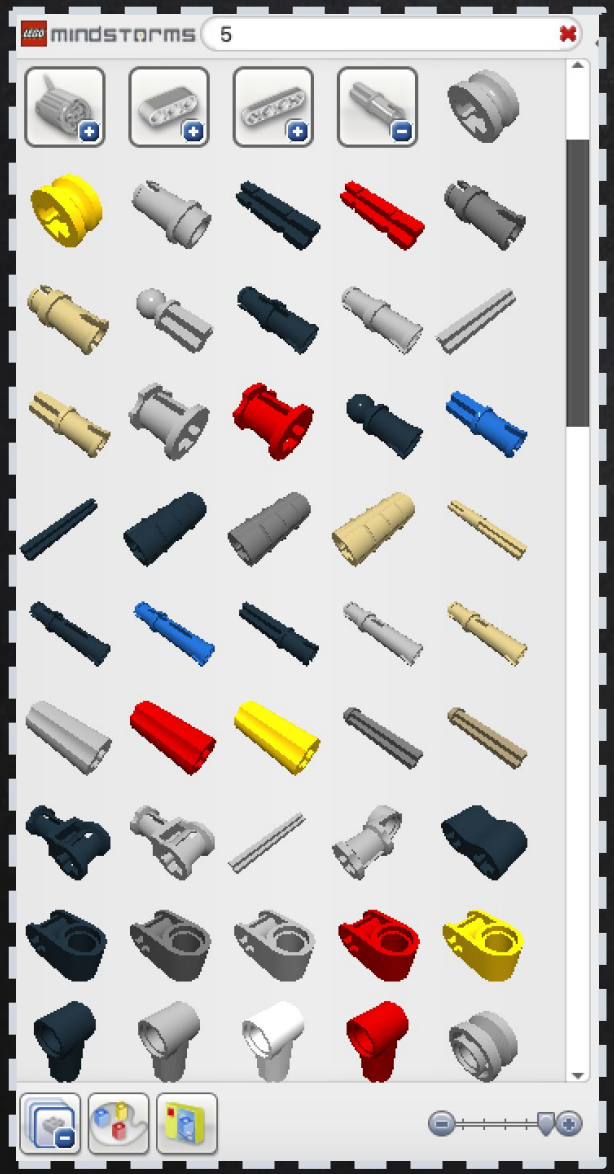
LEGO Digital Designer: Parts Library

Beams Continued

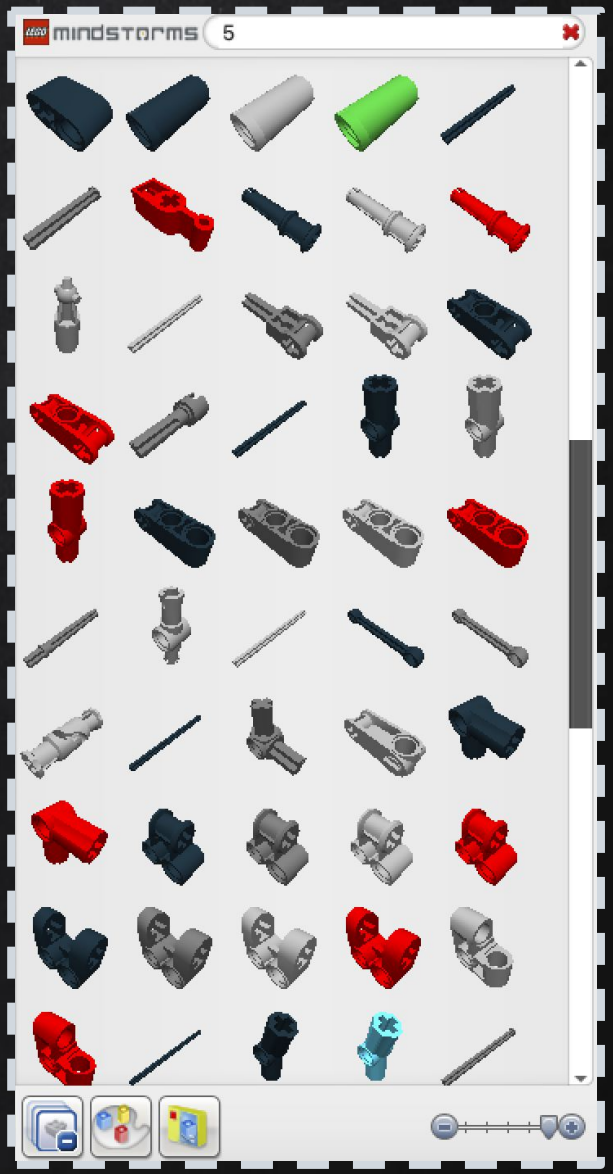
Half-Thickness Beams

LEGO Digital Designer: Parts Library

Pins and Miscellaneous Parts

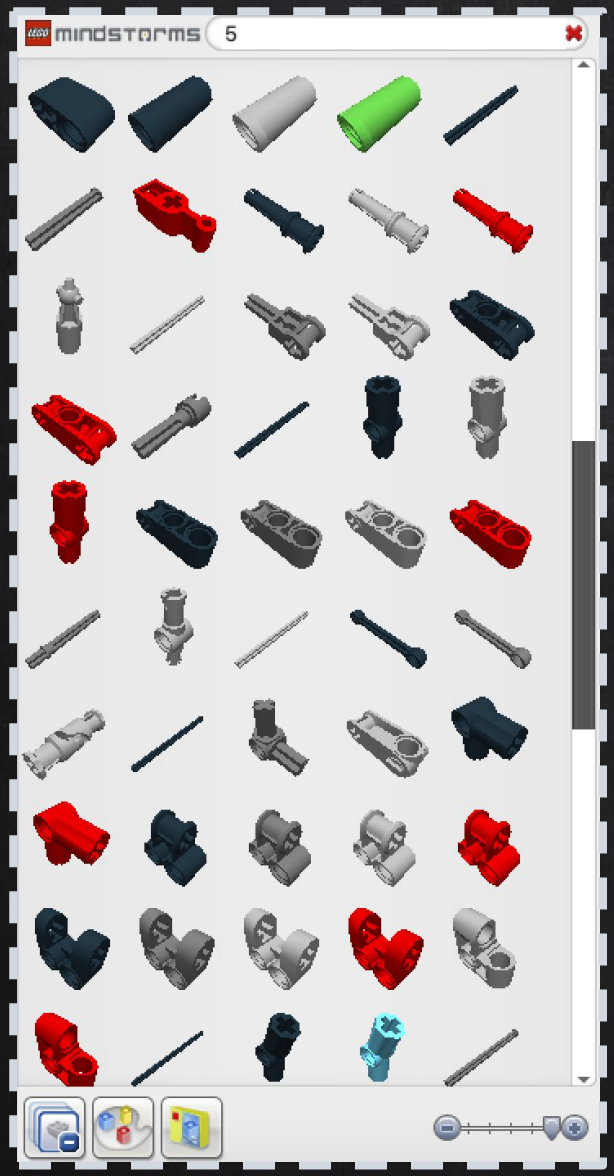


Pins and Miscellaneous Parts



LEGO Digital Designer: Parts Library

Pins and Miscellaneous Parts



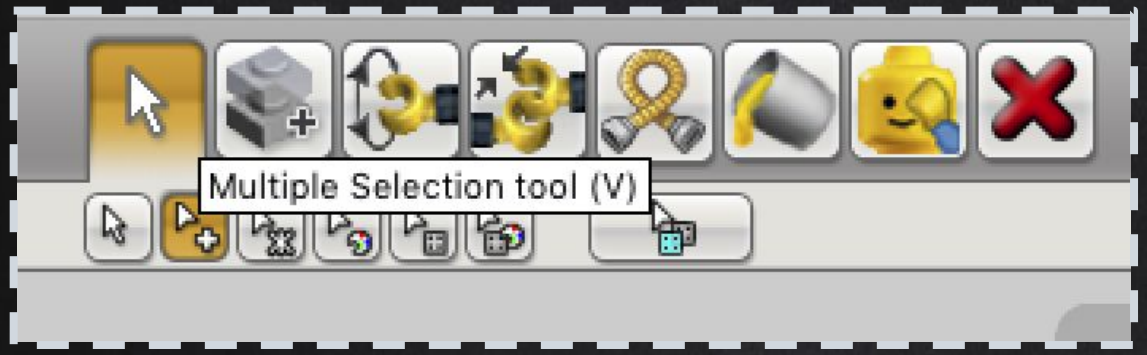
Pins and Miscellaneous Parts

LEGO Digital Designer: Parts Library

Wheels

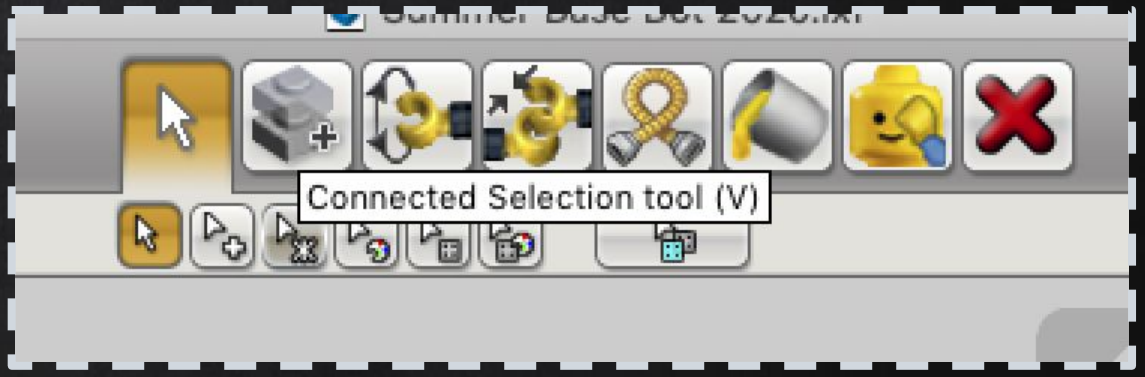
LEGO Digital Designer: Parts Library

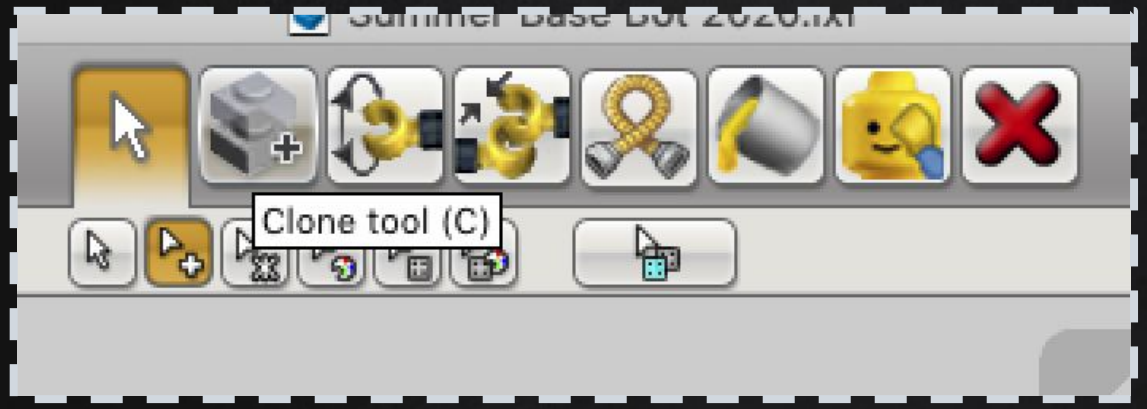
There are a few selection tools that are useful when creating your robot in the VRT. Their respective descriptions are below.



Multiple Selection Tool lets you select multiple parts at once. Once selected you can click and drag to move all parts at once.

Connected Selection Tool selects all parts connected to the part you select. Once selected you can click and drag to move all parts at once.

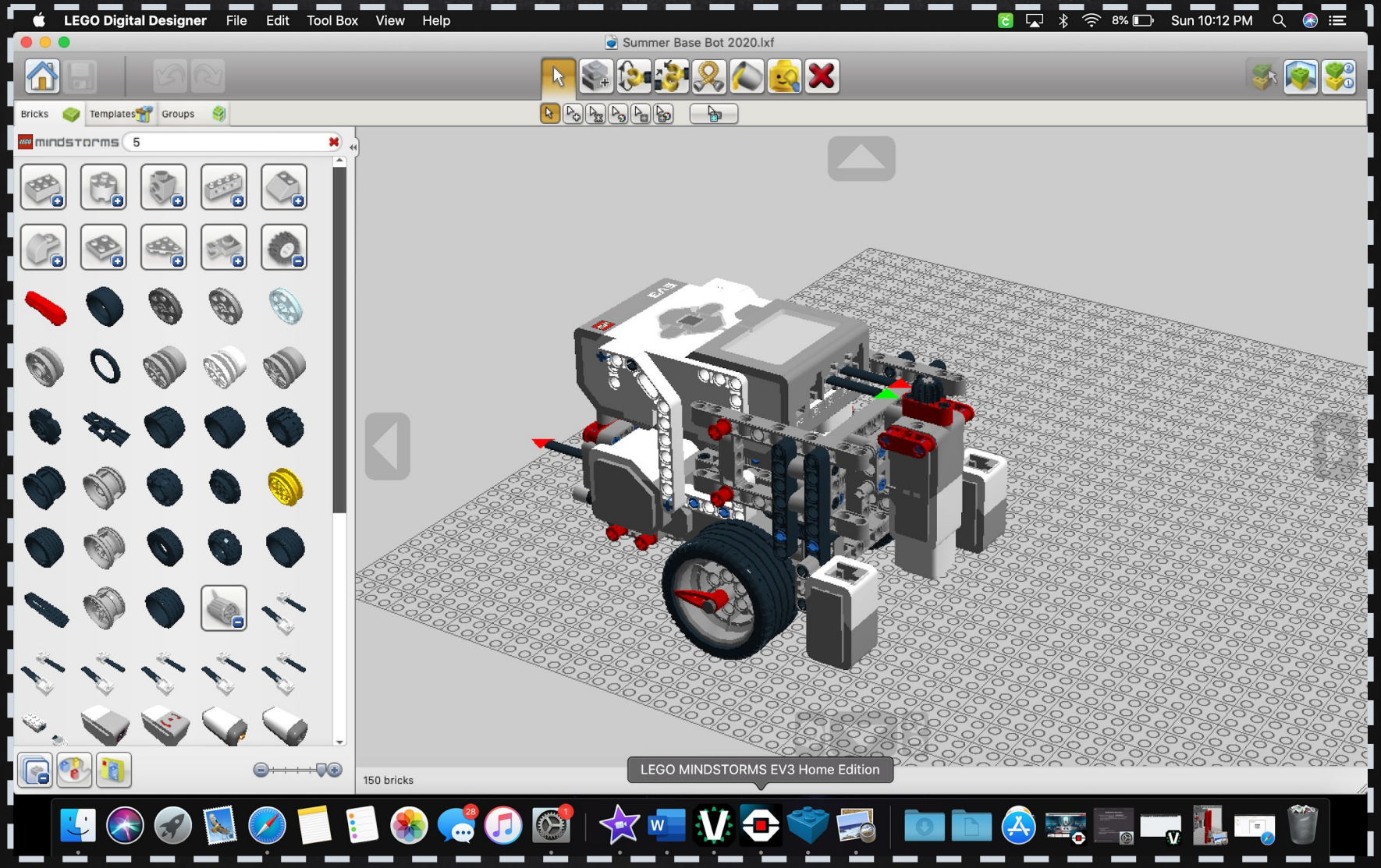




Clone Tool creates a copy of the part(s) you have selected.

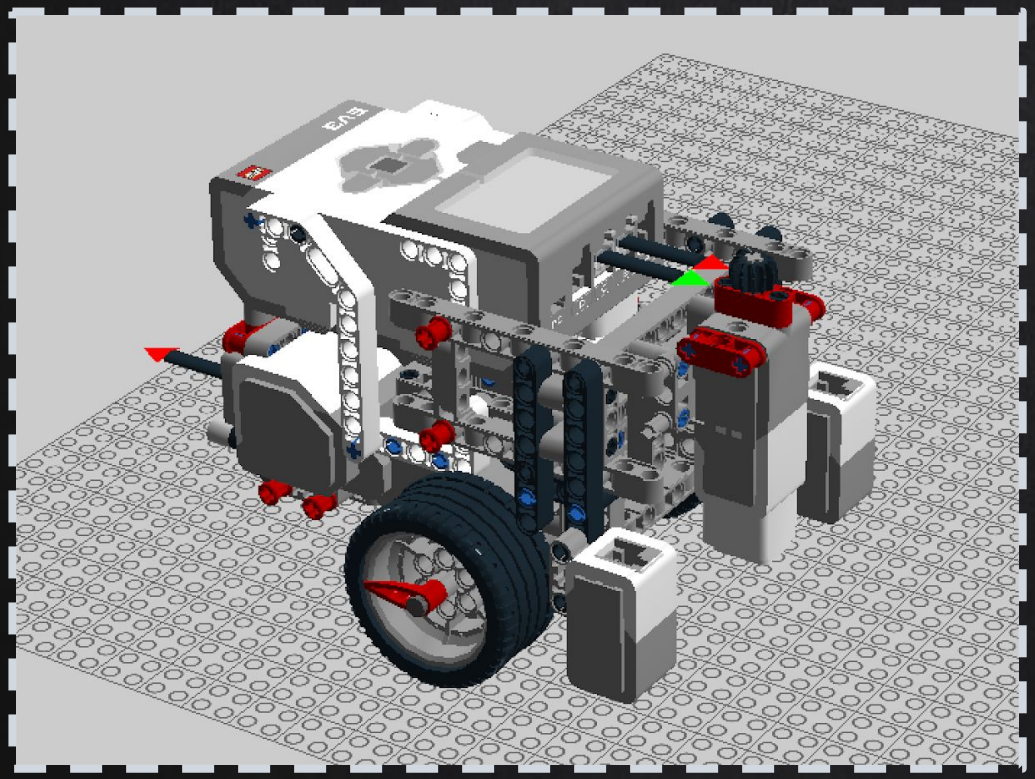
LEGO Digital Designer: Parts Library

Here is a screenshot of the fully built robot in LDD.



LEGO Digital Designer: Parts Library

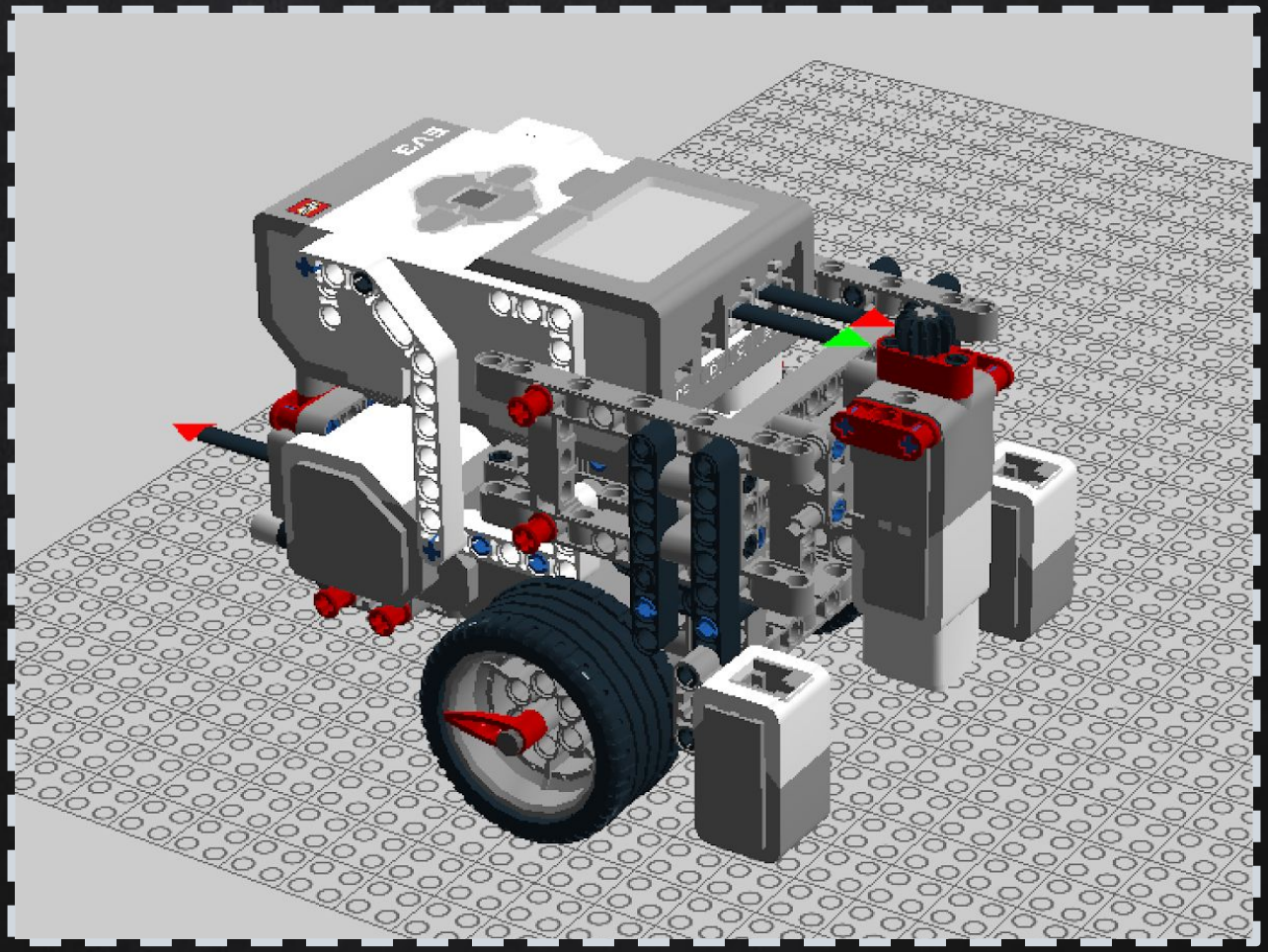
If you are having trouble building your robot in the VRT, and need an example build to assist you, you can download the file at the link below. I highly encourage you to give building in the software a try first however! It doesn't take long to get the hang out it.



Basebot LDD File Download

Next Resources Packet

Resources Packet #2 will be out soon! We will go over building a new mechanism to collect the eraser in the LDD, as well as how to import our LDD robot into the VRT software. Happy virtual building!



6328
MECHANICAL ADVANTAGE
LITTLETON MA