

## Design Report

During the prototyping lab week 2, we were shown a prototype model which consisted of a design with finite polygons at that movement it stuck to me that this type of design will be the most common in this coursework. So to have something which can accommodate all electronics components and be a little unique I decided to use the circle, in the beginning, the plan was to make it look like Beetle which can drag objects throughout the map but as we were informed to make it look like a spaceship and the design itself was similar to the spaceship with a little bit of refinement, therefore at final iteration, it was made to look like a spaceship. Also, I decided to add motors in front as it will make turning easier. Since the motors are in the front, the axis of rotation and the alignment of the line matches, and we don't have to include any complex algorithm to make it rotate  $90^\circ$  ~Jasmeet Singh Matta

During the design process, we had two teammates working on a design to select the best design and to gain deep knowledge of the design.

~ Picking this design, a lot of factors had to be taken into account, like the space where each and every electronic component had to be put, cabling (where holes are made to pass all the wires from under the vehicle which belong to sensors like the infrared sensor and connect it to the Arduino), the overall shape, and manufacturability (where we are limited to using 3D printers of a certain size), and the ability to connect the components together and placing them in a convenient way, for example, when the battery needs to be recharged or replaced, so it was placed in an accessible way yet very stable and functional.

The initial function of the vehicle was to pick up a box so the front was shaped into a carved-in handle but at the same time, it has a very cool and groovy look where it looks like it's a spaceship coming from outer space. The rounded dimensions helped us a lot in the vehicle speed and ability to turn smoothly. ~Arsany Girgis

~Since I worked on one design, I inspired my first idea from a Jeep because I thought that it would be suitable for farming, since it is a performant car on all the terrains. However, when I saw Jasmeet's design I liked it because it is creative and it was also in the theme of Moon Ships. As a result when the themes were announced we thought of keeping them. For the final version, I updated the lower part of Jasmeet because it did not fit all the components and I needed to design a holder for it to fit the breadboard. However, for the upper part, I decided to have the back part as a rounded shape and the front part as a square shape. The reason for this decision is, that I want to have enough space for the wires so the shape will not press them and in the front part, we needed no extra height because the sensors need to be attached from the bottom. In the end, I added some shapes and hole to make it looks like a military tank coming from space and I inspired this idea from my favourite cartoon back when I was a kid.~ Jaouaher Belgacem