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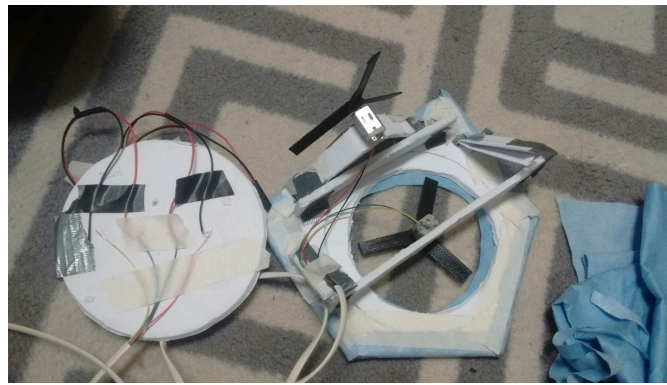
Professor Elizabeth Parry

Engineering 101

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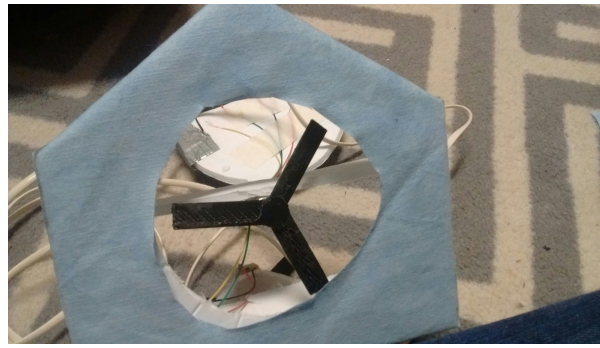
### How Our Hovercraft Works

The hovercraft presented was created out of cheap and easy-to manipulate materials. Composed of a foam board, duct tape, super glue, 9V batteries, two 3D printed fans, and a telephone wire, the hovercraft utilizes a wall skirt in order to create an air cushion on which it floats. For the hovercraft to move forward, a 3D printed fan was designed and attached to a small motor in the back. A telephone wire was stripped and attached to a handheld controller holding three 9V batteries that provide power to the lift and propulsion fan. In order to reach this final design, multiple prototypes were created, each providing new insight needed to produce the following:



**Figure 1**

Originally, a bag skirt with holes placed around the fan was implemented in the design. However, after experimenting with a suggested wall skirt (gratitude to Dr. Bottomley), the team came to the consensus that it created a thicker air cushion, causing the craft to perform better. The wall skirt is composed of a stiff fabric and is attached with masking tape. A hole is cut out as shown in figure 2 so that air may be trapped in the skirt to create air pressure that may lift the entire craft.

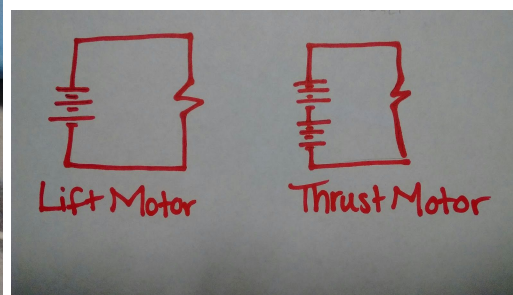


**Figure 2**

Research indicated that the ideal fan for maximum air movement possessed two or three blades. Two fans with three blades were printed using a Mini Lulzbot, and glued to two motors: one responsible for lift, and one responsible for propulsion. In order to transfer power to the two motors, an old telephone wire containing four individual wires was stripped as shown in Figure 3. Two wires are attached to each motor and connect to batteries attached to a hand held controller. On the controller sits three 9V batteries. To one battery, the two wires connected to the lift motor are readily available to connect when desired. The remaining two batteries are connected in order to provide extra power to the propulsion fan. Like the wires connected to the lift motor, the two wires connected to the propulsion motor are readily available to connect when desired. Figure four provided a schematic drawing of the wires connecting the batteries to the motors.



**Figure 3**



**Figure 4**