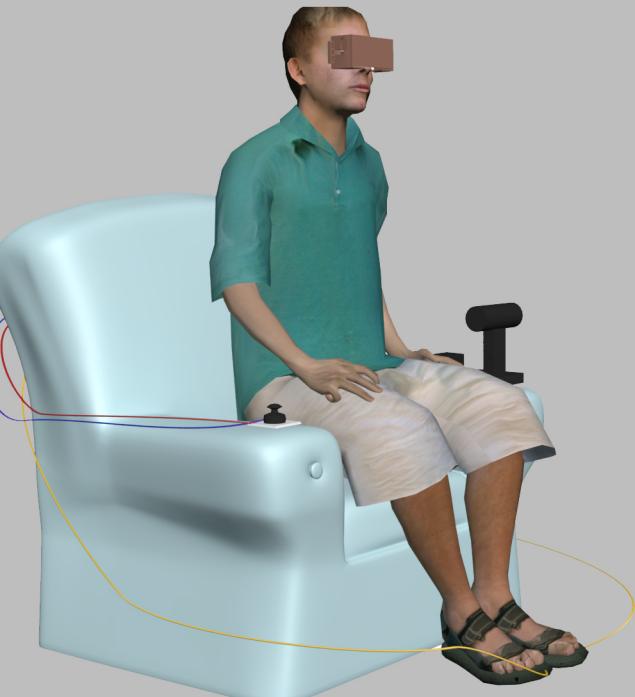


Team Arachnid

- > Sahir Sharma
- > Rajit Pimpale
- > Upamanyu
- > Abhra Dass
- > Himanshu Singh
- > Rakshit Ravi
- > Rishabh Jain
- > Sagar Dangal

PUT IT ON.

Experience Mars on
Earth with Google
Cardboard™ VR Technology.



Realistic simulation
experience through
haptic feedback
mechanism.

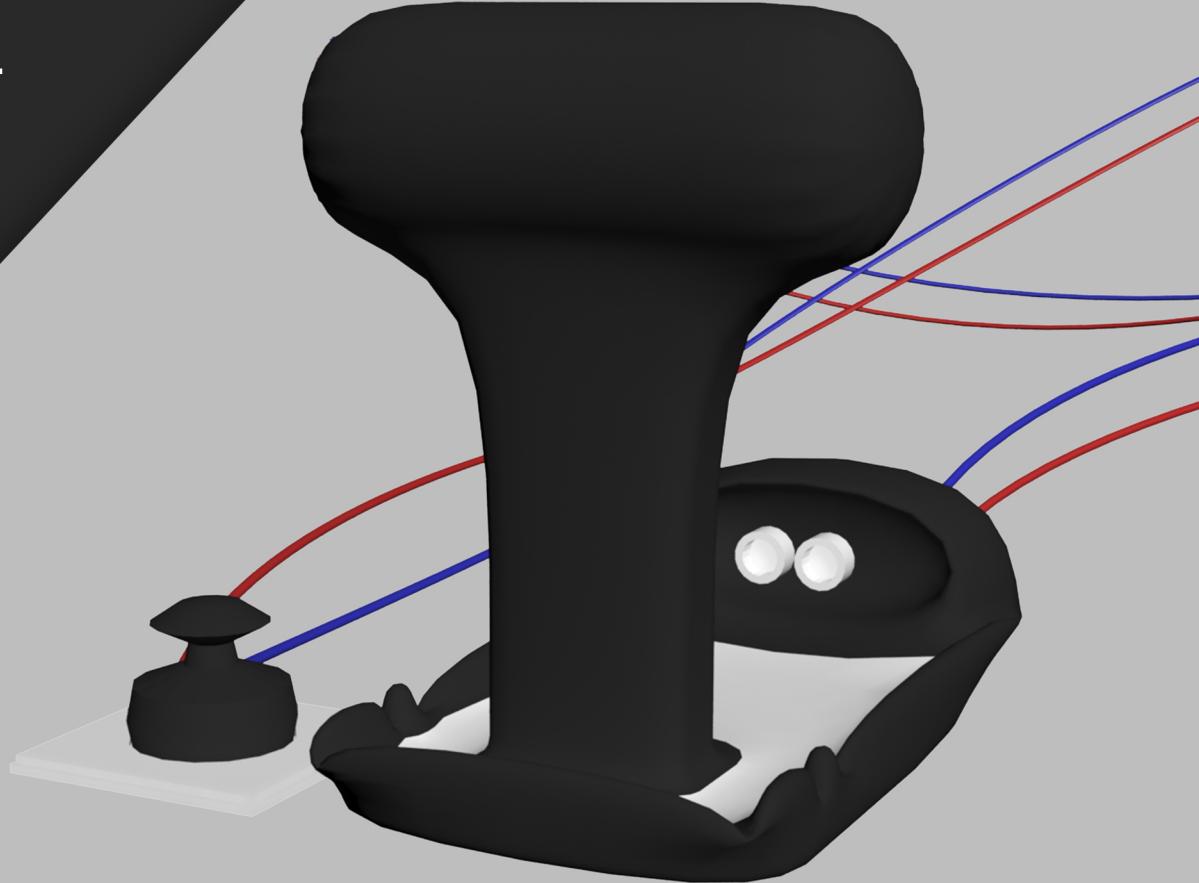
FPV simulation through the eyes of
an astronaut



Input Devices

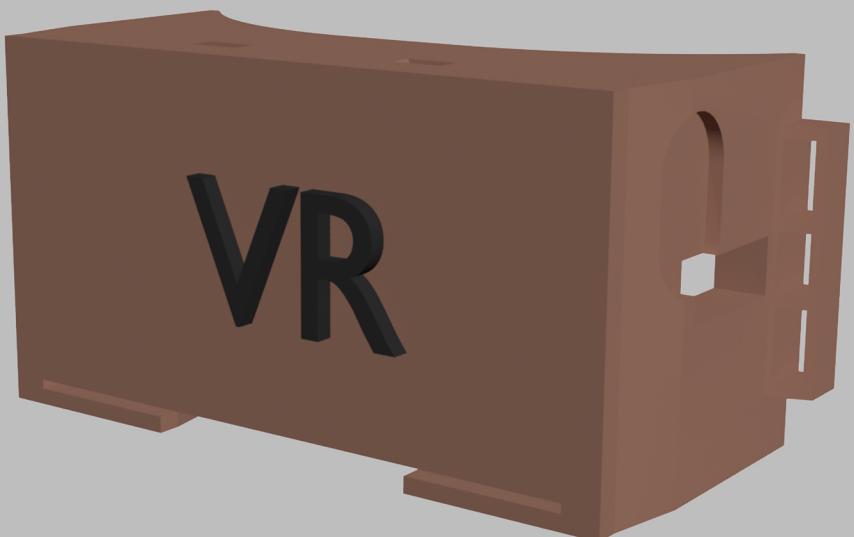
The input controls for the simulator include a throttle and a joystick.

The throttle is used to adjust the speed and the joystick is used for direction.

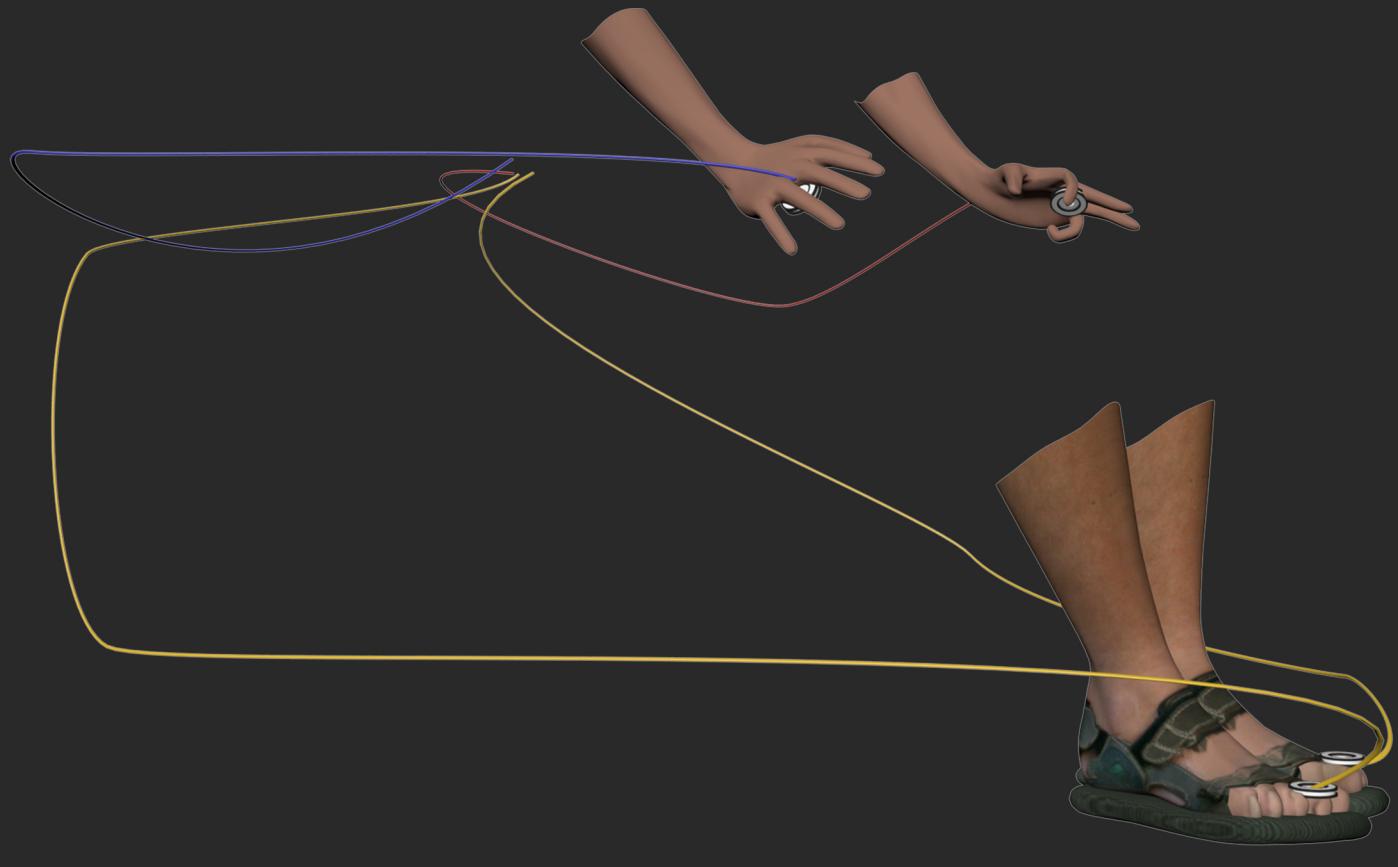


The VR Experience

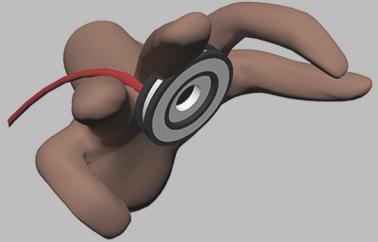
We make sure that the user experience is out of the world. Our simulation which exists in a stereoscopic form is viewed in VR through Google cardboard.



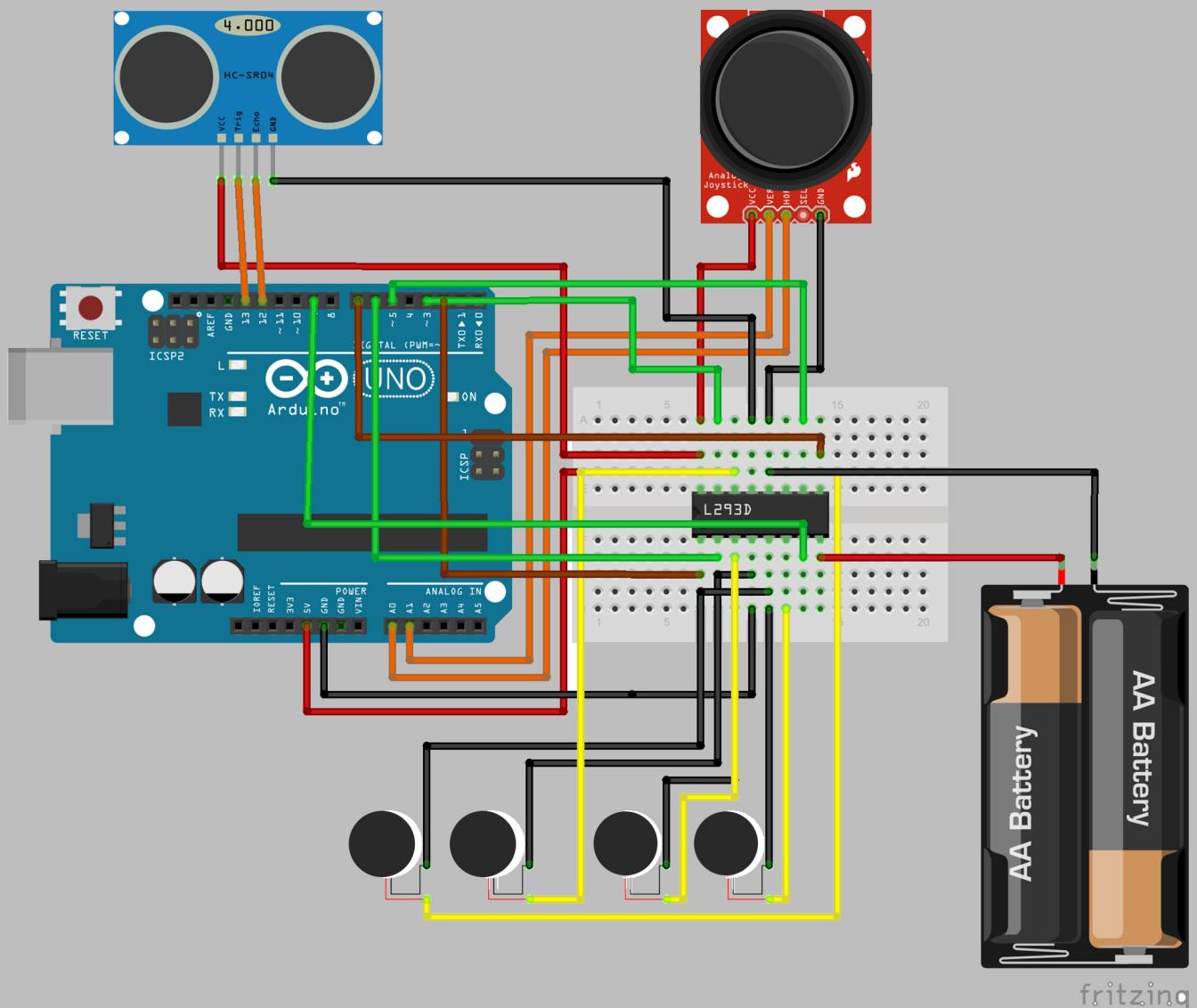
Feedback Systems



Our simulator is one of its kind. We have our own **haptic feedback** mechanisms to give the user a real life experience. We use vibration motors to simulate a jerk or a collision while the exploration.

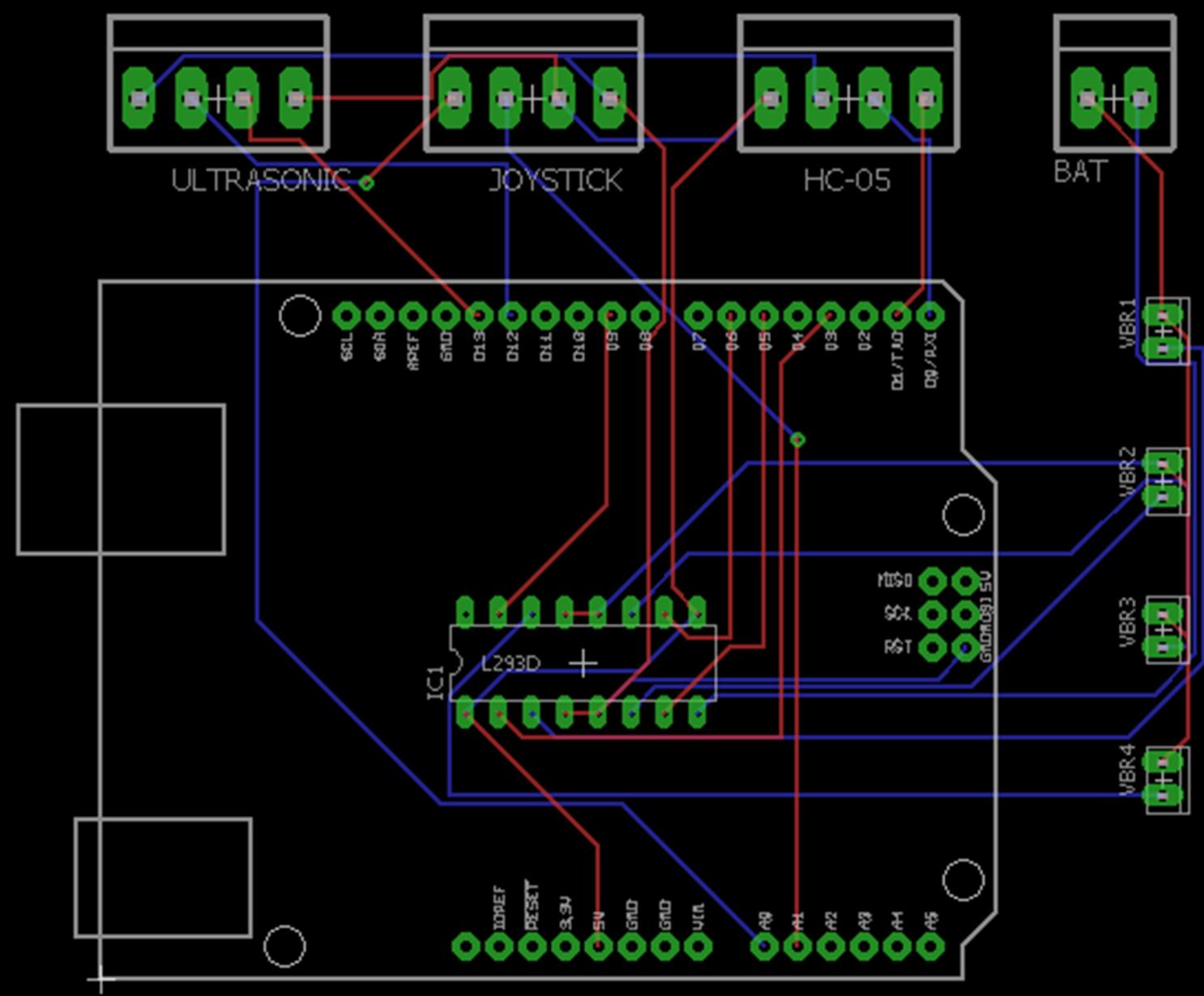


Circuit Diagram...



fritzing

Printed Circuit Board(PCB) Layout



Mechanical aspect of the Throttle

The Martian is equipped with a throttle module which is designed and fabricated carefully in order to insulate it from dirt sweat and humidity.

The throttle has one degree of freedom and is used as an input for rover acceleration and astronaut jump.

An ultrasonic sensor is attached to the front of the module facing the throttle stick. This sensor maps the distance value to the rover acceleration.

Mechanical aspect of the Joystick

The **Joystick** module has an analog stick attached to a cardboard plate. finishing touches are given through an insulating black electrical tape which protects the joystick from dirt and sweat.

The module has two degrees of freedom and is used to control the rover's and the astronaut's movements in the X-Y plane.

Both of the modules are fit with double sided tape at the back and can be attached on any chair with an armrest or any platform according to the users convenience.

Use of Python

- > Our simulator offers the user . real time astronomical data.
- > The astronomical data is stored in an excel file using Openpyxl.
- > Libraries Used:
 - Astropy
 - Ephem
 - Scipy

Software and Hardware tools used

- > Autodesk 3DS MAX
- > Autodesk Mudbox
- > Blender
- > Unreal Engine 4
- > Mixamo Fuse
- > NASA opendata
- > Arduino Uno
- > HC05 Bluetooth modulw
- > 6xAA Batteries
- > Jumper wires
- > HC-SR04 Ultrasonic module
- > UE4Duino plugin
- > Vibration Motors
- > Joystick Module
- > Google Cardboard
- > Android compatible phone
- > Chair with armrest
- > Fritzig
- > Eagle