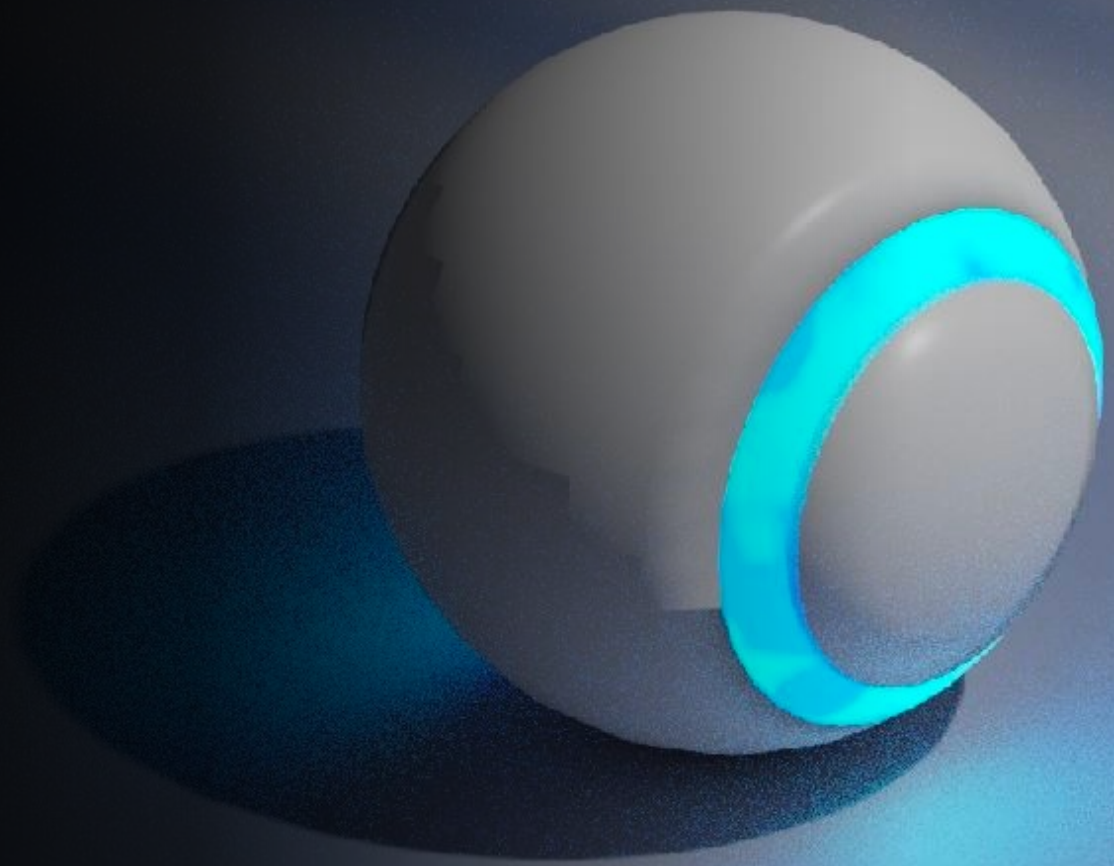
N-FORCE

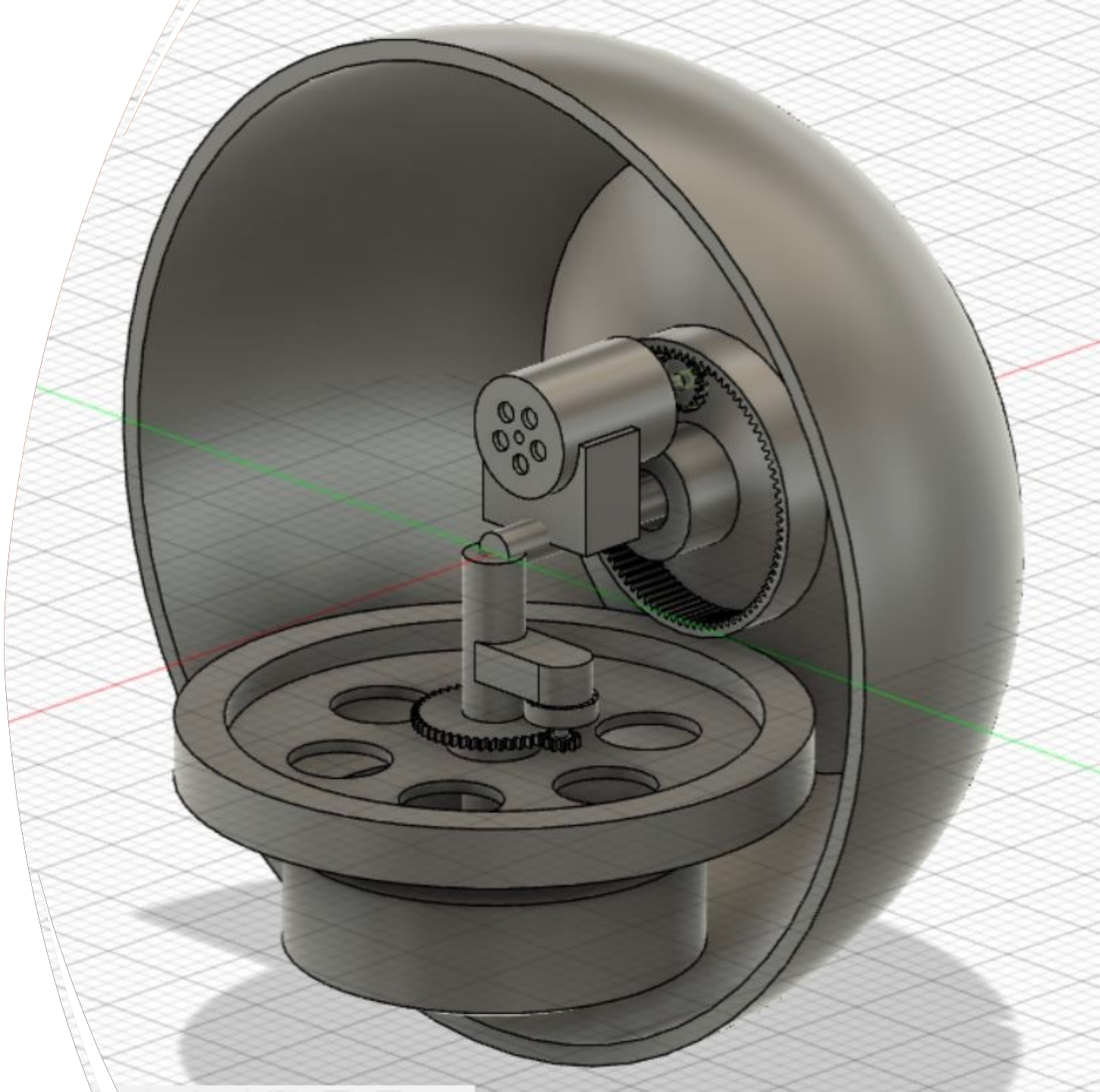


3D-Modeling Team:

- Karthikeya Javangula (22MIA1033)
- Etash Ashwin(22MIA1044)
- Kashish Gidwani(22MIA1117)
- Jeevan Jyoti Dash(22MIA1126)

Specifications

- Spherical body: 0.5m dia. (Single POC with Ground)
- Balancing Mechanism:
  - Low Center of Mass (Inspired by Roly-Poly Dolls)
  - Reaction Wheel for Yaw Movement
- Powered by Li-ion battery pack cleverly placed
- Sensors on-board:
  - Accelerometer
  - G-sensor
  - IR proximity sensors
- Actuators
  - BLDC Motors

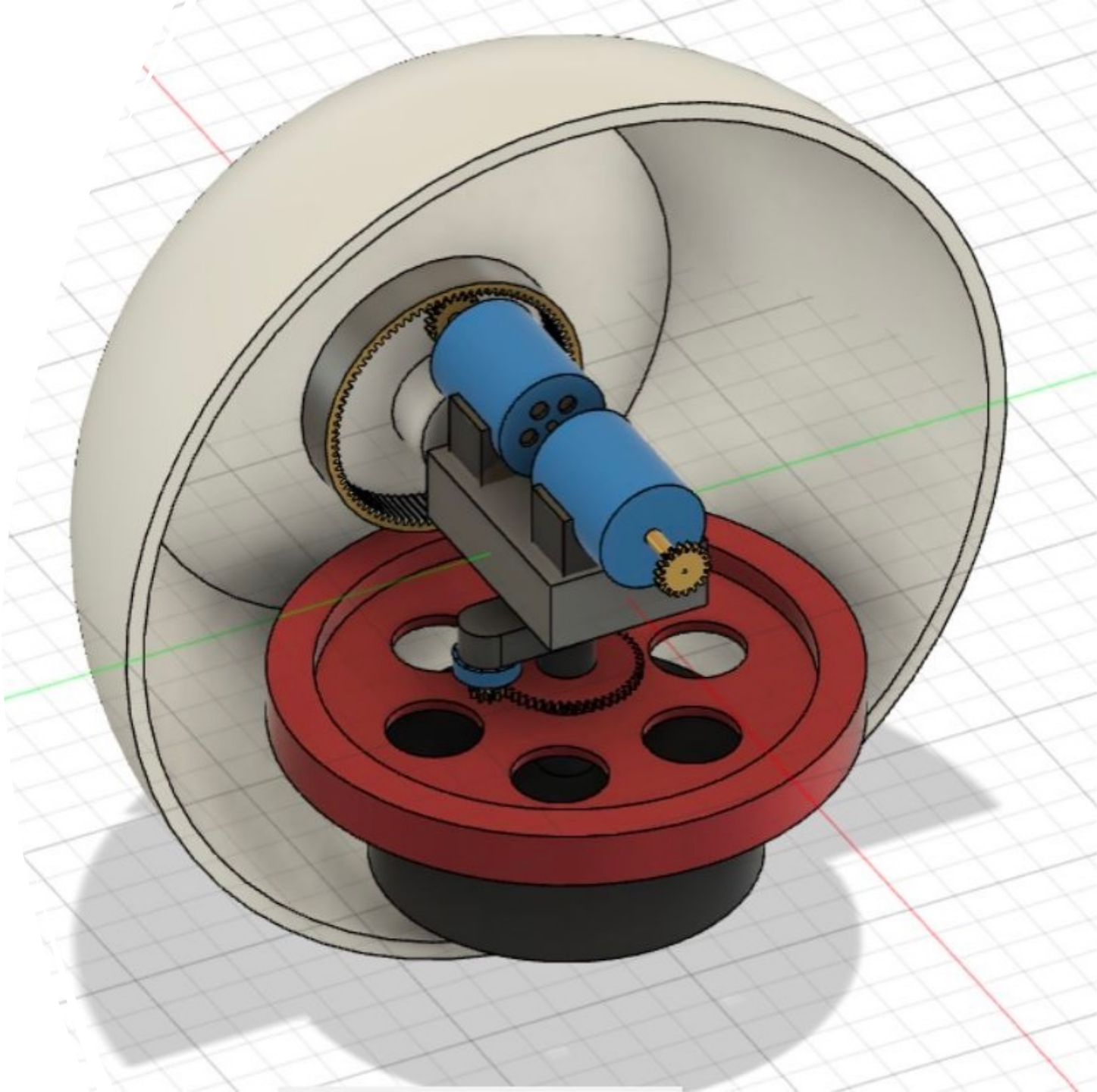


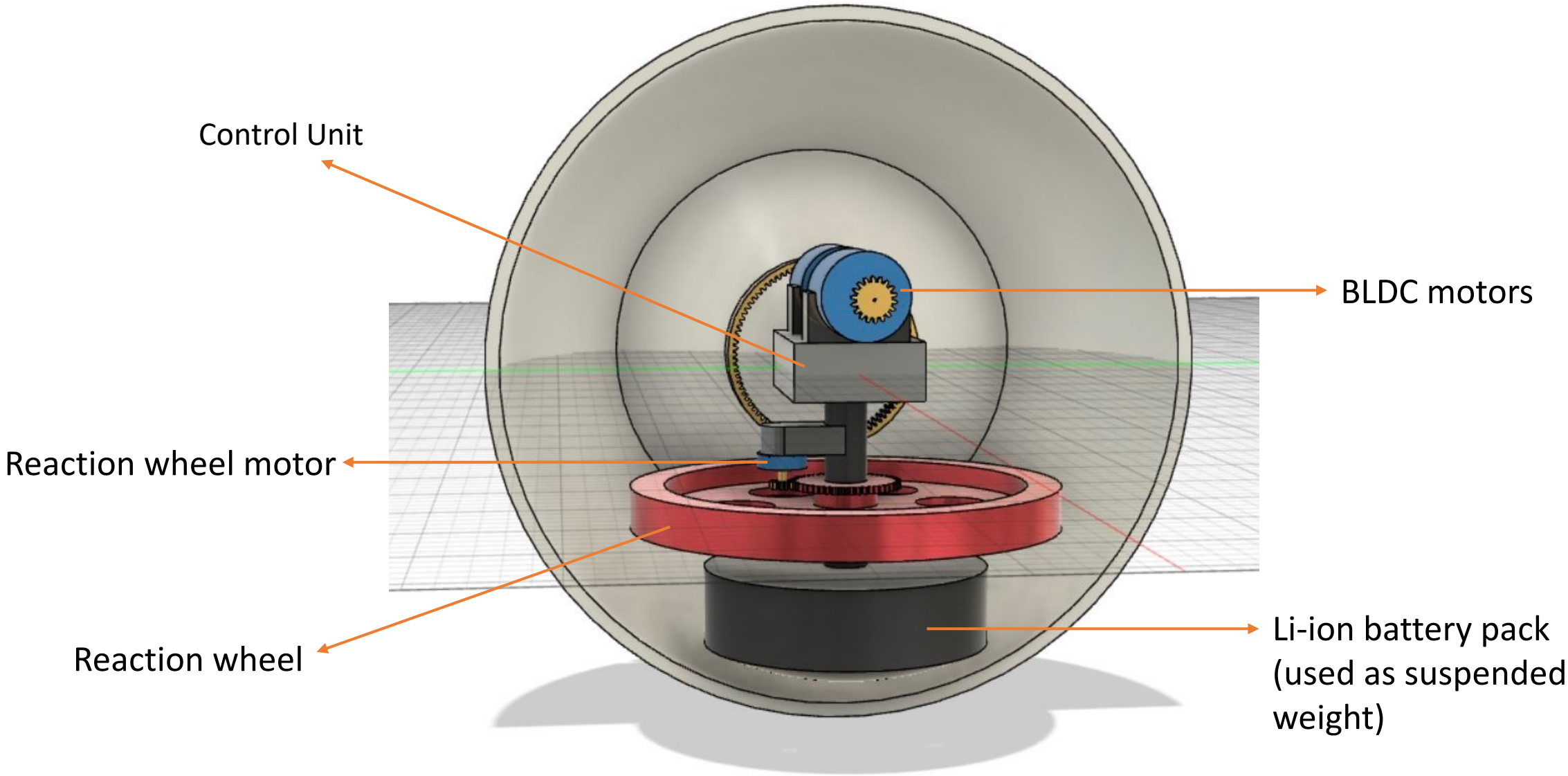
Inspiration

- Inspired by Roly-Poly Dolls
- Keeping the Centre of Mass Low to the ground allows the bot to stay Upright
- The simplicity of this Mechanism Ensures Stability
- We have Cleverly used the Battery Pack as the Suspended Weight

Working of the bot

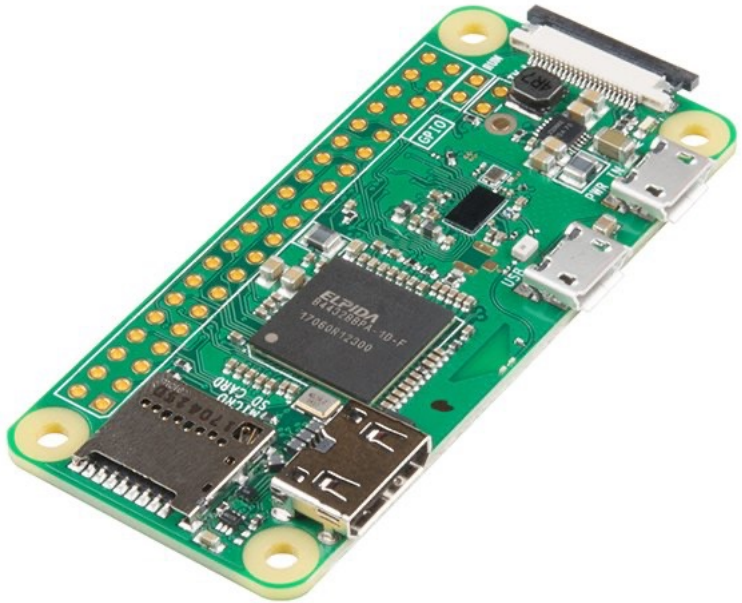
- Single Point Of Contact is Maintained due to the Spherical Shape of the Bot
- How the Bot Moves:
  - The Internal Structure Tends to Stay upright, thus exerting Torque on The Outer Shell will result in Forward/Backward Movement
- For Yaw Movement:
  - We have used a reaction Wheel in the Z-axis to enable the bot to turn in the Yaw axis.




Control Unit
BLDC motors
Reaction wheel motor
Reaction wheel
Li-ion battery pack
(used as suspended
weight)

Control Unit Components:

Accelerometer + G sensor



Raspberry Pi Zero W

BMS

ESCs