**Intro**

Hello, I am Harish. Next I’ll be presenting the Electronics Design and the Failure mode Effect analysis of our vacuum cleaner bot.

**Slide 1**

* Understanding the external environment and knowing the location of the bot precisely are two critical factors in implementing a coverage planning system.
* To solve this problem, we have chosen the IMU sensor and LIDAR sensor.
* The IMU we have chosen is MPU6050, an industry standard inertial measuring device with 6 degrees of freedom.
* And the selected LIDAR is TF-LUNA Micro LiDAR which has an operating range upto 8 metres.
* To interface with the sensors we have a ESP32 microcontroller, which publishes the data to the roscore and gives the navigation signals to motors.

**Slide 2**

* To power the entire bot, A Lithium ion battery pack made of LG HG2 18650 cells is designed.
* The aspects considered while choosing this were energy density, capacity and calendar life.
* Also the motors needed to run the vacuum cleaner fans and to drive the wheels are chosen as well.

**Slide 3**

* Next comes the feasibility of procurement and component testing.
* For the calibration and testing of sensors we plan to use third party libraries like adafruit.
* One important point to note here is that 18650 cells require a thorough testing, hence capacity tests and Constant current discharge tests are designed.

**Slide 4**

* Finally the FMEA analysis of the electronics and navigation module is presented.
* The focus here is on the accuracy of implementation and safety of users. We identified three potential failure modes.