**Script for the presentation**

Thank you, **Tim**

In the following section

introduce the hardware-wise new features of our new product

1. The robot has reduced noise level
   1. Existed designs on the market
      1. The vacuum motor generates many noise
         1. Which is annoying and disturbing
   2. reduce noise level compares to the product existed in the market
      1. With new motor design
      2. Centrifugal vacuum motor
2. The robot has Redesigned its wheels -> flexible wheels
   1. Old models
      1. Wheels are easily get jammed by uneven floors
         1. E.g. stairs, ramps on the floor, wires, some slopes
      2. Wheels are easily get jammed by obstacle
         1. For example, socks
   2. 360-degree-movable Up-liftable wheels
      1. Lift up the wheels to avoid those things happen
         1. If obstacle is detected, wheels will be lifted up
      2. Quicker turns, more precise turns in angle
      3. **-> Provides More flexible movements**
3. New sensors are added for obstacle detection
   1. Old models
      1. Sensors are not used
         1. Robot will easily get jammed obstacle
   2. Infrared sensor and Ultrasound sensor are used
      1. Obstacles can be detected by its size, density, distance and temperature
         1. It can detect if it is a living creature
         2. **-> avoid hitting or hurting animals or pets**
         3. **Or getting jammed by obstacles**
4. New chips are added on mapping, path calculating and edge detection
   1. Old models
      1. The cleaning Path is randomly generated
         1. E.g. Zip zap path -> some locations are cleaned some are not
      2. Particular spot remains unclear
         1. E.g. edges and corners
      3. Unable to back to its charging position
         1. It can’t charge automatically
   2. Using additional chips -> to calculate the data in real time
   3. Train the pathing model with cloud server
      1. Build a map of the house after scan house
      2. To calculate an effective cleaning path with the map
         1. Order and path can be adjusted by user
         2. e.g. which room to be cleaned
      3. To calculate the path for auto-return to its initial position
         1. Thus, it can charge automatically
5. New nozzle design is used
   1. Old models
      1. Corners and edges cannot be reached by the robot
   2. Smaller cleaning nozzle
      1. **-> Corners and edges can be cleaned**
   3. Nozzle are installed at the both the front and the back
      1. With 360-degree wheels
         1. **-> More accurate cleaning angle**
6. New battery design is used
   1. Old models
      1. Low battery capacity
      2. Long charging time
         1. 1hr charge -> 1 hr.
   2. Enlarged battery capacity
   3. New Quick charge feature
      1. Shorten charging time
         1. **15 min 100% charge**
         2. **-> 4 hrs. continuously cleaning**
7. New UV bacterial killing light
   1. Old models
      1. no sterilization
   2. The UV light is pointed toward the floor for sterilization
      1. **Bacteria are killed, useful especial during the quarantine period**

These are the new features of our product

compare to the existed designs on the market

The following section will be present by Ray, welcome Ray

Limitation of the technology w/ the solution

1. Bad efficiency
   1. Limitation of the cleaning path
      1. ~~Random pathing~~
         1. ~~Additional sensors to scan to house and mapping the house~~
         2. ~~Path will be recalculated with the map~~
      2. ~~Particular spot remains unclear e.g. conners and edges of the walls~~
         1. ~~Additional nozzle at the rear of robot~~
      3. ~~Poor cleaning performance per round~~
         1. ~~Redesigned the cleaning method~~
   2. ~~Unable to back to its initial/ charging position~~
      1. ~~Additional chips for record its path for returning to its initial position~~
2. Unable to detect elevation
   1. ~~Additional sensor at surrounding of the robot to detect the edges and stairs~~
   2. ~~Flexible wheels avoiding get jammed by uneven floor~~
3. High chance of getting jammed
   1. ~~Nozzle and wheels get jammed~~
      1. ~~Flexible wheels avoiding get jammed by obstacle~~
   2. Robot get jammed because of its size
      1. Robot will be designed in smaller size
4. ~~Short battery life~~
   1. ~~Low battery capacity~~
   2. ~~Battery life failed to maintain one cleaning cycle~~
      1. ~~New battery with large capacity~~
   3. ~~Long charging time~~
      1. ~~Quick charge~~
5. Noise made by the robot
   1. Noise made by the vacuum motor
      1. New vacuum motor design
   2. Noise made by the moving motor
      1. New motor design