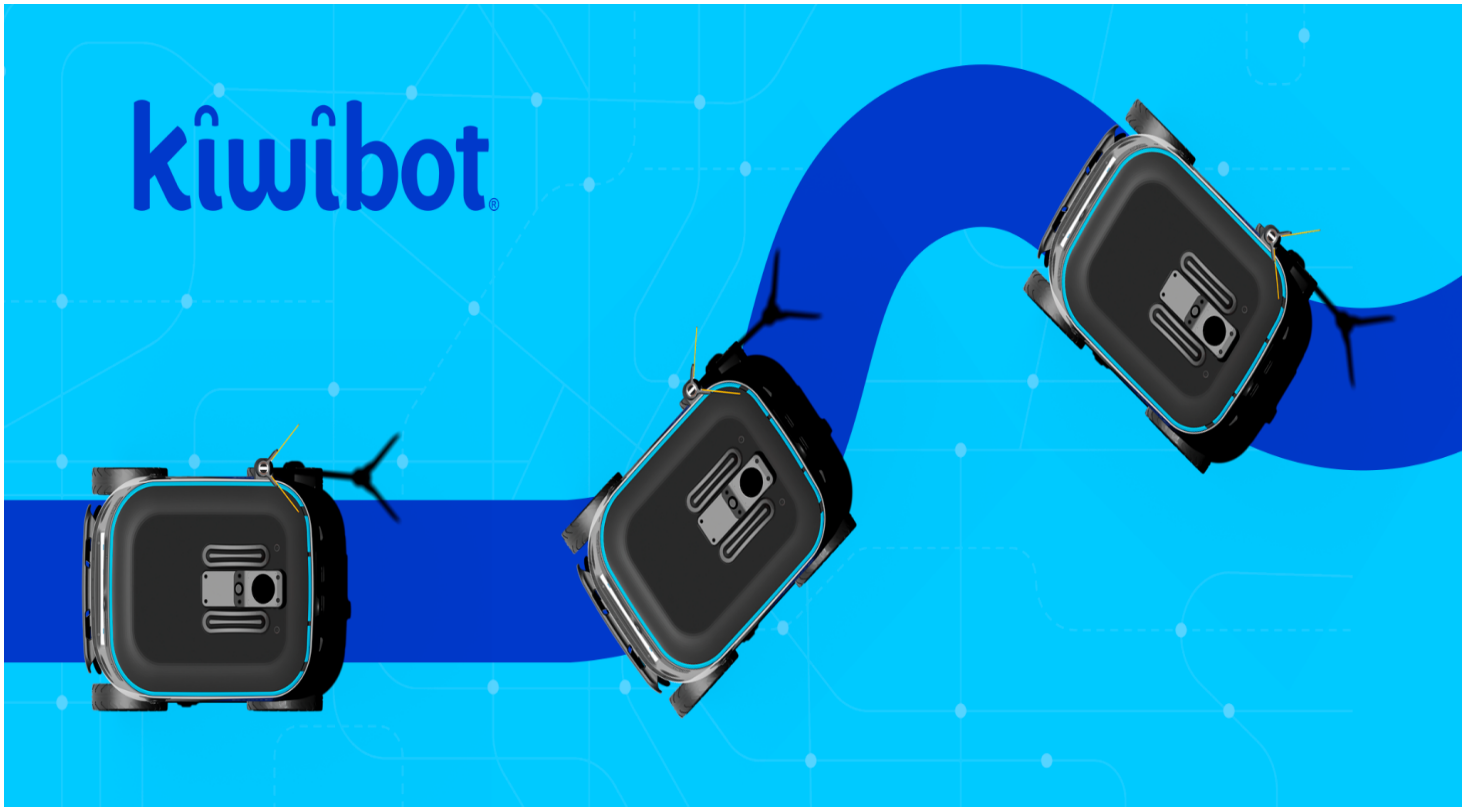
kiwibot

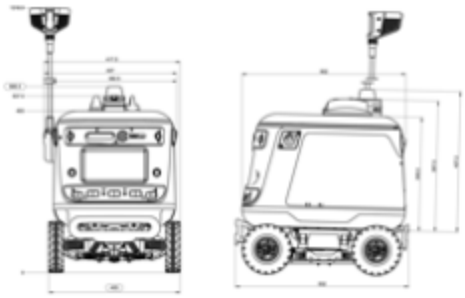
- Food delivery -

EMERGENCY RESPONSE PLAN FOR THE OPERATIONS ON STEVENSON UNIVERSITY CAMPUS



Dimensions

Height without flag	566.5mm (22.3 in)
Height with flag	1318.9mm (51.9 in)
Length	532mm (20.9 in)
Width	403mm (15.8 in)
Weight with Battery	20.5 kg (45.1 lb)
Weight without Battery	17.2 kg (37.9 lb)
Battery	14.8 V 39.8ah 589WH
Battery Life	7 Hours (Aprox)

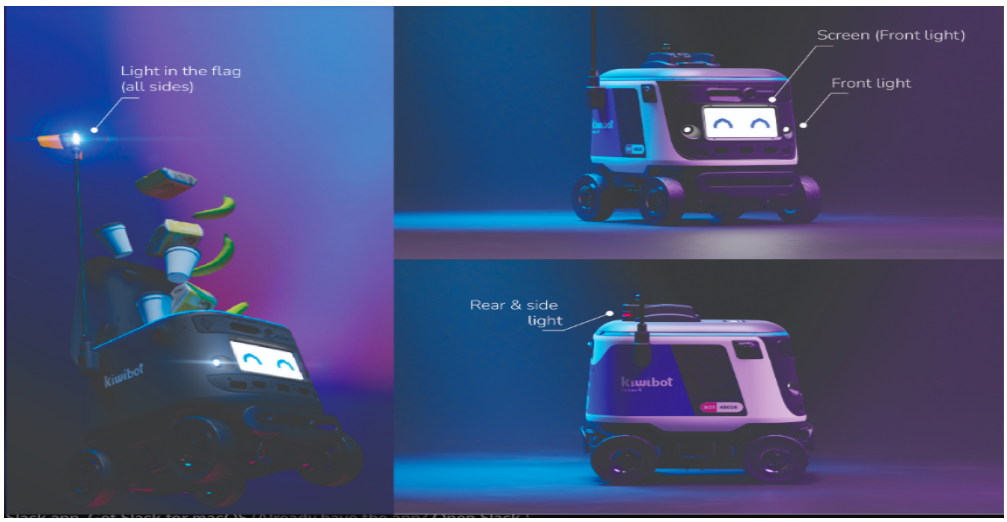


General

Speed	3.1 km/hr (1.9 m/h)
Cargo Space Dimensions	**L** 295mm (11.6in), **W** 285mm (11.6in) x **H** 220mm (8.6in), [19.2 liters]
Cargo System	Plastic Inner Container and Cooling System
Ability to Operate in Rain	Yes
Ability to Operate in Darkness	Yes
Autonomy Level	L2

Sensors System	2D Lidar, 3 Distance Sensors, 2 Cliff Sensors, and a Stereo Camera
Cameras	2 Front, 2 Sides, 1 Back
Location	GPS
Movement	4 Wheel Differential Drive
Interaction	Interactively Animate Eyes and Sound, Rear and Flag Alert Lights

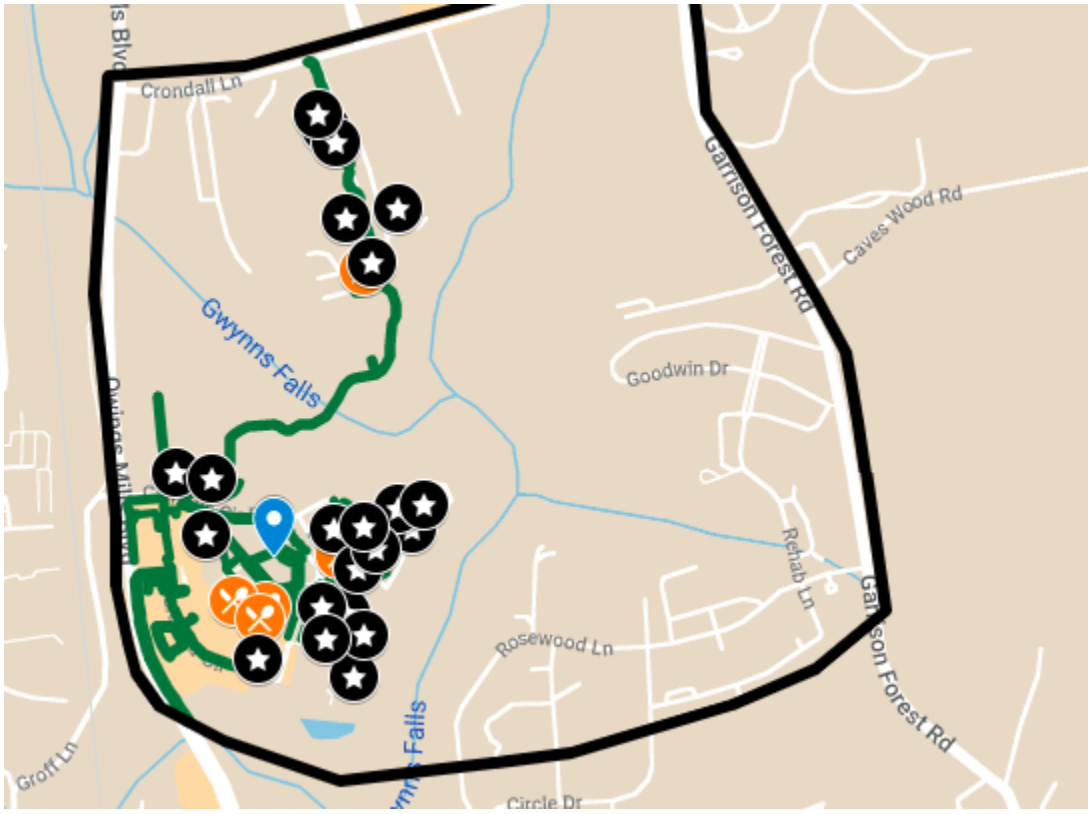
KIWIBOT PDD Lights locations:



All of our robots will have a visible number that helps us identify them, the number of customer service that is **+1 901-2958224,** and an email to give support in any situation **customer.service@kiwibot.com .**

Operations Map

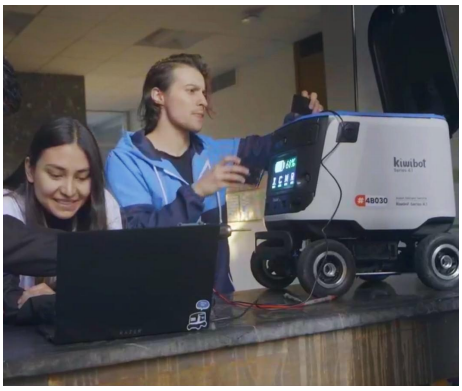
This map represents the area where Kiwibot will operate during the contract.



- The black dots are the drop-off points.
- The orange dots are the pick-up points.
- The green lines are the routes where the robots transit.

We are a logistic company

We have three teams that are the main ones responsible for the operation daily. The first one is the *IT/ Maintenance support*: Responsible for updating the software and maintaining it continuously. The second one is *Remote support*: Responsible for supervising what's happening with the bot. The third one is the *field ops*: who are responsible for overseeing the operation in the zone.



IT/Maintenance Support

Field Support

Remote Support

Operations Communication

Our robots have teleoperated assistance and observation throughout their operation. It is capable of notifying the field ops of any incident that may arise. In an emergency, Kiwibot has qualified personnel in different strategic

locations on the university campus. In any situation requiring immediate assistance during the operation, the field operation will be in the zone in less than 3 minutes to assist. This assistance could be but is not limited to:

- Solving any problem with the robot.
- Stopping the robot.
- Picking up the robot for repair.
- Customer service.

Incident Report

In the event of a collision with cars and people, it generates an alert to a remote supervisor, who will then give the order to a person on the field to immediately approach the exact location to verify that everyone is safe. A detailed report of the incident and its causes will be prepared and submitted to Sodexo and the authorities when they request it. Kiwibot must report the incident to the Sodexo Account Manager within 3–10 minutes of the occurrence. Following that, Kiwibot has three (3) hours to inform Sodexo in writing (email sufficient) of the operational impact of the incident and an estimated time of resolution. In the event that resolution is greater than 3 hours, Kiwibot shall communicate to the Site Account Manager a plan of recovery. If the situation requires it, our legal department will be contacted immediately to proceed with the process of informing authorities and claiming insurance if needed.

Crossing Streets & Field Identification

Whenever a robot happens to have to cross a street on its route, the system stops the robot before the crossing. After an alert is sent to a supervisor, they verify the surroundings using the cameras and sensors and will wait until

there's a group of people to cross together. Also, Kiwibot can recognize if it can cross the area or will need help from field ops crossing or changing routes.

Kiwibot has five cameras, two in the front being able to zoom, two on the sides, and one in the back. With these five cameras, Kiwibot can understand everything around his environment. Is always able to identify any traffic light following the signals shown in the area. Also, in any situation, Kiwibot PDD could give priority of moving to any kind of emergency vehicle, like moving not to block or stop and let the emergency vehicle cross. Kiwibot can identify if the obstacle is temporary or not for future decisions to optimize operations.

In the same way, the teleoperator supervisors can control the vehicle in case of emergencies so that in case there may be a mishap in the operation of this, it is possible to stop the PDD or even move it to remove it from the situation where it may be an obstacle.

Physical contact between pedestrians and robots can be unavoidable. Therefore, our robots have an integrated sensor system (2D Lidar, 3 distance sensors, 2 cliff sensors, and a stereo camera) that allows them to have the ability to recognize contact with people to avoid accidents and automatically have a reflective and safe reaction in these situations. When proximity is detected, its movements will be blocked, and it cannot resume operation until a supervisor, who is alerted of the potential collision, validates the situation.

Right of Way

Kiwibot focuses on being sidewalk friendly by being the smallest sidewalk robot. The bot will be capable of prioritizing the right of way for pedestrians. Its small size allows any pedestrian or wheelchair to pass without any problem. This maneuver could be, but is not limited to:

- Stopping the vehicle's trajectory.
- Slowing the vehicle's speed.
- Moving to the sides or backward.

Breaking system

The robot's movement is stopped by a dry braking action executed by the same system of sensors mentioned before. Any potential collision alert triggers this action and what it does is directly cut power from the motors, causing an immediate stop.

Updates, programming, and maintenance

- Only Kiwibot staff have full access to the working area and full control of the robot when it is under maintenance.
- There is a periodic check and validation of all equipment and connections for the safety of the robot and its respective human contact.
- There is a preventive maintenance plan for the company's entire fleet of robots.
- A lockout and safety plan are applied for all preventive maintenance and repair operations.
- The robot is set up according to the policies and guidelines of the Kiwibot and its respective legislation.

PDD door mechanism

The robot has 3 different mechanisms to open its gate.

Manually: It has an internal secret button which allows manual and direct opening. This button is in a part which is only recognized by Kiwibot staff in case a robot has to be opened in an emergency and it is only done in a private room.

Remote: A signal is remotely sent to the robot through our internal system only by the restaurant or our remote staff (it is specifically received via the internet, along with all the commands that generate any kind of movement or sound in the robot; it is not triggered via Bluetooth or any kind of local signal emitted by another device).

Customer: When an order is placed, the customer receives a message with a link to a website where they can track the status of their delivery and, just when the robot is at the dropoff location, they can ask the server to send the action of opening to the robot, meaning this is the only possibility that somebody other than the restaurant or our staff can open the robot. This site is exclusively created for each order generated through Sodexo's Everyday app and is exclusively assigned to the robot carrying that specific order only for the window of time when delivery is being made. This webpage is prescribed to end after the time of the delivery ends, and it cannot be used anymore.

Fire response

The university will provide Kiwibot with fire extinguishers for any fire incident. Kiwibot's on-field team will use them when a risk situation appears.

Batteries

All of our batteries are DC battery powered. We have battery protector 3000; this means that A safety system was designed for parallel connection of batteries, guaranteeing that the batteries do not allow reverse current and reverse voltage, which could cause an overload of cells.