CLAIMS

1. A system for facilitating cleaning an area, the system comprising:

an image capturing module configured to capture an image of the area, the image comprising a target to be disposed of;

at least one cleaning device configured to perform a task to dispose of the target; and

a processor communicatively couplable with the image capturing module and the at least one cleaning device, and configured to:

receive the image from the image capturing module;

determine an attribute of the target and a location of the target from the image; and

control the at least one cleaning device to perform the task, based on the determined attribute of the target and the determined location of the target,

wherein the processor is further configured to detect a rough shape of the target from the image, and process the image in a different manner based on whether the target is of regular shape or irregular shape to determine the attribute of the target and the location of the target,

wherein detecting the rough shape of the target from the image comprises, converting the image into a ground truth image, converting the ground truth image into a predicted mask image, converting the predicted mask image into a predicted anomalous image, and detecting from the predicted anomalous image, whether the target is of the regular shape or the irregular shape to determine the attribute of the target and the location of the target.

2. The system according to claim 1, wherein the processor comprises an anomaly detection module configured to identify a region of interest associated with the target from the image using an anomaly detection model.

3. The system according to claim 2, wherein the anomaly detection module is further configured to detect the rough shape of the target from the image using the anomaly detection model.

4. The system according to claim 3, wherein the processor comprises an object detection module; and

wherein if the anomaly detection module detects that the target is of the regular shape, the anomaly detection module is configured to determine that the target is a trash and send information about the region of interest to the object detection module.

5. The system according to claim 4, wherein the object detection module is configured to determine the attribute of the target and the location of the target based on the received information, using an object detection model.

6. The system according to claim 5, wherein the processor comprises a segmentation module; and

wherein if the anomaly detection module detects that the target is of the irregular shape, the anomaly detection module is configured to determine that the target is a spillage and send information about the region of interest to the segmentation module.

7. The system according to claim 6, wherein the segmentation module is configured to determine the attribute of the target and the location of the target based on the received information, using a segmentation model.

8. The system according to claim 6 or claim 7, wherein the processor comprises an image processing module configured to convert the image into a format readable by at least one of the anomaly detection module, the object detection module, and the segmentation module.

9. The system according to claim 7, wherein the processor comprises a scheduling module configured to receive the determined attribute of the target and the determined location of the target from the object detection module and/or the segmentation module, and control the at least one cleaning device to move to the determined location of the target and to perform the task in a predetermined manner based on the determined attribute of the target.

10. The system according to claim 9, wherein if the at least one cleaning device is unable to perform the task, the scheduling module is further configured to send a notification to an electronic device of a user.

11. The system according to any one of claims 1 to 10, wherein the attribute of the target includes at least one of a shape, a type and a colour of the target.

12. A method for facilitating cleaning an area, the method comprising:

capturing an image of the area, the image comprising a target to be disposed of;

detecting a rough shape of the target from the image;

processing the image in a different manner based on whether the target is of regular shape or irregular shape to determine an attribute of the target and a location of the target;

determining the attribute of the target and the location of the target; and

controlling at least one cleaning device to perform a task to dispose of the target, based on the determined attribute of the target and the determined location of the target,

wherein detecting the rough shape of the target from the image comprises, converting the image into a ground truth image, converting the ground truth image into a predicted mask image, converting the predicted mask image into a predicted anomalous image, and detecting from the predicted anomalous image, whether the target is of the regular shape or the irregular shape to determine the attribute of the target and the location of the target.

13. The method according to claim 12 further comprising: identifying a region of interest associated with the target from the image using an anomaly detection model.

14. The method according to claim 13, wherein the detecting the rough shape of the target from the image comprises: detecting the rough shape of the target from the image using the anomaly detection model.

15. The method according to claim 14 further comprising: if it is detected that the target is of the regular shape, determining that the target is a trash; and inputting information about the region of interest into an object detection model.

16. The method according to claim 15, wherein the determining the attribute of the target and the location of the target comprises: determining the attribute of the target and the location of the target based on the inputted information, using the object detection model.

17. The method according to claim 16 further comprising: if it is detected that the target is of the irregular shape, determining that the target is a spillage; and inputting information about the region of interest into a segmentation model.

18. The method according to claim 17, wherein the determining the attribute of the target and the location of the target comprises: determining the attribute of the target and the location of the target based on the inputted information, using the segmentation model.

19. The method according to any one of claims 12 to 18, wherein the controlling at least one cleaning device to perform a task to dispose of the target comprises: controlling the at least one cleaning device to move to the determined location of the target and to perform the task in a predetermined manner based on the determined attribute of the target.

20. The method according to any one of claims 12 to 19 further comprising: if the at least one cleaning device is unable to perform the task, sending a notification to an electronic device of a user.