CLAIMS

1. A robot comprising:

a mobile base;

a robotic arm operatively coupled to the mobile base; and

at least one interface configured to enable selective coupling to at least one accessory, the at least one accessory comprising a cart accessory, a conveyor accessory, or a pendant accessory, the at least one interface comprising:

an electrical interface configured to transmit power and/or data between the robot and the at least one accessory; and

a mechanical interface configured to enable physical coupling between the robot and the at least one accessory.

2. The robot of claim 1, further comprising a coupling sensor configured to determine if the robot and the at least one accessory are physically coupled through the mechanical interface.

3. The robot of claim 2, wherein the coupling sensor is a magnetic sensor.

4. The robot of claim 3, wherein the magnetic sensor is a hall effect sensor.

5. The robot of claim 3, wherein the magnetic sensor is a reed switch.

6. The robot of claim 2, wherein the coupling sensor is a contactless sensor.

7. The robot of claim 2, further comprising a computer processor configured to receive a signal from the coupling sensor and output an error when it is determined based on the received signal that the robot and the at least one accessory are physically coupled through the mechanical interface and that an electrical connector of the electrical interface is not connected to a corresponding connector of the at least one accessory.

8. The robot of claim 1, wherein the at least one interface comprises a first interface and a second interface,
wherein the first interface comprises:
a first electrical interface configured transmit power and/or data between the robot and a first accessory; and
a first mechanical interface configured to enable a first physical coupling between the robot and the first accessory, and
wherein the second interface comprises:
a second mechanical interface configured to enable a second physical coupling between the robot and a second accessory; and
a second coupling sensor configured to determine if the robot and the second accessory are physically coupled through the second mechanical interface.

9. The robot of claim 8, wherein the second mechanical interface is incompatible with the first accessory such that the first accessory cannot couple to the robot through the second mechanical interface.

10. The robot of claim 9, wherein the first mechanical interface is incompatible with the second accessory such that the second accessory cannot couple to the robot through the first mechanical interface.

11. The robot of claim 8, wherein the first mechanical interface is disposed on a first side of the robot, and wherein the second mechanical interface is disposed on a second side of the robot opposite the first side of the robot.

12. The robot of claim 11, further comprising a battery charging port disposed on the first side of the robot or the second side of the robot.

13. A system comprising:
a robot comprising;

a mobile base;

a robotic arm operatively coupled to the mobile base;

an accessory interface configured to enable selective coupling to at least one accessory, the accessory interface comprising:

an electrical interface configured to transmit power and/or data between the robot and the at least one accessory; and

a mechanical interface configured to enable physical coupling between the robot and the at least one accessory; and

a cart accessory operatively coupled to the robot through the accessory interface, the cart accessory comprising:

a cart body having a flat surface on which one or more objects can be placed; and

a plurality of wheels coupled to the cart body.

14. The system of claim 13, wherein the robot comprises one or more distance sensors, wherein the cart accessory includes a first side operatively coupled to the robot and a second side opposite the first side, the second side facing an environment, and wherein at least one distance sensor of the one or more distance sensors is disposed on the robot to have a field of view that includes an area of the environment that the second side of the cart faces.

15. The system of claim 13, wherein the robot comprises a plurality of distance sensors, wherein a first field of view of a first distance sensor of the plurality of distance sensors at least partially overlaps a second field of view of a second distance sensor of the plurality of distance sensors.

16. The system of claim 15, wherein at least one of the plurality of wheels occludes an area of the first field of view when the cart accessory is coupled to the robot, wherein the second distance sensor is arranged such that the second field of view includes at least some of the occluded area of the first field of view.

17. The system of claim 16, wherein the first distance sensor and the second distance sensor are arranged on the robot such that a maximum dimension of a portion of the occluded area of the first field of view not included in the second field of view is less than a predetermined dimension.

18. The system of claim 17, wherein the predetermined dimension is 100 millimeters.

19. The system of claim 17, wherein the predetermined dimension is 75 millimeters.

20. The system of claim 13, wherein the robot comprises a distance sensor disposed on a same side of the robot as the accessory interface, wherein a field of view of the distance sensor includes an area under the cart accessory.

21. The system of claim 13, wherein the robot is configured to receive information identifying the cart accessory, and wherein the robot is configured to adjust an operation of the robot based on the received information.

22. The system of claim 21, wherein the received information includes cart size information, and wherein the robot is configured to adjust an operation of the mobile base based on the cart size information.

23. The system of claim 21, wherein the received information includes cart size information, and wherein the robot is configured to adjust one or more safety protocols based on the cart size information.

24. The system of claim 21, wherein the robot comprises a reader configured to read an identifier tag located on the cart accessory, and wherein receiving information identifying the cart accessory comprises receiving the information in response to reading the identifier tag.

25. The system of claim 21, wherein the information identifying the cart accessory is received by the robot through the accessory interface.

26. The system of claim 13, wherein each of the plurality of wheels of the cart assembly is passive.

27. The system of claim 13, wherein at least one of the plurality of wheels of the cart assembly is configured to be actively steered and/or driven.

28. A system comprising:

a robot comprising;

a mobile base;

a robotic arm operatively coupled to a mobile base;

an accessory interface configured to enable selective coupling to at least one accessory, the at least one interface comprising:

an electrical interface configured to transmit power and/or data between the robot and the at least one accessory; and

a mechanical interface configured to enable physical coupling between the robot and the at least one accessory; and

a pendant accessory operatively coupled to the robot through the accessory interface,

wherein the pendant accessory is configured to enable a user to operate the robot through a user interface of the pendant accessory.

29. The system of claim 28, wherein the pendant accessory is configured to enable the user to control one or more operations of the mobile base.

30. The system of claim 28, wherein the pendant accessory is configured to enable the user to control one or more operations of the robotic arm.

31. The system of claim 28, wherein one or more safety protocols of the robot are configured to be disabled when the pendant accessory is coupled to the robot through the accessory interface.

32. The system of claim 31, wherein the pendant accessory comprises a momentary switch, wherein the one or more safety protocols of the robot are configured to be disabled only when the momentary switch is activated.

33. The system of claim 28, wherein the pendant accessory comprises a momentary switch, wherein the pendant accessory is configured to enable the user to operate the robot only when the momentary switch is activated.

34. The system of claim 28, wherein the pendant accessory is powered by the robot when the pendant accessory is coupled to the robot through the accessory interface.

35. The system of claim 34, wherein the user interface of the pendant accessory comprises at least one joystick and at least one button.

36. The system of claim 34, wherein the user interface of the pendant accessory comprises at least one touchscreen.

37. The system of claim 36, wherein the at least one touchscreen is selectively removable from a remainder of the pendant.

38. The system of claim 37, wherein the at least one touchscreen is powered by the pendant when coupled to the remainder of the pendant.

39. A method comprising:

mechanically coupling an accessory to a robot through a mechanical interface of an accessory interface of the robot, the robot comprising a robotic arm operatively coupled to a

mobile base, the at least one accessory comprising a cart accessory, a conveyor accessory, or a pendant accessory;

sensing, using a coupling sensor, whether the robot and the accessory are mechanically coupled;

electrically coupling the accessory to the robot through an electrical interface of the accessory interface;

determining whether the accessory is electrically coupled to the robot; and

transmitting information between the robot and the accessory through the electrical interface.

40. The method of claim 39, further comprising entering an error state when a computer processor determines, based on a signal from the coupling sensor, that the robot and the accessory are mechanically coupled and determines that the robot and the accessory are not electrically coupled.

41. The method of claim 39, wherein transmitting information between the robot and the accessory comprises transmitting accessory information from the accessory to the robot.

42. The method of claim 41, further comprising adjusting an operation of the robot based on the transmitted accessory information.

43. The method of claim 42, wherein adjusting the operation of the robot comprises adjusting an operation of the mobile base.

44. The method of claim 42, wherein adjusting the operation of the robot comprises adjusting one or more safety protocols.

45. The method of claim 39, wherein transmitting information between the robot and the accessory comprises transmitting accessory size information from the accessory to the robot.

46. The method of claim 45, further comprising adjusting an operation of the robot based on the transmitted accessory size information.

47. The method of claim 46, wherein adjusting the operation of the robot comprises adjusting an operation of the mobile base.

48. The method of claim 46, wherein adjusting the operation of the robot comprises adjusting one or more safety protocols.

49. The method of claim 39, further comprising transmitting power between the robot and the accessory through the electrical interface.