CLAIMS

1. A method of automatically moving, by an automatic location placement system, a marine vessel, the method comprising:

receiving, by a central processing unit, from a vision ranging photography system, at least one optical feed including data providing a mapping of an environment surrounding a marine vessel;

displaying, by the central processing unit, on a touch screen monitor, the mapping of the environment;

receiving, by the central processing unit, from the touch screen monitor, target location data; and

directing, by the central processing unit, at least one element of a propulsion system of the marine vessel, to move the marine vessel to the targeted location, using the mapping.

2. The method of claim 1 further comprising displaying an overlay of a geometry of an environment surrounding the marine vessel, over the mapping of the environment received via the at least one optical feed, wherein the optical feed provides live video of the environment surrounding the marine vessel.
3. The method of claim 1, wherein receiving the at least one optical feed further comprises receiving at least one update of the data.
4. The method of claim 1 further comprising receiving, by the central processing unit, from an infrared vision system, transmitted data including a second mapping of the environment surrounding a marine vessel.
5. The method of claim 4 further comprising displaying, on the touch screen monitor, an output received from the infrared vision system.
6. The method of claim 4 further comprising displaying, on the touch screen monitor, the second mapping.
7. The method of claim 4 further comprising displaying, on the touch screen monitor, the second mapping as an overlay over the mapping received from the vision ranging photography system via the at least one optical feed.
8. The method of claim 1, wherein receiving further comprises receiving an identification of a targeted location for the marine vessel, the targeted location being between two aft external objects.

9. The method of claim 1 further comprising validating a selected location area identified in the target location data.
10. The method of claim 9, wherein validating further comprises confirming that the selected location area will accommodate the marine vessel.
11. The method of claim 1, wherein directing further comprises:

engaging, by the central processing unit, at least one aft ranger laser scanner;

receiving, by the central processing unit, from the at least one aft ranger laser scanner, data including at least one of distance, velocity, and dimensional area information.
12. The method of claim 1, wherein directing further comprises automatically providing, by the central processing unit, the at least one element of the propulsion system of the marine vessel, a path of travel to the selected targeted location, upon receiving the targeted location data from the touch screen monitor.
13. The method of claim 1, wherein directing further comprises automatically controlling, by the central processing unit, at least one steering system of the marine vessel to move the marine vessel into the targeted location, upon receiving the targeted location data from the touch screen monitor.
14. The method of claim 1, wherein directing further comprises automatically controlling, by the central processing unit, at least one drive system of the marine vessel to move the marine vessel into the targeted location, upon receiving the targeted location data from the touch screen monitor.
15. The method of claim 1, wherein directing further comprises engaging, by the central processing unit, a thruster of the marine vessel.
16. The method of claim 1, wherein directing further comprises engaging, by the central processing unit, a drive system of the marine vessel.
17. The method of claim 1, wherein directing further comprises determining to engage a plurality of elements of the propulsion system of the marine vessel substantially simultaneously.
18. The method of claim 1, wherein directing further comprises determining, by the central processing unit, an instruction to provide to the at least one element in response to the received mapping.

19. The method of claim 1 further comprising determining a position of the marine vessel in relation to the target location.
20. The method of claim 19 further comprising determining the position based on data included in the at least one optical feed.
21. The method of claim 19 further comprising determining the position based on the target location data.
22. The method of claim 19, wherein directing further comprises determining, by the central processing unit, an instruction to provide to the at least one element in response to the position of the marine vessel in relation to the target location.
23. The method of claim 1 further comprising comparing an expected behavior of the marine vessel with a response of the marine vessel to the direction.
24. The method of claim 1 further comprising:

detecting, by the central processing unit, that a human operator has manually interfered with operation of the marine vessel; and

disengagement, by the central processing unit, of the automatic location placement system based upon the detection of manual interference.

25. The method of claim 1 further comprising directing, by the central processing unit, at least one element of a propulsion system of the marine vessel, to maintain a location of the marine vessel at the targeted location.
26. An automatic location placement system for placement of a marine vessel, the system comprising:

a vision ranging photograph system generating at least one optical feed;

at least one infrared vision system;

at least one ranger laser scanner;

at least one inertial measurement unit;

at least one global positioning system unit;

an touch screen control monitor;

a propulsion system of a marine vessel including at least one thruster, at least one drive system, and at least one actuator; and

a central processing unit located on the marine vessel and operatively connected to the propulsion system, the central processing unit:

receiving, from the vision ranging photography system, the at least one optical feed, the feed including data providing a mapping of an environment surrounding the marine vessel;

displaying, by the central processing unit, on an touch screen monitor, the mapping of the environment;

receiving, from the touch screen monitor, target location data; and

directing, by the central processing unit, at least one element of the propulsion system of the marine vessel, to move the marine vessel to the targeted location, using the mapping.

CLAIMS

Claim 1. A method for automatically maneuvering a marine vessel to a targeted location adjacent to an external object, the method comprising:

sensing, using at least one transducer, a sensed lateral reference point on the external object;

transmitting information representing the sensed lateral reference point on the external object to a processor control unit;

receiving, by the processor control unit, the information representing the sensed lateral reference point;

at the processor control unit, memorizing the information representing the sensed lateral reference point as memorized lateral reference point information; and

automatically maneuvering the marine vessel on a collision-free path to the targeted location adjacent to the external object using the memorized lateral reference point information.

Claim 2. The method of claim 1, further comprising maintaining the marine vessel at the targeted location adjacent

to the external object.

Claim 3. The method of claim 1, wherein automatically maneuvering the marine vessel to the targeted location adjacent to the external object comprises automatically maneuvering the marine vessel to a lateral position adjacent to the sensed lateral reference point represented by the memorized lateral reference point information.

Claim 4. The method of claim 3, wherein automatically maneuvering the marine vessel to the lateral position adjacent to the sensed lateral reference point represented by the memorized lateral reference point information comprises:

calculating, at the processor control unit, the collision-free path of the marine vessel, incorporating information about at least one obstacle detected by a hazard detection and avoidance system;

determining, by the processor control unit, a required directional force to allocate to at least one element of a propulsion system of the marine vessel, based upon a current location of the marine vessel relative to the external object; and

engaging, at the processor control unit, the propulsion system to perform collision-free path planning and automated

guided manipulation of the marine vessel to the targeted location adjacent to the external object.

Claim 5. The method of claim 1, wherein the targeted location comprises a location relative only to the external object.

Claim 6. The method of claim 1, wherein the targeted location comprises a location relative to a plurality of external objects, including the external object.

Claim 7. The method of claim 1, further comprising, at the processor control unit, validating the targeted location to confirm that the targeted location is large enough to accommodate the marine vessel.

Claim 8. The method of claim 1, wherein automatically maneuvering the marine vessel comprises computing a global path and a local path.

Claim 9. The method of claim 1, wherein automatically maneuvering the marine vessel comprises maintaining the marine vessel in a controlled lateral path of travel in relation to the sensed lateral reference point.

Claim 10. The method of claim 1, further comprising, at the processor control unit, receiving, from multiple sources, sensor and imaging data associated with an environment surrounding the marine vessel.

Claim 11. The method of claim 10, further comprising, receiving, from the multiple sources, a continuously updated stream of sensor and imaging data representing a relation between the marine vessel and the targeted location adjacent to the external object.

Claim 12. A system for automatically maneuvering a marine vessel to a targeted location adjacent to an external object, the system comprising:

at least one transducer adapted to:

sense a sensed lateral reference point on the external object; and

transmit information representing the sensed lateral reference point on the external object to a processor control unit; and

the processor control unit, adapted to:

receive the information representing the sensed lateral reference point;

memorize the information representing the sensed lateral reference point as memorized lateral reference point information;

automatically maneuver the marine vessel on a collision-free path to the targeted location adjacent to the external object using the memorized lateral reference point information.

Claim 13. The system of claim 12, wherein the processor control unit is further adapted to maintain the marine vessel at the targeted location adjacent to the external object.

Claim 14. The system of claim 12, wherein the processor control unit is adapted to automatically maneuver the marine vessel to the targeted location adjacent to the external object by automatically maneuvering the marine vessel to a lateral position adjacent to the sensed lateral reference point represented by the memorized lateral reference point information.

Claim 15. The system of claim 14, wherein the processor control unit is adapted to automatically maneuver the marine vessel to the lateral position adjacent to the sensed lateral reference point represented by the memorized lateral reference

point information by:

calculating, at the processor control unit, the collision-free path of the marine vessel, incorporating information about at least one obstacle detected by a hazard detection and avoidance system;

determining, by the processor control unit, a required directional force to allocate to at least one element of a propulsion system of the marine vessel, based upon a current location of the marine vessel relative to the external object; and

engaging, at the processor control unit, the propulsion system to perform collision-free path planning and automated guided manipulation of the marine vessel to the targeted location adjacent to the external object.

Claim 16. The system of claim 12, wherein the targeted location comprises a location relative only to the external object.

Claim 17. The system of claim 12, wherein the targeted location comprises a location relative to a plurality of external objects, including the external object.

Claim 18. The system of claim 12, wherein the processor

control unit is further adapted to validate the targeted location to confirm that the targeted location is large enough to accommodate the marine vessel.

Claim 19. The system of claim 12, wherein automatically maneuvering the marine vessel comprises computing a global path and a local path.

Claim 20. The system of claim 12, wherein automatically maneuvering the marine vessel comprises maintaining the marine vessel in a controlled lateral path of travel in relation to the sensed lateral reference point.

Claim 21. The system of claim 12, wherein the processor control unit is further adapted to receive, from multiple sources, sensor and imaging data associated with an environment surrounding the marine vessel.

Claim 22. The system of claim 21, wherein the processor control unit is further adapted to receive, from the multiple sources, a continuously updated stream of sensor and imaging data representing a relation between the marine vessel and the targeted location adjacent to the external object.