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.