CLAIMS

1. A method for automatically navigating 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 on the external object;

at the processor control unit, memorizing the information representing the sensed lateral reference point on the external object as information representing the targeted location adjacent to the external object;

automatically navigating the marine vessel to the targeted location adjacent to the external object, comprising automatically moving the marine vessel at a controlled velocity toward the targeted location adjacent to the external object, comprising:

sensing the marine vessel's position relative to the external object;

receiving, by the processor control unit, a set of distance, position and velocity information relating to distance, position and velocity between the marine vessel and the external object in real-time; and

automatically controlling, by the processor control unit, at least one element of a propulsion system of the marine vessel, to navigate the marine vessel at the controlled velocity toward the targeted location adjacent to external object, comprising:

calculating, at the processor control unit, a path of movement 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 the at least one element of the propulsion system on 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;

stopping the marine vessel at the targeted location adjacent to the external object;

and

maintaining the marine vessel at the targeted location adjacent to the external object.

2. The method of claim 1, wherein automatically controlling the at least one element of the propulsion system comprises automatically controlling, by the processor control unit, the propulsion system of the marine vessel to navigate the marine vessel at the controlled velocity towards the external object in real-time.

3. The method of claim 1, wherein stopping the marine vessel at the targeted location adjacent to the external object comprises, at the processor control unit, automatically engaging the propulsion system to reduce the controlled velocity and to stop the marine vessel at the targeted location adjacent to the external object.

4. The method of claim 3, further comprising, at the processor control unit, automatically engaging the propulsion system to maintain the marine vessel at the targeted location adjacent to the external object.

5. A system for automatically navigating a marine vessel to a targeted location adjacent to an external object, the system comprising:

a propulsion system;

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 to a processor control unit; and

the processor control unit, operatively connected to the propulsion system to:

receive the information representing the sensed lateral reference point on the external object;

memorize the information representing the sensed lateral reference point on the external object as information representing the targeted location adjacent to the external object;

automatically control at least one element of the propulsion system to navigate the marine vessel to the targeted location adjacent to the external object, comprising

automatically moving the marine vessel at a controlled velocity toward the targeted location adjacent to the external object, comprising:

sensing the marine vessel's position relative to the external object;

receiving, by the processor control unit, a set of distance, position and velocity information relating to distance, position and velocity between the marine vessel and the external object in real-time; and

automatically controlling, by the processor control unit, at least one element of a propulsion system of the marine vessel, to navigate the marine vessel at the controlled velocity toward the targeted location adjacent to the external object, comprising:

calculating, at the processor control unit, a path of movement 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 the at least one element of the propulsion system on 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;

automatically engage the propulsion system to stop the marine vessel at the targeted location adjacent to the external object; and

automatically engage the propulsion system to maintain the marine vessel at the targeted location adjacent to the external object.

6. The system of claim 5, wherein automatically controlling the at least one element of the propulsion system of the marine vessel comprises automatically controlling the propulsion system of the marine vessel to navigate the marine vessel at the controlled velocity, per foot of travel per second, towards the external object in real-time.

7. The system of claim 5, wherein the processor control unit is further operatively connected to the propulsion system to automatically control the at least one

element of the propulsion system to engage the propulsion system to reduce the controlled velocity and to stop the marine vessel at the targeted location adjacent to the external object.