CLAIMS:

1. A method for operating a marine vessel, implemented by one or more processors and memory circuit, the method comprising:

receiving input data comprising at least radar input data from one or more radar units indicative of a first field of view and imagery input data from one or more camera units indicative of a second field of view being at least partially overlapping with said first field of view;

processing the radar input data to determine data indicative of one or more reflecting objects within an overlapping portion of said first field of view,

determining one or more respective locations within said second field of view where said one or more reflecting objects are identified, and

obtaining radar meta-data of said one or more reflecting objects;

processing said input imagery data said respective locations in an overlapping portion of said second field of view, and

determining one or more image data pieces corresponding with one or more sections of said imagery data associated with said one or more reflecting objects, using an object analyzing module configured for receiving and processing input imagery data and trained for recognition and classification of objects in a marine environment;

correlating the radar meta-data with the one or more image data pieces, and determining a correlation level between the radar meta-data and the one or more image data pieces, and determining that the correlation level satisfies a correlation criterion, wherein the correlation criterion is selected based on at least one of weather, visibility and day/night illumination conditions;

using said radar meta-data for generating label data and generating labeled output data comprising said one or more image data pieces and said label data, thereby facilitating connection of said radar meta-data with image data of one or more objects to enable machine learning training for object detection based on said imagery data; and

continuously or periodically updating, during operation of the marine vessel, training of at least one artificial intelligence (AI) module based on the labeled output data, thereby enabling on-the-fly training for object detection and classification is said imager data.

2. The method of claim 1, wherein said radar meta-data comprises one or more data pieces indicative of radar signature of one or more objects reflecting a radar signal.

3. The method of claim 1 or 2, wherein radar meta-data comprises one or more data pieces selected from the group of: object size, object distance, object closing speed, and object aspect, object location, Angles, azimuth, vector, Doppler, cross section & signature.

4. The method of any one of claims 1 to 3, further comprising providing said labeled output data comprising one or more image data pieces and labeling data for training processing of one or more artificial intelligence (AI) modules to thereby enable continuous training for object recognition and/or classification in said imagery data.

5. The method of any one of claims 1 to 4, wherein said at least one AI module is adapted for object detection in marine environment, enabling collision prevention in a marine vessel in accordance with said imagery data.

6. The method of any one of claims 1 to 5, wherein said at least one AI module is further configured for receiving location data from one or more location detection units (GPS) and for determining navigational route of said marine vessel.

7. The method of any one of claims 1 to 6, wherein said at least one AI module is connected to an auto-captain module that is connectable to steering controls and propulsion controls of said marine vessel, and configured to generate navigation and collision-avoidance control commands for the marine vessel by varying at least one of speed and heading, thereby enabling at least partially autonomous operation of said marine vessel.

8. The method of any one of claims 1 to 7, further comprising processing the radar input data to determine data indicative of one or more reflecting objects within said first field of view, and upon determining that one or more respective locations where reflecting objects are identified being outside of said second field of view, generating an operation command to obtain imagery data from said one or more respective locations.

9. The method of any one of claims 1 to 8, further comprising providing data on position of said one or more reflecting objects and utilizing an automatic identification system (AIS) and said position of said one or more reflecting objects to obtain data on identity of said one or more reflecting objects, using said data on identity for generating additional label data and generating labeled output data comprising said one or more image data pieces and said label data and said additional label data.

10. A marine vessel management system comprising at least one processor and memory circuit, one or more camera units and one or more radar units, the at least one processor comprises an auto-captain module, object detection training module, and training data generator;

the auto-captain module comprises an artificial intelligence (AI) module continuously trainable based on labeled image data and is configured to receive imagery data from said one or more camera units, processing said imagery data to determine data on one or more objects within a selected field of view around said marine vessel, and is connectable to steering controls and propulsion controls of said marine vessel and configured to generate navigation and collision-avoidance control commands by varying at least one of speed and heading of said marine vessel;

the training data generator is configured and operable for receiving input data from said one or more camera units and one or more radar units, said input data comprises at least radar input data indicative of a first field of view and imagery input data indicative of a second field of view being at least partially overlapping with said first field of view, processing the radar input data to determine data indicative of one or more reflecting objects within an overlapping portion of said first field of view, determining one or more respective locations within said second field of view where said one or more reflecting objects are identified, and obtaining radar meta-data of said one or more reflecting objects; processing said input imagery data said respective locations in an overlapping portion of said second field of view, and determining one or more image data pieces corresponding with one or more sections of said imagery data associated with said one or more reflecting objects,

wherein the training data generator is configured and operable for using said radar meta-data for generating label data and generating labeled output data comprising said one or more image data pieces and said label data, thereby facilitating connection of said radar meta-data with image data of one or more objects to enable machine learning training for object detection based on said imagery data;

the object detection training module is configured to receive said labeled output data, and update training of said AI module of said auto-captain module for detecting objects based on said labeled output data, thereby enable continuously updating training of said AI module; and

wherein the AI module is trained on scenarios in accordance with marine regulations.

11. The system of claim 10, wherein said AI module is adapted for processing input imagery data received from said one or more camera units and determine data on one or more objects identified in said imagery data, to thereby provide object recognition of one or more objects from said imagery data.

12. The system of claim 10 or 11, wherein said radar meta-data comprises one or more data pieces indicative of radar signature of one or more objects reflecting said radar signal.

13. The system of any one of claims 10 to 12, wherein radar meta-data comprises one or more data pieces selected from the group of: object size, object distance, object closing speed, object aspect, object location, Angles, azimuth, vector, Doppler, cross section, and signature.

14. The system of any one of claims 10 to 13, wherein said AI module is further configured for receiving location data from one or more location detection units (GPS) and for determining navigational route of said marine vessel.

15. The system of any one of claims 10 to 14, wherein said auto-captain module is connectable to steering controls of said marine vessel and configured for varying at least one of speed and heading of said marine vessel to thereby enable at least partially autonomous operation of said marine vessel.

16. The system of any one of claims 10 to 15, further comprising processing the radar input data to determine data indicative of one or more reflecting objects within said first field of view, and upon determining that one or more respective locations where reflecting objects are identified being outside of said second field of view, generating an operation command to obtain imagery data from said one or more respective locations.

17. The system of any one of claims 10 to 16, further comprising automatic identification system (AIS) module, wherein said training data generator is further configured to provide data on position of said one or more reflecting objects and obtain from said AIS module data on identity of marine vessels located at said position, using said data on identity for generating additional label data and generating labeled output data comprising said one or more image data pieces and said label data and said additional label data.

18. A system for generating labeled training data for a marine vessel, the system comprising a processing utility comprising one or more processors, memory unit, and

communication module connectable to one or more camera units and one or more radar units; the processing utility is configured for receiving input data comprising at least radar input data indicative of a first field of view and imagery input data indicative of a second field of view being at least partially overlapping with said first field of view; processing the radar input data to determine data indicative of one or more reflecting objects within an overlapping portion of said first field of view, determining one or more respective locations within said second field of view where said one or more reflecting objects are identified, and obtaining radar meta-data of said one or more reflecting objects; processing said input imagery data at said respective locations in an overlapping portion of said second field of view, and determining one or more image data pieces corresponding with one or more sections of said imagery data associated with said one or more reflecting objects, using said radar meta-data for generating label data and generating labeled output data comprising said one or more image data pieces and said label data, thereby facilitating connection of said radar meta-data with image data of one or more objects to enable machine learning training for object detection based on said imagery data.

19. The system of claim 18, wherein said processing utility comprises a radar reflection detector, radar signature processing module, and FOV analyzer; said radar reflection detector is configured to receive input data from the one or more radar units and determine data of one or more radar signal reflections indicative of one or more objects in field of view of the one or more radar units, and location of said one or more objects; the radar signature processing module is configured to receive and process data on said radar signal reflections and determine data on radar signature of said one or more objects; said FOV analyzer is configured to receive input imagery data from said one or more camera units and said data on location of said one or more object, and to process the input imagery data to determine one or more image data pieces associated with said location of said one or more objects; the processing utility generates labeled output data comprising said image data pieces and labeling data associated with said data on radar signature of said one or more objects thereby generating labeled training data for training of one or more artificial intelligence (AI) modules.

20. The system of claim 18 or 19, wherein said radar meta-data comprises one or more data pieces indicative of radar signature of one or more objects reflecting said radar signal.

21. The system of any one of claim 18 to 20, wherein radar meta-data comprises one or more data pieces selected from the group of: object size, object distance, object closing speed, object aspect, object location, Angles, azimuth, vector, Doppler, cross section, and signature.

22. The system of any one of claim 18 to 21, wherein said processing utility is further configured to provide said labeled output data comprising one or more image data pieces and labeling data for training processing of one or more AI modules to thereby enable continuous training for object detection in said imagery data.

23. The system of claim 22, wherein said one or more AI modules being adapted for object detection in marine environment, enabling collision prevention in a marine vessel in accordance with said imagery data.

24. The system of claim 23, wherein said one or more AI modules being further configured for receiving location data from one or more location detection units (GPS) and for determining navigational route of said marine vessel.

25. The system of claim 24, wherein said one or more AI modules are connectable to steering controls of said marine vessel, thereby enabling at least partially autonomous operation of said marine vessel.

26. The system of any one of claims 21 to 25, wherein said processing unit is configured to generate an operation command to obtain imagery data from additional one or more respective locations in response to identifying data indicative of one or more reflecting objects within said first field of view and determining that one or more respective locations where reflecting objects are identified being outside of said second field of view.

27. The system of any one of claims 18 to 26, further comprising automatic identification system (AIS) module, wherein said training data generator is further configured to provide data on position of said one or more reflecting objects and obtain from said AIS module data on identity of marine vessels located at said position, using said data on identity for generating additional label data and generating labeled output data comprising said one or more image data pieces and said label data and said additional label data.

28. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method for operating a marine

vessel, implemented by one or more processors and memory circuit, the method comprising:

receiving input data comprising at least radar input data from one or more radar units indicative of a first field of view and imagery input data from one or more camera units indicative of a second field of view being at least partially overlapping with said first field of view;

processing the radar input data to determine data indicative of one or more reflecting objects within an overlapping portion of said first field of view,

determining one or more respective locations within said second field of view where said one or more reflecting objects are identified, and

obtaining radar meta-data of said one or more reflecting objects;

processing said input imagery data at said respective locations in an overlapping portion of said second field of view, and

determining one or more image data pieces corresponding with one or more sections of said imagery data associated with said one or more reflecting objects, by means of an object analyzing module (110) configured for receiving and processing input imagery data and trained for recognition and classification of objects in a marine environment;

correlating said radar meta-data with said one or more image data pieces, and determining a correlation level between the radar meta-data and the one or more image data pieces, and determining that the correlation level satisfies a correlation criterion, wherein the correlation criterion is selected based on at least one of weather, visibility and day/night illumination conditions;

using said radar meta-data for generating label data and generating labeled output data comprising said one or more image data pieces and said label data, thereby facilitating connection of said radar meta-data with image data of one or more objects to enable machine learning training for object detection based on said imagery data; and

continuously or periodically updating, during operation of the marine vessel, training of at least one artificial intelligence (AI) module based on said labeled output data, thereby enabling on-the-fly training for object detection and classification in said imagery data.

29. A computer program comprising computer program code means for performing all the steps of any of Claims 1 to 9 when said program is run on a computer.

30. A computer program as claimed in Claim 29 embodied on a computer readable medium.