

Surveillance

Representative Patent 02

- ❖ Title of Invention : **Maritime surveillance system**
- ❖ Application Number. : KR2016-0000978

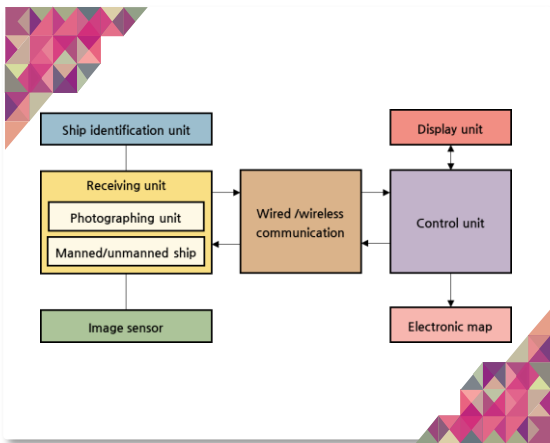
Application of Technology and Field of Use

- ◆ **Monitoring of Illegal fishing, Monitoring of territorial invasion, Detection of vessel in distress**
- ◆ **Difficulty in rapid detection by manually identifying ships conducting illegal activities**

- Generally, the automatic identification system (AIS) is used to identify ships suspected of illegal activities, but is difficult to execute quick operation because the suspected ship is manually identified by comparing the location of the ship received through AIS signal with that captured by the camera.

- ◆ **Occurrence of Image quality deterioration due to weather conditions**

- Image quality deteriorates due to sea fog, etc. when marine surveillance is performed using an unmanned aerial vehicle.



<Representative drawing>

Features of Technology

- A receiving unit mounted on a manned or unmanned ship to receive ship identification information transmitted from an automatic ship identification unit of a specific nearby ship
- An image sensor configured to convert image information photographed by a photographing unit mounted on a manned or unmanned vessel into an electrical signal, wherein the image sensor comprises one of a daytime image sensor, an infrared sensor, an SAR(synthetic aperture radar), and a visualization device using radio waves such as LiDAR
- A control unit configured to control a display unit so that the image of a specific ship and the identification information of the ship are superimposed on the display unit by fusing two pieces of information received from the receiving unit and the image sensor

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Technical Effects

◆ Convenience of identification of ship

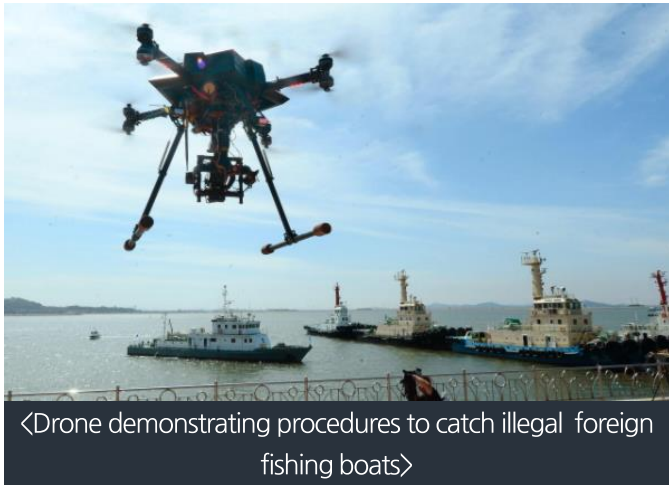
- The ship can be easily identified by receiving images and ship identification information from unmanned or manned aircraft equipped with a ship identification device at the same time, fusing the two pieces of information and outputting the same to the display unit.

◆ Possible to detect ship in desired range located within proximity area

- It is possible to output single or multiple ships located within a proximity area depending on whether the proximity area of the image sensor is set to be wide or narrow.

◆ Possible to simultaneously monitor multiple ships for which ship identification unit does not operate

- If a ship of interest is designated on an electronic map, the location of the ship can be continuously displayed with changing its color.
- The location of a ship that is not recognized by the ship identification unit can be displayed on the map by displaying a specific symbol if a target point of the camera is clicked on the electronic map by a mouse or a screen touch.



<Drone demonstrating procedures to catch illegal foreign fishing boats>

Social, Environmental, Economical Effects

◆ Possible to monitor illegal fishing ships

- Illegal ships with no ship identification unit can be monitored whether illegal fishing activities are carried out in territorial waters.

◆ Detection of ship in distress

- From small fishing boats to large ships, it is possible to detect a ship in distress for which the ship identification unit does not operate and transmit its location information.