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**ABSTRACT**

Title: On the autonomous navigation of unmanned surface vehicle, ARAGON

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Abstract: ARAGON is an unmanned surface vehicle (USV) for ocean observation and sea surveillance of Korea Research Institute of Ships and Ocean Engineering (KRISO). It has been constructed through the research and development project, which is entitled with “The development of intelligent unmanned surface vehicle for multipurpose mission of ocean observation and sea surveillance” under the financial support of Korea Ministry of Oceans and Fisheries since 2011. Now, it is the sixth fiscal year of the project. The length of ARAGON is about 7.5 meter and its maximum speed is over 40 knots. In order to make USV navigate safely according to the convention on the international regulations for preventing collisions at sea, 1972 (COLREGs) without human operation, autonomous navigation system is needed. A collision avoidance system is developed by using changeable action space searching. Obstacles can be detected and tracked by using AIS or Sensor fusion based on radar, Lidar and EO/IR (Electro Optical/Infra-Red) camera. In order to evaluate the performance of autonomous navigation of ARAGON, field tests are carried out in actual sea on the colliding situation such as head-on, crossing and overtaking with multiple obstacles. In this paper, the main features of ARAGON and main results of field test are described.