

Vessel Tracking Vision System using a combination of Kalman Filter, Bayesian Classification, and Adaptive Tracking Algorithm

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Abstract— In these days, there are many vessel traffics to trade with foreign nations and travel abroad. Near coast or in harbor, the more traffics of transportation, the more possibility of accidents tends to occur. Thus, to reduce ships collision, vessel traffic services (VTS) centers have installed lots of equipment to keep a close eye on ships sailing in sea port, such as night observation device, telescope, and CCTV. To improve efficiently existing tracking system and overcome flaw of noises in the process of pursuit in maritime environment, considering bad weather and waves, this paper presents vessel tracking system using an image input device. The tracking system uses a fusion of Bayesian classifier to distinguish some images at initial stage, Kalman filter algorithm for keeping tracking the watercraft when it cannot be detected from the obtained image because some noises or inappropriate parameters used in the library functions may prevent detection from successive pictures, and the adaptive tracking algorithm for not only whether Kalman filtering is used as adaptive way to reduce a computational time but also disregarding the noise interference. The experimental results are included to prove the validity of the proposed method.

Keyword— Adaptive Tracking with Kalman Filter; Bayesian Classifier; Vessel Tracking; Object Detection



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