

Title Abstract: Analyses of AIS data for real time risk detection in maritime traffic

By: Mr Takeharu KATO | Japan Coast Guard

Contact e-mail: jcghkokugikaihatsu1-6r9i@mlit.go.jp

Section Chief, International Affairs and Engineering Development Office, Administration and Planning Division, Maritime Traffic Department Japan Coast Guard (JCG). Graduated from Department of Mechanical and Aerospace Engineering, School of Engineering, Tohoku University in March 2014. Scope of Activity: Development of Aids to Navigation system including VTS



Abstract:

This presentation gives overview of the development of technologies to automatically detect potential risks of maritime accidents in a timely manner from shore stations. This is based on AIS data that Japan Coast Guard (JCG) has accumulated in the last 10 years relating to collision and anchor dragging.

Of the two scopes of developments, the risk identification of dragging anchor is the main focus because frequent damages are caused by typhoons in Japan, with potentials to affect Japanese economy; an accident caused by the cargo ship's dragging anchor in October 2018, interrupted the operation of the sea-based airport for 14 days. The JCG has found that anchor dragging can be detected by the combination of vessel movement patterns, which are modelled by means of pattern recognition based on AIS data analyses. The result of the evaluation shows that the proposed method could detect the possible anchor dragging earlier than VTS operators with high accuracy.

Additionally, the JCG also found that the proposed collision prediction algorithm, which considers relative motions of two vessels, i.e. their distance, speed and direction could produce higher accuracy compared to the conventional CPA/TCPA methods; the proposed method could reduce false alerts in current VTS system(s).