



SHIP COURSE-KEEPING ALGORITHM BASED ON KNOWLEDGE BASE

PIOTR BORKOWSKI

ZENON ZWIERZEWICZ

Maritime University of Szczecin

Poland

pborkowski@am.szczecin.pl

ABSTRACT—The article presents an original ship course-keeping algorithm based on a knowledge base. Its integral part is a computer-borne ship movement dynamical model based on a set of signals obtained from the object's input and output. This way problems occurring while designing classic control algorithms for a complex, non-linear ship model have been avoided. The presented methodology is general in the sense that it can be also applied in other ship control tasks or other dynamic objects. The proposed intelligent course-keeping system has been verified via simulation. The designed algorithm was compared to LQR controller as well as feedback linearizing one. The results prove high-quality performance of the proposed method. It concerns minimizing the steering quality criterion, control time and over-regulation at a step change of the preset course.

Key Words: Ship course keeping, intelligent control system