

An expert system for the best weight distribution on ferryboats

Khaled Shaalan, Mohammed Rizk, Yasser Abdelhamid, Reem Bahgat

ABSTRACT

There are some problems that need expertise in order to get a satisfactory solution. Ferryboat carries goods, fresh water, diesel oil, luggage and storing rooms up to its permissible draft in order to maintain safety according to the international safety regulations. The best weight distribution on ferryboat needs human expertise to handle many variables, such as the amount of the bunker and fresh water that allow us to use more rooms for charging in order to maximize the profit. This sort of problems can be classified under Configuration Problem. In this paper, we address the development of a ferryboat expert systems (WDFB) using CommonKADS knowledge engineering methodology. We propose a reusable problem-solving approach, which is an enhancement of the structure-oriented approach, capable of solving the ferryboat configuration problem. The proposed model includes heuristics that make the search of suitable configuration more efficient, taking into consideration the transformation knowledge and the [optimality](#) criteria. The results of testing the system on a real-world data from National Navigation Company, Suez, Egypt, were satisfactory.