

A REVIEW PAPER FOR DEADLOCK DETECTION, AVOIDANCE AND PREVENTION OF SHIP SURVIVAL DURING COVID PANDEMIC USING ALGORITHM & DATA MINING

Computer Science

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ABSTRACT

Ship survival is basically a concept of predicting survival of all the boarding people and its members, crew, mariner including all the system and maintenance of ship and its materials, things with the ideas of deadlock detection, avoidance and its prevention during covid pandemic crisis using codechef tools and algorithm.

KEYWORDS

Covid Pandemic, Ship Survival, Deadlock Detection, Data Mining, Codechef Tools, Online Flow Chart Tool, Algorithm(s) Deadlock, Smart Draw Online Tool

INTRODUCTION (DATAMINING & SHIP SURVIVAL)

Basically data mining is a process of arranging the large datasets into various patterns and build relations between data to take accurate decision of the project and matter and to predict its future scope with various types of datasets. So, with the help of data mining and deadlock conditions, algorithms we can predict the future of ship survival during various types of survival crisis and also various action and measurements taken to handle the previous covid pandemic situation through out the world for the safety of the ship and all materials and members of it.

CRISIS AND DEADLOCK CONDITIONS

A Covid Crisis On Ship Survival

According to the all the published paper mentioned on references and going through various searches I found that there was a major crisis in ship survival during the pandemic including the ship goods transport markets and demand for oxygen and availability of arrangements of all materials in the ship so with the help of some observations and conclusions this paper is done.

B Deadlock Detection, Avoidance & Prevention

Mainly deadlock detection is a technique to detect availability of resources in running all the processes should be spontaneous and simultaneous at a certain point and interval of time in order to run multiple processes accurately to avoid the deadlock condition.

Deadlock avoidance is a condition where the system continuously check for safe and unsafe states, the request for any resource will be granted if the resulting does't cause deadlock in the system Deadlock can be prevented by eliminating any of the four necessary conditions i.e. mutual exclusion, hold & wait, No preemption, circular wait so it cannot be violated practically.

In this paper I have used deadlock concept in order to maintain all process and resources for proper management of the process using data mining technique and online tools for flowchart and algorithm, coding etc to validate ,to check proper maintenance, accuracy of all the required conditions and process request for the resources at a certain time to avoid deadlock condition following necessary algorithm, flowchart, datasets, coding techniques, checking, verification and validation techniques.

REVIEW EXPLANATIONS OF PAPERS

[1]Developing innovative and efficient diagnostic, along with therapeutic strategies to combat coronavirus has enormous implications. The work in presents in the model in the paper can break down the standardized force of the x-beam picture to describe and depict the patients status as a positive or negative COVID-19.

[2]Every ship shall carry a training manual, which may comprise several volumes, shall contain instructions & information, in easily understood terms illustrated wherever possible, on the life-saving appliances provided in the ship and on the best methods of survival.

[3]Ship-shaped offshore units are some of the more economical systems for the development of offshore oil and gas fields and are often

preferred in marginal fields. The systems are especially attractive when developing oil & gas fields in deep & ultradeep water areas and locations remote from existing pipeline infrastructures. Recently, the ship shaped offshore units have also been considered for application to near -shore oil & gas terminals. This book is an ideal text & reference on the technologies for designing, building & operating ship-shaped offshore units, within inevitable space (& time) requirements.

[4]A rational updated plan of action has however been prepared within a time range of five years. It will consider priority the development of vulnerability criteria able to distinguish ships sensible to additional dangerous phenomena so that full calculations/testing can be limited to these ships.

[5]Ship operators should provide seafarers (and passengers where applicable) with general information on COVID-19 & application standard health protection measures and precautions. The person(s) responsible for medical care on board ships should be informed and updated about the outbreak of COVID-19 and any new evidence and guidance available. It is recommended that they regularly review the WHO website for COVID-19 advice & guidance.

[6] The inland water transportation (IWT) system of Bangladesh is one of the most significant modes of transportation for being easily accessible & less expensive. Though Bangladesh own geographical benefit of having a huge inland waterway network but there are severe safety deficiencies in this sector. This study has analyzed the data of accidents that took place during 2005 to 2015 in the inland waterways of Bangladesh

[7] The covid-19 pandemic has had severe ramifications worldwide, and the ocean economy is no exception. While initially projected to double by 2030, the growth of the ocean economy has been hindered by COVID-19, with significant revenue losses throughout port closures, travel restrictions & supply chain disruptions have disrupted ocean-based industries such as shipping, marine and coastal tourism and fisheries. As with many crises, it is the most vulnerable groups, such as coastal communities and informal workers, that are hardest hit

[8] It represents an initial experimental validation of a signal-based traverse stability monitoring system, which consists of an estimator -detector kernel that solely uses measurements of roll motion to identify changes in vessel's metacentric height by estimating the roll natural frequency. Its performance is evaluated based on experimental data from a towing tank scale model test campaign. Access to systems for automatic detection of changes in vessel's stability related parameters would better support the crew during fishing & navigation operations

[9] In this paper, risk based approach is applied to predict the probability of capsizing for a certified ship, which is effected by the forces of sea especially the wave loading safety assessment and risk analysis process are also applied for the probabilistic prediction of stability for ships

[10] It is shown that the phase space flux is monotonically increasing as the significant wave height increases, while the safe basin is decreasing

rapidly. The relation between the phase space flux and the melnikov function has attained and the influence of significant wave height on the phase space flex has discussed.

[11] In this paper, an algorithm is made to detect deadlocks in concurrent message-passing programs. Even though deadlock is inherently non-compositional and its absence is not preserved by standard abstractions, our framework employs both abstraction and compositional reasoning to alleviate the state space explosion problem. We iteratively construct increasingly more precise abstractions on the basis of spurious counter examples to either detect a dead-lock or prove that no deadlock exists.

[12] A distributed computer system consists of a set of autonomous processes linked by a net-work. Process in such an environment do not have any global memory, but communicate through messages. Depending on the way the machines are connected in the network & the time it takes for 2 machines to communicate with each other, each machine gets a partial view of the global state. The processes may vary in size and function. The four major reason for building distributed system are resource for building distributed system are- resources sharing, computation speed up, reliability & communication.

Abbreviations And Acronyms

A.O.R-Any one risk, A/B- able bodied seaman, a member of the crew who is able to perform all duties of an experienced seaman, A/R-All risks or against all risks, A1-First class condition, A.O.E-Any one event, AAR-Against all risks or All and any risk, Above Board-Anything on or above the open deck. if something is open and in plain view, it is above board, AFCSPS-Arrival first compulsory sea pilot station, AFF REIGHTMENT-The hiring of a ship in whole or part, AFMT-After fixing main terms, AFSPS-Arrival first sea pilot station, AFT, after-The foremost part of the ship. Toward the stern or back of the vessel. Between the stern & the midship section of the vessel.

Agreed valuation-The value of a shipment agreed upon in order to secure a specific freight rate, AH-Aft hatch, AGW WP-All going well weather permitting, AHTS-Ancor Handling Towage and supply, AID-Agency for international development, AIMS-American Institute of merchant shipping, ALLI-Annual load line inspection, Aloft-Above the deck of the ship

Units

Cable length-length, fathom-length, knot-speed, league-length, nautical mile-length, rhumb-angle(the angle between two successive points of the thirty-two point compass), shackle-length(15 fathoms), toise-length (toise was also used for measures of area and volumes), twenty foot equivalent unit or TEU-Volume(used in connection with container ships and ports)

Figures



[12]

Avoidance of deadlock in signaling mechanism

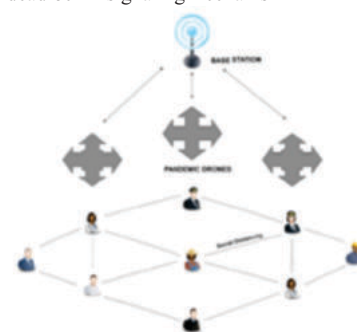


FIGURE 16. Connected drones monitoring social distancing.

[1]

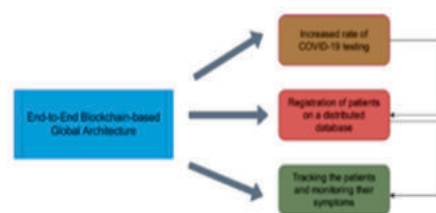


FIGURE 6. Blockchain-based architecture for COVID-19.

[1]

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