

Abstract

Population explosion, globalization and technological advancement has increased air traffic. The increased air traffic has increased probability of collisions caused by terrain, aircraft, mechanical failure or many others. The accidents put in danger many lives. Automated Air Traffic Control System (AATCS) overcome human error but it must be accurate and fault free. Therefore, modeling of maintaining minimum safe flight level is necessary which has not been modeled yet according to our limited knowledge. To ensure safety, the work proposes Automated Air Traffic Control System (AATCS) with special concern of Alarm System for Safe Altitude (ASSA) in Linear Temporal Logic (LTL) and verified by SPIN model checker. The work contains algorithms of all the entities of AATCS and ASSA. It ensures safety property of maintaining minimum safe altitude in order to avoid collusion with terrain. To maintain minimum safe altitude property, altimeter and base station information is monitored periodically. It ensures the minimum safe altitude, generate alarm, and send a signal to ground stations for emergency alert. The model is converted into Process Meta Language (PROMELA) and is evaluated in Simple Promela Interpreter (SPIN). The results proved more reliability and safety.