

Abstract

Implementation of a Smart Lifejacket for Assisting the Evacuation Process on Large Passenger Ships [†]

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Abstract: Evacuating large passenger ships is a complex and safety-critical process. During an evacuation, the passengers are assisted by exit signs, the public announcement system and the crew, the latter providing instructions for mustering and abandonment. In addition, passengers are required to wear lifejackets that are made of buoyant or inflatable material used to keep them safe in the water. The timely mustering and guidance of passengers to their embarkation stations is of the utmost importance and greatly affects the evacuation time in the case of an emergency. This is especially important in extreme conditions and hazards, such as fire and flooding. Within the context of the project SafePass, a smart lifejacket is designed and implemented, which integrates indoor localization technology and a haptic navigation system that can assist passengers during evacuation. The indoor localization technology reports the passengers' location within the ship, while the navigation system can negotiate a route and navigate the passenger using vibration motors attached to the smart lifejacket. These actuators vibrate to provide haptic cues to the passenger to navigate them to their destination in low visibility conditions and in the case they are left behind or lost. The smart lifejacket can also help the crew to locate stray passengers, thus increasing the safety of passengers and reducing the evacuation time as a whole.

Keywords: evacuation; smart lifejacket; localization; haptic navigation; large passenger ships



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