
Curiosity: wick in candle of learning, increases Situational Awareness.

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Abstract

An intention to develop Situational Awareness suggests a high level of natural (or learned) curiosity. Curiosity - “the desire to know or learn something” is an extensively researched topic. Developing an intense curiosity around the “whys” behind behaviour and motives can lead to increased situational awareness and safety. The central idea in this research is to embed curiosity-inducing design to improve situational awareness using an Augmented Reality system. We propose a prototype based on Microsoft HoloLens to increase situational awareness for an Offshore Installation Manager. We advocate that studying information as a driver for motivation has the potential of unifying our way of looking at the myriad of complex situations. We further hope to extend our understanding of design for curiosity by attending this workshop and gaining useful insights to use in future research.

Author Keywords

Augmented Reality; Situational Awareness; Human Perception; Optical see through AR glasses

ACM Classification Keywords

H.5.m [Information interfaces and presentation (e.g., HCI)]:
Miscellaneous

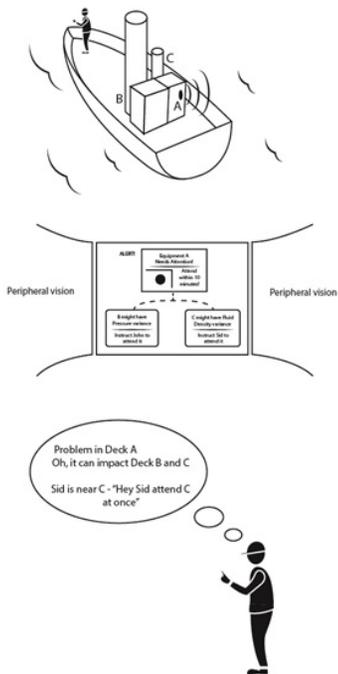


Figure 1: In this image, the OIM is at one end of the deck. With help of HoloLens, he receives a notification that problem in deck A can also impact Deck B and C .

Introduction

Situational Awareness is the cognitive skill of knowing what is going on around oneself and using that understanding to predict how the situation may develop in the future. Situational Awareness simplified is knowledge - it satisfies our innate curiosity and requirement to know. According to information gap theory, when people are made aware of gap in their knowledge, they become curious and engage in information-seeking behaviour to complete their knowledge and resolve the uncertainty [3]. However, to our knowledge the systems that are being designed in today's era still don't cater this gap of information seeking and posits a research gap to be fulfilled. Curiosity is defined as “the desire to know, to see, or to experience that motivates exploratory behaviour directed towards the acquisition of information” [2]. Inspired by approach-gradient theory [4] and Gestalt psychology [5], the theory further predicts that the motivation to seek information becomes most intense as one approaches the answer, creating the urge to “complete” the picture. In this work, we examine the potential to kindle curiosity using Augmented Reality. The proposed use case applies to Offshore Installation Manager (OIM). The OIM is the most senior management representative of the operating company to be continuously present on the offshore facility. That facility may be a drilling rig, or a production platform [1]. The OIM is responsible for the operation of the vessel, the gangway and all other plant and equipment, within safe limits and in agreement with the terms of the contract.

Use Case

Considering a situation in which the OIM is working on one side of the offshore platform and a fire/sound alarm goes off on other end of the deck (say, due to increase in temperature). However, owing to distance on offshore platform, he might not be aware of this malfunction. The

proposed use case notifies OIM about the same using AR notification. Also, such increase in temperature of certain equipment in the deck A could directly be related to impact on pressure and fluid density in some other sensitive equipment which could be B or C (refer Fig. 1). Using this interruption, we are inducing curiosity in the OIM to look into other possible impacts because of the recent change in temperature. With the help of HoloLens, we are working on a prototype which would help the OIM be informed on the equipment/ resource status on the ship and better focus on the safety measures required during emergency situations.

Conclusion

This research aims to provide an effective and efficient solution for OIMs in terms of handling the emergency situations. Future works include developing the current technique and testing it with users in real time situations.

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