A Proposal for a Heads-Up Display for Use in Firefighting Applications

Zubin Kane and Cameron Mosley

We propose the creation of a heads-up display with minimalistic user interface to aid firefighters’ efforts to save lives during emergent situations. This objective will be achieved through displaying critical statistics about their health and surroundings within their field of view while being unobtrusive enough to not impede their actions during use. This relatively simple implementation will save countless lives in the course of dangerous and challenging field work and will strengthen firefighters’ performance in these situations.

Project Description

Our proposed design for User Interface technology targeted for Public Safety applications is a heads-up display integrated into masks for firefighters. This heads-up display would include information such as oxygen tank levels, heartrate, surrounding air temperature, directional heading, and indicators on the status of other team members. Constant access to this information with an unobtrusive UI is crucial for more effectively saving lives and protecting the lives of firefighters in emergent situations.

Current information displays in the aforementioned field are limited to simple thermal imaging screens in helmets; both the existing technology and our heads-up display could be utilized simultaneously. Conceptuals for other heads-up displays for firefighters are cumbersome, often involving unnecessary information being displayed in the user’s field of view and a bevy of commands initiated by hand movements which could be unintentionally triggered by a firefighter in the course of his actions on the job. Our design would be simple, displaying most information only as an alert after reaching critical thresholds, and would involve no actions on the part of the user, accepting inputs only from the sensors embedded in the firefighting suit and from fellow team members’ devices. Our device’s sensors would not be integrated with the PASS device already used by firefighters so as not to interfere with the functions of that system, but distress signals would be broadcast to other team members’ devices in the event that the device detects an emergency with its user.

Resume Information

We believe that we are well-suited for this project because of our experience in developing innovative software solutions for a variety of interdisciplinary projects within the Purdue Engineering program. Our work in the School of Electrical and Computer Engineering has prepared us for more intricate work in the evolving field of augmented reality. Additionally, our access to various resources and engineering minds at Purdue University should prove useful for developing the prototypes and final implementation of this project. Finally, Mr. Kane’s prior experience and relationship with NIST will assist our team’s transition to collaborating effectively with the Institute.



