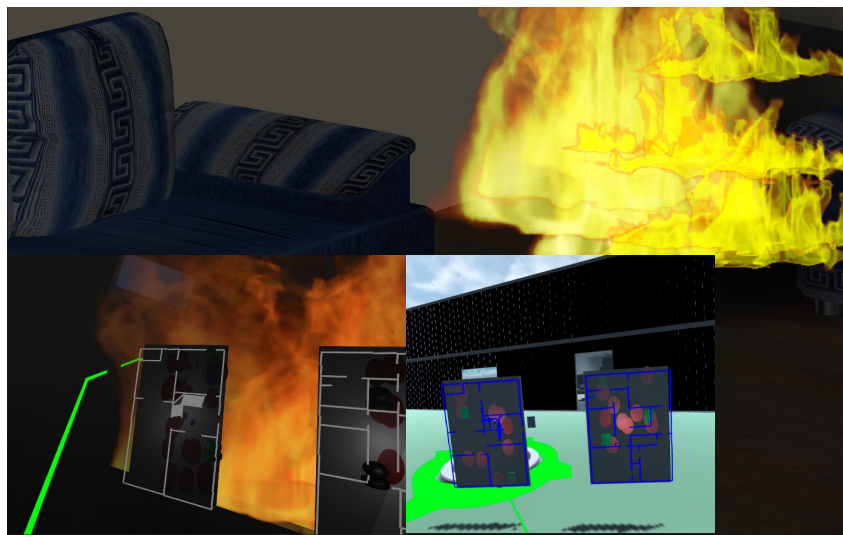


Award #1840080 FW-HTF: *Future of Firefighting and Career Training - Advancing Cognitive, Communication, and Decision Making Capabilities of Firefighters*

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Future of firefighting with new augmentation technology for prompt situation awareness

Intellectual Merit:

We propose a specialized, scalable, and adaptable data infrastructure with new methods of data collection, analysis, modeling, immersive visualization, and decision making. We also examine the social transformation of the firefighter's work.

Motivation:

To reduce the risks and casualties of firefighters and provide augmentation technology that enhances the cognition, communication, and decision-making capabilities of firefighters.

Objective:

To advance firefighting through investigating the new augmentation technology, studying enhancement and potential issues on human-technology relationships, and innovating education and training of firefighters for better job performance, social well-being, and quality of life.

- Develop a novel augmentation technology system that involves advanced data, machines, tools, and human-technology relationships.
- Collaborate with the fire service and develop comprehensive education and training plan.

Approach and Results:

- Intrusive and non-intrusive sensing for real-time data collection/analysis for situational awareness
- Mixed reality for data fusion of various information/environment with embodied cognition and interactive analysis with natural interaction methods
- New fire modeling techniques for real-time fire development prediction
- Comparative analysis of adoption of multiple technologies based on 46 semi-structured interviews of firefighters in two states
- Perception of technologies via a lens of firefighter's distinct occupational identity
- Compatibility between a technology's symbolic meaning and firefighter's occupational identity affecting its adoption and use