Enhancing Real Emergency Outcomes through VIRTUAL: Virtual Intelligent Reality Technology Using Adaptive Loops

Project Summary

- The basic goal of firefighting is to locate, confine, and extinguish the fire. To do this safely, firefighters must undergo extensive training beforehand. However, a firefighter can never be fully prepared for all events. That is why having an AI navigation and rescue assistant that can providing constant navigational guidance can improve a firefighter's level of preparedness, safety, efficiency, and chance of mission success.

- VIRTUAL will provide a competitive advantage by operating a real-time, adaptive feedback loop. Voice feedback from an HUD microphone coupled with current/historical sensor data and operational parameters guide the navigational and non-navigational decisions made by the AI, which in turn guides the firefighter who once again provides additional feedback. There will also be a self-rescue mode where the firefighter will receive visual reminders of necessary actions as well as prompts to learn about the surroundings to inform routes for escape.

Participant Summary

- For the past 3 years, DeepScience has primarily conducted scientific research and development using the tools of artificial intelligence and AR/VR. We see AI as a key tool for turning data into actionable information and AR/VR as the means for a user to interact with that information.

- We are a small company led by 2 researchers/developers but we have won several innovation awards in the past 3 years, proving that we have the R&D skills necessary to be self-funding. For 2017 our project lead, Dahl Winters, was the 3rd top solver on InnoCentive, a network of 380,000 registered problem solvers tackling the most challenging problems in R&D. We have successfully followed through on several projects while maintaining ongoing research collaborations with large multinational companies such as AstraZeneca and RTI International. We have also had a history of serving clients in the defense and intelligence community through the development of AI software products.
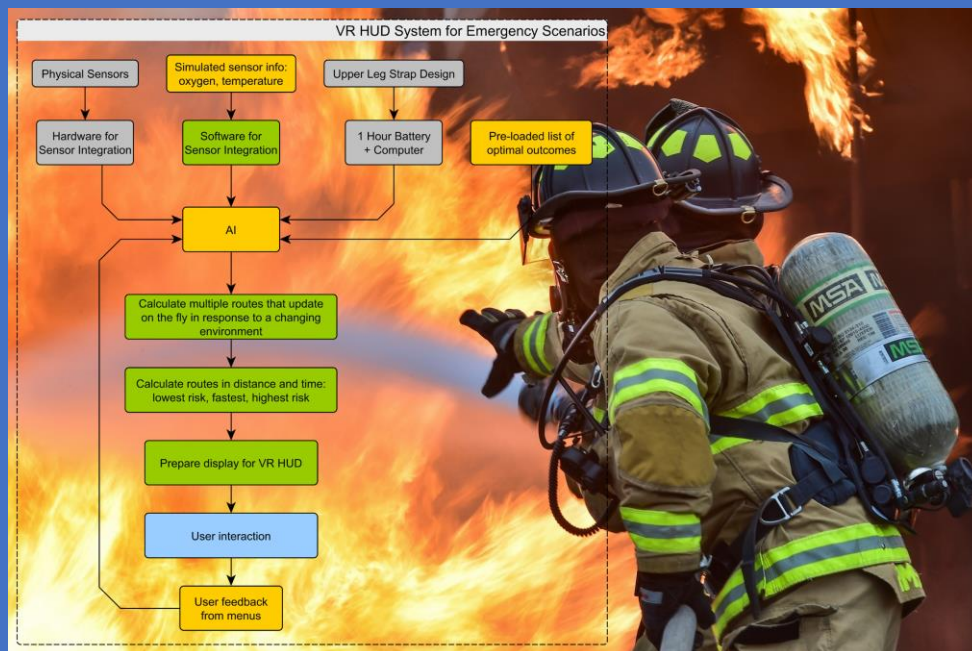
Technical Outcome

- Ultimately, saving time on the fireground means saving both property and lives. We see that as the real goal of this challenge and our approach will go a long way in meeting that goal. There is currently no commercially available, artificially intelligent navigation and rescue assistant quite like VIRTUAL. Firefighters will be able to have their own personal AI constantly integrating user feedback and sensor data in a changing environment to provide the best possible strategy to meet mission objectives. By providing real-time guidance, VIRTUAL will improve a firefighter's safety, efficiency, and chance of a successful outcome.

- A human cannot integrate incoming information as rapidly as an AI. Yet only the human can carry out the mission's tasks. He or she must perform the search and rescue for victims and extinguish fires. Thus a solution merging the best of human and machine is a very positive technical outcome for both public safety as well as for firefighters performing their duties.