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VR's Emergency Revolution

By Louie Fox

Bowie State University's VR Lab looks to use advanced simulations to help prepare first responders

Virtual reality has undoubtedly grown over the years. While at one point VR was merely a fictional idea, showcased in pieces of classic pop culture such as VR Troopers and Total Recall, nowadays virtual reality has become, ironically enough, a reality. VR is now a consistently improving piece of tech rather than a fad, revolutionizing the worlds of gaming, films, and even activism. However, Bowie State University's Virtual Reality Laboratory, just outside of Washington, DC, in Bowie, Maryland, is looking to utilize the technology and do something unique: give first responders a realistic training experience.

The work of Bowie State's VR Lab has the potential to revolutionize the way disaster prevention is addressed. Virtual reality is now being integrated in training for nursing, combat, and even surgery, so it makes sense that disaster response would be the next frontier.

An interesting cross between game development and behavioral analysis, Bowie State University's Megacity project looks to create realistic disaster scenarios in order to prepare first responders for a number of situations. The project offers an incredibly convenient alternative to realistic simulations and evacuation drills, which can not only be time-consuming, but expensive. It all started with one main objective: developing a collaborative VR Megacity environment that offers flexibility to run multiple scenarios and evacuation drills for disaster preparedness and response. In addition, it can help train SWAT teams, fire responders, and traffic clearance personnel.

The project is led by Dr. Sharad Sharma, Associate Professor and Director of the VR Lab at Bowie State University, whose work since 2007 has focused on modeling and simulation of emergency response and human behavior. "Human behavior becomes unpredictable when people make decisions in emergencies," said Dr. Sharma. "So analyzing the behavioral aspect of first responders is a necessity."

Dr. Sharad Sharma's Virtual Reality Lab combines realistic disaster emulations and human behavioral modeling to prepare first responders for real world emergency scenarios.

The project allows the user to experience everything from hazardous materials and building fires to civil disturbances and terrorist attacks. The intuitive environment enables the user to react to factors such as smoke that can affect quickness and computer-controlled characters that can hinder your progress within the simulation. The project offers two different control options to enter the Megacity VR environment: immersive using the Oculus Rift Head-Mounted Display and non-immersive using a standard mouse with a keyboard or joystick. This allows users to control their level of involvement and interaction while getting to experience the variety of disaster simulations and what-if scenarios. Dr. Sharma involves his students in developing and programming the scenarios.

One of the most unique aspects of Megacity is the wide range of viewpoints available in the project. According to Dr. Sharma, "When the user enters the environment, you can enter it from multiple perspectives. You can enter as a civilian, as a policeman, as a medic, or as a soldier. So, when you enter the VR environment, you can navigate as an autonomous agent." Within the Megacity VR environment, users can encounter multiple computer-controlled, artificial intelligence agents with assigned behaviors, such as hostile, selfish, or leader-follower behavior, to interact with the user-controlled agents in multiple what-if scenarios.

Emergency personnel can be trained to respond to a variety of emergencies safely and securely via the Megacity project without ever being exposed to real world dangers. Considering that the U.S. Bureau of Labor claimed that paramedic and EMT careers would grow 15 percent between 2016 and 2026 (more than twice the average growth rate of most occupations), more modern preparation techniques such as Megacity are vital for first responders moving forward. ■