Disaster Response Training Simulator Based on Augmented Reality, Virtual Reality, and MPEG-DASH

Authors : Sunho Seo, Younghwan Shin, Jong-Hong Park, Sooeun Song, Junsung Kim, Jusik Yun, Yongkyun Kim, Jong-Moon Chung

Abstract : In order to effectively cope with large and complex disasters, disaster response training is needed. Recently, disaster response training led by the ROK (Republic of Korea) government is being implemented through a 4 year R&D project, which has several similar functions as the HSEEP (Homeland Security Exercise and Evaluation Program) of the United States, but also has several different features as well. Due to the unpredictiveness and diversity of disasters, existing training methods have many limitations in providing experience in the efficient use of disaster incident response and recovery resources. Always, the challenge is to be as efficient and effective as possible using the limited human and material/physical resources available based on the given time and environmental circumstances. To enable repeated training under diverse scenarios, an AR (Augmented Reality) and VR (Virtual Reality) combined simulator is under development. Unlike existing disaster response training, simulator based training (that allows remote login simultaneous multi-user training) enables freedom from limitations in time and space constraints, and can be repeatedly trained with different combinations of functions and disaster situations. There are related systems such as ADMS (Advanced Disaster Management Simulator) developed by ETC simulation and HLS2 (Homeland Security Simulation System) developed by ELBIT system. However, the ROK government needs a simulator custom made to the country's environment and disaster types, and also combines the latest information and communication technologies, which include AR, VR, and MPEG-DASH (Moving Picture Experts Group - Dynamic Adaptive Streaming over HTTP) technology. In this paper, a new disaster response training simulator is proposed to overcome the limitation of existing training systems, and adapted to actual disaster situations in the ROK, where several technical features are described.

Keywords : augmented reality, emergency response training simulator, MPEG-DASH, virtual reality

Conference Title : ICDMGSF 2017 : International Conference on Disasters Management, Geomatics Solutions and Forecasting

Conference Location : New York, United States

Conference Dates : August 07-08, 2017