

Virtual Reality Software for Improved, Flexible Workforce Training (2017-007)

Actively engages users to increase knowledge retention and incentivize performance

Market Overview

This Virtual Reality (VR) software provides online workforce training for both academia and industry. Research emphasizes the potential of using VR-based training because of its ability to provide the user with a sense of immersion that promotes learning and growth. According to MarketsandMarkets, the VR market is expected to grow from USD 1.37 Billion in 2015 to USD 33.90 Billion by 2022. A major driving force in the VR market growth is the use of VR for training and simulation. While VR-based training is becoming more widespread, many companies do not share their training assets. Further, studies show that active engagement with training materials enhances knowledge retention when compared to passive training administered by presentations or lectures. To overcome these issues, Clemson University researchers have developed a VR software architecture for workforce training. The design and development of the virtual simulations emphasizes realism and performance on low-end hardware to target a wide audience. This approach gives users the flexibility to train on-demand using a standard web browser while improving their learning experience.

Application

Workforce training, Virtual reality

Stage of Development

Prototype

Advantages

- Requires active participation from the user, increasing knowledge retention when compared to traditionally used passive lectures
- Enables on-demand training via online portal, providing flexibility for the user to train at any time and repeat as necessary
- Uses gaming components such as scores and dynamically generated scenarios, incentivizing the user to perform better amongst their peers

Technical Summary

The VR modules can be accessed via an online portal, enabling on-demand training at a time and place that is convenient for trainees. Users can interact with simulations either by a standard mouse and keyboard or by using more advanced tracking and head-mounted display (HMD) technology. HMDs fully immerse the user in a scenario and demand full attention on the current task. In some simulations, trainees navigate virtual spaces from an egocentric or first-person view. This gives them the freedom to train at their own pace and see a given scenario from a perspective that is similar to how they would see it in the real world. Other simulations are exocentric and provide a birds-eye view of a scenario, allowing the trainee to make connections between different systems and be able to see the big picture.

App Type	Country	Serial No.	Patent No.	CURF Ref. Number	Inventors
Copyright	United States	NA	NA	2017-007	Anand Gramopadhye, Chalil Madathil Kapil

About the Inventors



Dr. Anand Gramopadhye is Professor and Dean of the College of Engineering, Computing and Applied Sciences at Clemson University. He earned his Ph.D. in Industrial Engineering/Human Factors from State University of New York at Buffalo. He has more than 300 publications and is a Fellow of the Institute of Industrial Engineers. His research focuses on solving human-machine system design problems and modeling human performance in technologically complex systems, such as health care, aviation and manufacturing.



Dr. Kapil Chalil Madathil is an Assistant Professor of Civil Engineering and Deputy Director of the Risk Engineering and System Analytics Center at Clemson University. He earned his Ph.D. in Industrial Engineering from Clemson University. He is a member of the Human Factors and Ergonomic Society and Association for Computing Machinery. His research interests focus on how sustainable human computer interaction research might be extended to play a broader role in tackling global sustainability issues and supporting the societal change that this will require.

For More Information

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