

Virtual training environment for the prefabrication of installation systems



Keywords / Topics: Virtual Reality

Abstract:

Within this work, the student gets the opportunity to create a virtual training environment, where factory workers can be trained to prefabricate installation systems. The task also includes the development of a method on how to generate virtual training environments from previously modeled components, provided through open access databases and libraries. As a result, the method is validated by testing the created virtual training environment.



Source: <https://www.intopalo.com/blog/2016-11-04-intopalo-vr-training/>

Background

This work is co-supervised by the industry partner Hilti, which is offering planning and prefabrication services of installation systems to its customers. The student will not only be able to deliver a valuable scientific contribution but also provide a solution for practice.

Content of Work

The rise of commercially available, low-cost virtual reality hardware leads to new fields of applications beyond the gaming sector. One of these promising new fields is education and training of factory workers in manual assembly lines. Until now, these workers were mainly trained through textbooks, instructional videos, and real world training environments. As real world training environments are effective but also costly and not scalable, virtual training environments are seemingly an attractive alternative to educate assembly line workers. Recent quantitative studies confirm the high educational benefits that come with virtual training environments for assembly line tasks. However, the modeling of these virtual environments remains a highly resource consuming task. Within this work, the student should develop a method to generate training environments for assembly tasks. To reduce the high resource intensity of modeling, the method should emphasize on integrating components from databases and libraries from the company. Following, the student should validate the developed method by creating and testing a prototypical training environment for the prefabrication of installation systems. The student will have the opportunity to test the created virtual training environment with assembly line workers from Hilti's installation system prefabrication factory. The thesis concludes with a discussion of the developed method and the created corresponding virtual training environment.

Work Packages:

- Literature review on modeling virtual assembly training environments
- Development of a method to generate industrial training environments for manufacturing tasks
- Creation and testing of a training environment prefabrication of installation systems
- Intermediate and final presentation
- Written report, preferably in English (German is also possible)

Information & administration

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