

Virtual Manufacturing Curricula Development for Engineering Education

Zoltán Forgó¹, Wei Deng Solvang², Bjørn Solvang³, Hao Yu⁴, Beibei Shu⁵

¹Sapientia Hungarian University of Transylvania
^{2,3,4,5}UiT The Arctic University of Norway

Abstract

Higher education faces challenges not only because of the online education forced by the pandemic situation, but also by the instantly available amount of information which makes traditional education more difficult. In our opinion, this applies even more to technical higher education, as physical experiencing is essential for the correct recognition, understanding of phenomena and the storing of knowledge based on them. As mechanical engineers, in the focus of our work are the production systems and their design. With EEA Grant support, we developed a curriculum with the help of which the students receive information about the production system's design, structure and operation with the help of interactive virtual reality (VR) or augmented reality (AR). Although simulation software has been around for decades and has also a role in the design of systems, today the computer hardware has developed to a level that enables the widespread use of these type of software. Having in mind this democratization of VR and AR our primary goal was to select a tool set that enables the processing of this present curricula, but other topics as well. This helped us not to actually take the students to the source of the information (presentation in a classroom or shopfloor), but to deliver the information to the students using their favorite channels (mobile devices) and methods. This has many advantages, but we will also present disadvantages that do not allow us to establish the profession of future engineers with the help of such educational methods alone.

Keywords: augmented reality, immersive, simulation, technical higher education, virtual reality