Preparing the XR Workforce of tomorrow

Thomas Wischgoll

Virtual and Cyber-Physical Systems have become a centerpiece of current advancements in technology. The advent of low-cost virtual reality tools, such as head-mounted display systems, e.g., Oculus Rift, HTC Vive, or Microsoft's HoloLens, have reinvigorated the area of Virtual Reality with myriads of applications in healthcare, training, and engineering due to their ability to increase retention and safety, and reduce costs. Utilizing this technology for workforce development and for more advanced training in several application disciplines is critical to Ohio's economy. Furthermore, investing in building the region's workforce will increase local industries' success in competing for investment dollars allocated for virtual and cyber-physical initiatives. Training the workforce of tomorrow has become even more important today than it has ever been in the past as most jobs require specialized training.

According to Statista, the number of jobs in XR is expected to be 23.36 million by 2023. The impact of VR globally is forecast to provide a boost on GDP to the worldwide economy worth US $450.5 billion by 2030 based on a market study by Statista. XR can be applied to a myriad of applications ranging from gaming over training to running experiments. Similarly, XR can be applied to a plethora of domains. In order to prepare our students, we have established the Center for Virtual and Cyber-Physical System. With the Appenzeller Visualization Laboratory and the Immersive Visualization and Animation Theater, students have access to a variety of display systems, such as a new four-walled CAVE-type display environment and head-mounted augmented reality displays. This will augment the existing systems of 3D-capable display systems combined with optical tracking and head-mounted displays, such as different types of stereoscopic display systems [1], a three-walled tiled display configuration [2], and head-mounted displays suitable for AR and VR. These systems have been used for different experiments [3] and nursing students at Wright State University who are currently learning using AR devices, such as the Magic Leap One, that allows the student to see organs inside the manikins traditionally used for training [4].

Similar to the different hardware devices that can be used for XR, there are various different software platforms and environments available for developing AR and VR software [5]. Each of these software packages have their pros and cons. Typically, we select the software environment based on the needs of the specific project. Hence, students need to be aware of a variety of options which is why our laboratories provide direct access to a selection of different software environments. This enables us to train and prepare the students to be ready to develop software based on these software environments and beyond. This presentation will provide further details on the hardware and software infrastructure we use for AR and VR and some of their use cases.

References:

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