BYU
BRIGHAM YOUNG
UNIVERSITY

Monitoring AR Learning via Onshape Digital Twins

PROJECT SUMMARY

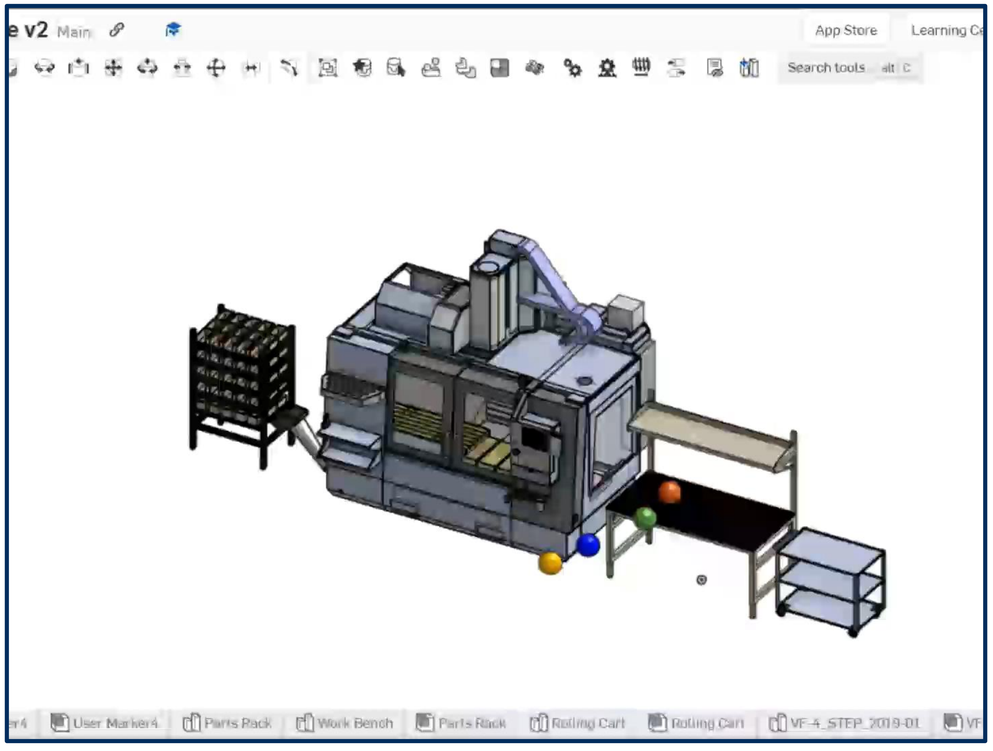
Augmented Reality (AR) is a powerful tool with countless applications that span across many fields, like factory work instructions and other educational mediums. Whether deployed in an industrial or classroom setting, AR provides substantial benefits since it can immerse users into an environment that's content-rich and interactive. AR creates a 3D space that is chock-full of instructional content and allows users to organically learn important concepts in a way that feels intuitive.

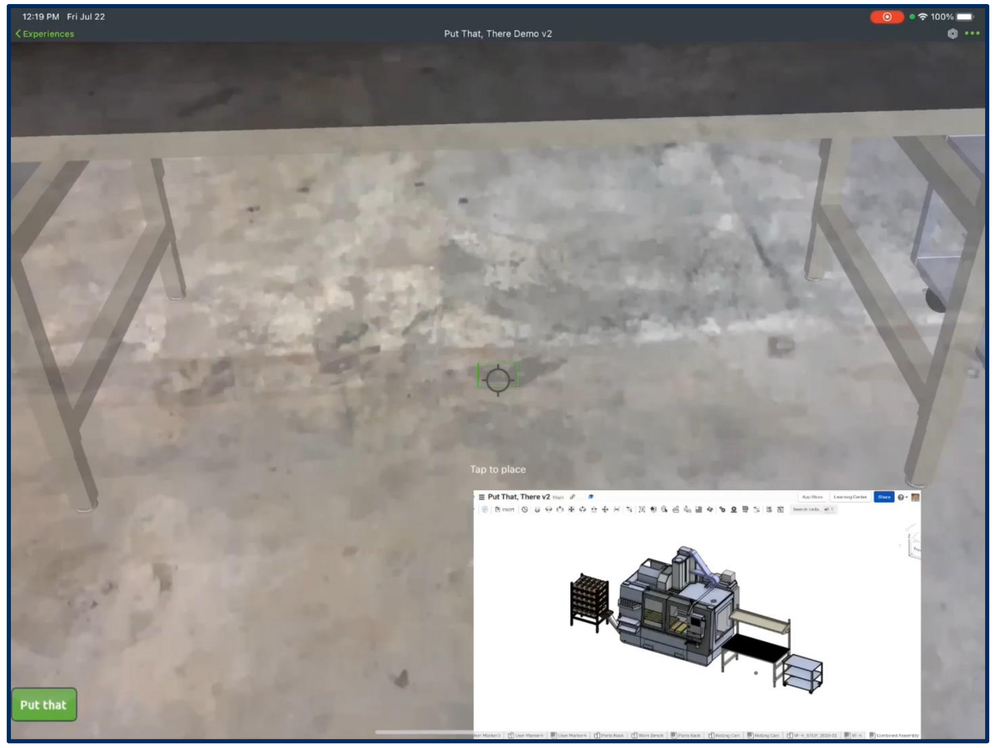
As AR becomes more prevalent in education, it is more important than ever for facilitators of the AR content, such as teachers and factory managers, to monitor the interactions learners are having within the AR space. This monitoring capability is not currently present in the Vuforia AR suite, so a workaround solution was developed. This poster explores how Onshape can be utilized to create digital twins of AR content that update in real-time and are persisted after learners exit the AR application. These digital twins serve as examples of how Onshape & AR can work together to form a new classification of educational content.

VIDEO LINKS

User movement tracking:
https://youtu.be/9HKiSfyI4zI

Equipment reconfiguration:
https://youtu.be/YM6pC7yaTMw





USER MOVEMENT TRACKING

When AR is used in a classroom setting, there are often groups of students interacting with 3D content on their devices and exploring the AR space together. The content the students are exploring is invisible to those without an AR device, so it is difficult for instructors to monitor the students' progress through the learning experience.

By mirroring the AR space *and* the students themselves in an Onshape digital twin, it becomes possible for instructors to observe how each student is learning, no matter where they are located. Regardless whether the students are learning remotely or together in a classroom, instructors can use Onshape to easily see the position of each student relative to the others and simultaneously monitor their activity with the educational content.

EQUIPMENT RECONFIGURATION

Another cutting-edge application for AR is to facilitate workstation reconfiguration by enabling workers to lay out a work area digitally first, before creating it physically. The major advantage of employing AR for this application is that the new layout can be digitally created in the actual location it will exist physically. When digital *defines* physical, downtime is reduced, money is saved, and informed decisions are made.

As the models are repositioned, an Onshape digital twin is updated to mirror the newly created layout and document the newly defined positions in real time. Then, the new workstation layout can be easily viewed and shared by others since now it exists permanently in the cloud. This combination of Vuforia's industry-leading AR technology with Onshape's collaborative, SaaS-based nature creates an unmatched tool to accelerate the rising trend of workstation modularity.

onshape®

JT Frandsen

Onshape Research Symposium Student Poster 2022