How Mixed and Augmented Realities Impact Our World?

Media Futures

On-site or Remote Working?: An Initial Solution on How COVID-19 Pandemic May Impact Augmented Reality Users

Adam Nowak, Yuchong Zhang, Andrzej Romanowski, Morten Fjeld

As a cutting-edge technique requiring high-precision equipment, augmented reality (AR) and its users are influenced by the ambient environment. With the tremendous effect brought by COVID-19 pandemic, most people have shifted from on-site working to remote working. In this study, we propose an initial solution to explore the impact of COVID-19 pandemic on AR users working in these two situations. We develop a prototype application facilitated with gamification process in which users are requested to play an AR game in headset both in on-site and remote working environments. This game, which is highly dependent on the ambient environment, enables people to memorize, distinguish, and place virtual objects when immersing themselves into different surroundings with distinct distractors. We envision to conduct more user studies investigating how COVID-19 affects AR users.

Augmented Reality with Industrial Process Tomography: To Support Complex Data Analysis in 3D Space

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Today, in-situ analyzing, and monitoring are imperative for ensuring successful and healthy industrial processes in confined environments. With the rapid development of digitization, augmented reality (AR) has been utilized for letting people immersively interact with the necessary information. However, there are still knowledge gaps between AR technique and domain users pertaining to effective analysis of complex data. Hence, new solutions empowering domain users would benefit the whole industry. In this study, we report an initial prototype supporting complex data visualization and analysis in entire 3D surroundings within industrial process tomography (IPT). Microsoft HoloLens 2 is equipped for users to interact with the 3D information characterizing the workflow of the industrial process with high immersion.

What does the oscilloscope say?: Comparing the efficiency of in-situ visualizations during circuit analysis

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Traditional measuring devices separate probes from their data visualization, requiring the operator to switch attention between their metering and result frequently. We explored the efficiency of four different visualization modalities during a circuit analysis task that utilizes the output of an oscilloscope. We argue that the spatial alignment of an oscilloscope's display and probe interferes with the cognitive processing of data visualizations, hence increasing the probability of errors and required time. We compared a fixed placed oscilloscope, in-situ projections, user positioned tablets, and head-mounted display while measuring completion times, subjective workload, number of errors, and personal preferences after each task. Results indicate that the oscilloscope produced the lowest completion time compared to other modalities.

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