

Title: Mixed Reality Substation

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How Mr & VR can be used in electrical substations?

The approach in the application of this concept, in a real use case in an electrical substation, involves a bridge between MR and VR technologies, for a multi-user and multi-platform remote collaboration, supported by 5G communications and Edge Computing to manage visualisation and interaction through a cloud video-audio streaming.

Why should we integrate AR into substation environment?

It is clear that by integrating AR into substation environment, its maintenance activities will be simplified and will enable unambiguous identification of components while presenting real-time measurements data, thus easing substation monitoring. 4.1. Architecture There were a few iterations of the AR application prototype.

What is augmented reality & mixed reality?

In recent years, augmented reality (AR) and mixed reality (MR) technologies and devices (e.g., Google Glass [1], Microsoft Hololens [2]) have introduced a significant amount of technological hype by offering the ability to augment a user's real-world vision field with contextual information.

Can AR technology be used for substation maintenance?

AR technologies are used in in substation environments in [17, 18]. Nevertheless, AR is used for simulation and training purposes in both articles and none of the already mentioned articles deals with process related SCADA information used for substation maintenance purposes as proposed in this paper. 3.

How are electrical substations controlled?

Most electrical substations are remotely monitored and controlled by using Supervisory Control and Data Acquisition (SCADA) applications. Current SCADA systems have been significantly enhanced by utilizing standardized communication protocols and the most prominent is the IEC 61850 international standard.

How can a substation environment be scanned?

The substation environment can be scanned by using a device with a camera. The application uses an instance of the Vuforia library to process each frame image from the camera. Once a marker is detected in a frame, the Vuforia library also starts processing the VuMark and decodes the string data encoded in the VuMark.

Siemens and Sony have partnered to launch a mixed-reality headset to power the industrial metaverse. The pair unveiled at CES 2024 the ...

The Metaverse [Mystakidis 2022], represents a universe beyond reality, where the boundaries between the physical and digital realms merge seamlessly. It exists as a continuous and ...

Mixed Reality (MR) technology provides an innovative remote assistance solution for power substation operation and maintenance by integrating virtual information with the real ...

Predictive Maintenance and Mixed Reality are two enabling technologies, which enable effective ways to support future maintenance work in factories. Predictive maintenance ...

With the increasing complexity and specialization of substation operation and maintenance (Q&M), traditional training methods are insufficient to meet the demands of ...

Augmented reality (AR) mixed (MR) techniques matured enough to provide new possibilities displaying relevant wherever needed. This paper presents a novel methodology for visualizing ...

As manufacturers get more familiar with augmented and virtual reality, they are leveraging the technology for use cases in work instructions, ...

The invention discloses a transformer substation intelligent operation and inspection auxiliary system man-machine interaction method based on a mixed reality technology, which ...

Mixed Reality supported maintenance phase In the future, the maintenance phase of the plant is to be supported by Mixed Reality, enabling damages to be determined during ...

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The integration of the maintenance systems and mixed reality techniques discussed here focuses on the development of data visualization. The mixed visualization will allow assist ...

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The introduction of emergent technologies, such as Virtual Reality (VR) and Augmented Reality (AR), is offering new solutions for the railway's environment for both ...

The use of Mixed Reality (MR) technology in power substation operations and maintenance has greatly enhanced the efficiency of equipment inspections, fault diagnosis, ...

With the help of augmented reality equipment and yolov8 target detection network, this paper applies the improved target detection algorithm to mixed reality, realizes the ...

