

A NOVEL AUGMENTED REALITY SYSTEM TO SUPPORT VOLUMETRIC VISUALIZATION IN INDUSTRIAL PROCESS TOMOGRAPHY

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ABSTRACT

Augmented Reality (AR), as a variation of Virtual Reality (VR), has been proved useful for decades. However, it is not widely utilized in most industries. To fill the gap between this technique and industrial usage, we propose a novel AR system in the context of industrial process tomography (IPT). As the pioneering AR deployment in IPT, this system offers a new solution to underpin the onsite data analysis regarding volumetric visualization. In our work, an endeavor to provide intelligent control for an industrial drying system is pursued by using microwave tomography (MWT), a breed of IPT, as an imaging modality. Here, the AR system is integrated with the MWT for post processing of its volumetric images, containing critical information of the industrial process. The core part of the AR system is implemented by an interactive mobile app that is supported on iOS/Android platforms. The overall system is generalized by four distinctive findings: interactivity, mobility, information richness, and mutual collaboration. Our proposed system opens the horizon of leveraging AR in IPT to benefit domain-related users regarding onsite data analysis and visualization.

KEYWORDS

Augmented reality, volumetric visualization, industrial process tomography, microwave tomography, interactivity.