RESTART – Industrial network resource management for optimizing multimodal XR-assisted productivity

Background

In an era defined by rapid technological advancements, multimodal extended reality (XR) has emerged as a groundbreaking concept that transcends the boundaries of our physical reality. Such key Metaverse technologies pose novel challenges to the network and data management layers, which would need to be architected according to radically new design concepts. As industries increasingly embrace digital transformation, there is a growing need to explore the integration of concepts such as the Metaverse into industrial and production environments. This innovative synergy holds the potential to revolutionize how work is conducted, enabling unparalleled efficiency, collaboration, and resource optimization. The fusion of technologies like visual and haptic XR, Ultra-Reliable Low Latency Communication (URLLC)/Enhanced Mobile Broadband (eMBB), and the understanding of human sensory perception limits presents an exciting frontier for enhancing industrial processes, providing one of the most concrete applications of the emerging Metaverse concepts. Therefore, exploring the role of novel Metaverse features (based on the integration of the mentioned technologies) in optimizing resources within industrial and production settings, with a keen focus on improving the productivity Key Performance Indicators (KPIs) of industrial cyber-physical and human resources, brings forward numerous research challenges in the context of computation and communication scheduling.

Topic description

The topic focuses on algorithmically investigating the intricate interplay between abstractions of cutting-edge technologies such as visual and haptic XR, URLLC/eMBB networking, perceptual psychology concepts and productivity KPIs to explore the potential of the "Metaverse integrations" of these technologies in industrial domains. The primary focus will be on identifying and implementing computing and communication resource optimization strategies that would be able enhance the efficiency and effectiveness of industrial production processes. By harnessing the power of immersive XR experiences, ultra-reliable communications, and an understanding of human perceptual thresholds, the topic will focus on revolutionizing the way industrial human resources operate in virtually augmented cyber-physical production environments and contribute to improving their productivity KPIs.

Type of prospect positions

We plan to open positions at the level of Researcher on this topic.

Funding and partnerships

Candidate profile

Ideal candidates should have obtained a PhD degree (or have a 3-year professional experience in research) in Computer Science, Wireless Networking, Computer Engineering, Telecommunications Engineering, or closely related disciplines, and a proven track record of excellent scientific publications. Preferably, the PhD should be in Industrial Networking, Optimization, Distributed Computing, Artificial Intelligence.

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