IEEE Transactions on Visualization and Computer Graphics, vol.31, no.10, pp.8359-8371, October, 2025.

Virtual, Augmented, and Extended Reality Applied to Science Communication: A Systematic Literature Review

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Abstract-

Extended reality (XR)—which includes virtual reality (VR) and augmented reality (AR)—is becoming increasingly popular for sharing scientific knowledge. This research evaluates the state-of-the-art in XR for scientific communication. Our two-phase methodology began with a Systematic Literature Review, identifying 94 relevant articles and conference papers from the last decade (2013- 2023) sourced from the Web of Science and SCOPUS databases. These publications show scholars and practitioners using XR to convey scientific findings, foster awareness, ignite interest, shape opinions, and enhance understanding. In the second phase, we applied data clustering and analysis. Our findings highlight a significant increase in XR studies over the last decade, with the XR technologies used for communication (N = 24), dissemination (N = 23), educational/training (N = 21), and decision-making (N = 10). Our results indicate the need to establish clearer guidelines for aligning science communication and to create more possibilities to publish peer-reviewed research in.

Index Terms- scientific communication, public understanding of science, extended reality, XR, virtual reality, VR, augmented reality, AR, Mixed Reality, MR.

Citation:
Romero-Luis, J.; Rubio-Tamayo, J.L.; Sánchez-Acedo, A.; Wuebben, D.L.; Codesido-Linares, V. "Virtual, Augmented, and Extended Reality Applied to Science Communication: A Systematic Literature Review", IEEE Transactions on Visualization and Computer Graphics, vol.31, no.10, pp.8359-8371, October, 2025.