



## Enchanted by Digital Twins: Multimedia Convergence for Citizens' Well-Being

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A digital twin is a digital replication of a living or non-living physical entity. By bridging the physical and the virtual worlds, data is transmitted seamlessly allowing the virtual entity to exist simultaneously with the physical entity. A digital twin facilitates the means to monitor, understand, and optimize the functions of the physical entity and provides continuous feedback to improve quality of life and wellbeing of citizens in smart cities. In this talk, we will discuss the convergence of multimedia technologies (AR/VR, AI, IoT, BigMM Data and 5G-Tactile Internet) towards the digital twin for health care. We will conclude by describing the challenges and the open research questions.

### Bio:

Abdulmotaleb El Saddik, (FIEEE) is Distinguished Professor and University Research Chair in the School of Electrical Engineering and Computer Science at the University of Ottawa. He completed his Dipl.-Ing. and Dr.-Ing. from the Technische Universität Darmstadt, Germany. He is the director of the Multimedia Communications research Laboratory and the Medical Devices Innovation Institute.

Dr. El Saddik is an internationally-recognized scholar who has made strong contributions to the knowledge and understanding of multimedia computing, communications and applications. He is a leading haptics expert, with global recognition for his development of new technologies for real-time multisensory-based identification of humans (biometrics), synchronization of haptics, audio and visual data, Quality of Experience models for multisensory environments, and methods that dynamically compute the confidence levels of sensory data in a collaborative environment. His work looks toward the establishment of Digital Twins using AI, AR/VR and Tactile Internet that allow people to interact in real-time with one another as well as with their digital representation. He has been extremely productive of high-quality research and impact. He is the author of more than 550 peer-reviewed articles and five patents. He is senior Associate Editor of the ACM Transactions on Multimedia Computing, Communications and Applications (ACM TOMM), and IEEE Multimedia (IEEE MM), and Guest Editor for several IEEE Transactions and Journals. He is the author of the book Haptics Technologies: Bringing Touch to Multimedia.

He received 7 Best Paper Awards for peer-reviewed, published articles. He has obtained research grants and contracts totaling more than \$20 M. He has supervised more than 120 researchers and received several international awards including the Friedrich Wilhelm Bessel Award from the German Humboldt Foundation and the IEEE Instrumentation and Measurement Society Technical Achievement Award, ACM Distinguished Scientist, Fellow of the Engineering Institute of Canada, Fellow of the Canadian Academy of Engineers and Fellow of IEEE, IEEE I&M Technical Achievement Award, IEEE Canada C.C. Gotlieb (Computer) Medal and A.G.L. McNaughton Gold Medal for important contributions to the field of computer engineering and science.