

## Keynote Speaker II

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# The Metaverse: AI-Powered Universe of Persistent Digital Twins

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*Abstract*—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 enabling the virtual entity to coexist with its real counterpart. Utilizing AI, the digital twin monitors, comprehends, and optimizes the functions of the physical entity, offering continuous insights to enhance citizens' quality of life and well-being.

A Metaverse encompasses an interconnected realm of persistent Digital Twins. Within this research initiative, we delve into designing and developing frameworks, methodologies, and strategies that converge multimedia technologies (AR/VR, AI, IoT, Big Data, Cybersecurity, and 5G) to shape the Metaverse. We will explore techniques for sensory data fusion and streaming within the Metaverse context, addressing unresolved questions and potential avenues for further research and development.

#### I. BIOGRAPHY

Dr. Abdulmotaleb El Saddik is a Distinguished University Professor at the University of Ottawa and the Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), UAE. His global recognition stems from profound contributions to intelligent multimedia computing, communications, and applications. Serving as Editor-in-Chief of ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM), as well as Associate Editor and Guest Editor for

multiple Transactions and Journals, he influences the scholarly landscape.

With over 600 publications and 10 co-authored books, he has also overseen 150+ researchers and chaired numerous conferences and workshops. His research grants exceed US\$20M, showcasing his dedication to innovation. He is the author of “Haptics Technologies: Bringing Touch to Multimedia.”

Dr. El Saddik's accomplishments extend to fellowships in esteemed organizations like the Royal Society of Canada, IEEE, Canadian Academy of Engineering, and the Engineering Institute of Canada. His laurels include the Friedrich Wilhelm Bessel Award, IEEE Technical Achievement Award, ACM Distinguished Scientist title, and recognition such as the IEEE Canada C.C. Gotlieb (Computer) Medal, A.G.L. McNaughton Gold Medal, and IEEE TCSC Achievement Award for Excellence in Scalable Computing.

