Embodied Intelligence in Electronics:
A new era in circuit design

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Wed, Nov 16 5:30PM (MT)

ZOOM VIRTUAL MEETING

Free and Open to the Public
Pre-registration required

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Linda Katehi is the O'Donnell Endowed Chair in Engineering and a Distinguished TEES Chair Professor of Electronics in the Electrical and Computer Engineering and the Material Science and Engineering departments at Texas A&M, College Station. She is a member of the National Academy of Engineering (NAE), The American Academy for Arts and Sciences, The National Academy of Innovators (NAI), and a Fellow of IEEE. She was the Chair of the President's Committee for the National Medal of Science and the Chair of the Secretary of Commerce's Committee for the National Medal of Technology and Innovation. She is a Fellow and served on the Board of the American Association for the Advancement of Science (AAAS) where she also served as the President of the Engineering Section. She served as a member of the National Higher Education Board, a member of the Higher Education Business Forum, and many other national and international boards and committees. From 2017 until 2020 she served as the President-Elect, President, and Past-President of the (WEPAN) Women in Engineering Professional Advocacy Network.

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Abstract

The future of electronic systems lies in our ability to include intelligence in their design specifications. Incorporating intelligence will demand a change in the way we design electronics. Recent studies on cognition and intelligence have demonstrated that cognitive processes are not disconnected from motor-sensory processes but are directly influenced by the body's interactions with its environment. Intelligence cannot be achieved without a body that can interact with its environment and learn from these interactions. The design of an autonomous system is based on its ability to acquire data via its physical and social interactions with its environment, making mobility and adaptability important physical aspects. An intelligent wireless network of sensors and actuators is a concept that requires a co-design of computer architectures, learning algorithms, materials, robotics, and electronics for sensing and communication. This co-design is not available today but will be needed for the successful implementation of intelligence in systems that will be part of 5G and beyond. This presentation will discuss all the opportunities for bringing intelligence into the design of electronics along with the impacts on existing traditional approaches.

Albuquerque IEEE WIE Public Talk
Co-sponsored by the Albuquerque Section of the Institute of Electrical & Electronic Engineers (IEEE) and IEEE Women in Engineering (WIE)