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Sustainable Computing at Scale

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Organizations across the globe are facing growing pressure to address climate change, and companies providing at scale computing services are no exception. The existing cloud services combined with the more recent growth in machine intelligence are rapidly increasing the demand for compute resources and outpacing hardware efficiency improvements. This talk covers carbon emissions from a computer architecture perspective. It examines the emissions associated with at-scale computing – from the manufacturing of the devices to the grids used to power data centers – and provides insight into architectural solutions that may address carbon emissions. The talk concludes with a discussion of upcoming challenges facing the computing industry as sustainable solutions such as renewable energy intersect with an ever-growing power demand from data centers.

Srilatha (Bobbie) Manne is a Senior Fellow in the Research and Advanced Development group at Advanced Micro Devices (AMD). She received her PhD from the University of Colorado, Boulder, and has worked on low-power/high-performance architecture for over two decades in both industrial research labs and product teams at companies such as Microsoft, Meta, Cavium and Intel. More recently, she has investigated efficiency and sustainability in hardware design and at scale computing. She has over 30 publications and is the recipient of the International Symposium on Computer Architecture "Test of Time" award which recognizes papers that had the most impact on the field. She is also a co-inventor on nearly 40 patents pending or granted.

Presenter: Dr MANNE, Shrilatha (Bobbie) (AMD)