

HBM D-RAM and beyond

Shekhar Borkar, Qualcomm

This module of the short course describes High Bandwidth DRAM memory (HBM). It starts with an introduction to a memory subsystem, motivation for the HBM memory, and how it fits in the overall memory subsystem. It describes principles of HBM, namely architecture, organization, input/output (IO), and benefits of HBM over other types. Then it covers state-of-the-art in HBM, system level design, some anecdotes, and summarizes.

Shekhar Borkar is Sr. Director of Technology at Qualcomm Inc, a retired Intel Fellow, and an IEEE Fellow. He worked on the 8051 family of microcontrollers, supercomputers, and high performance & low power digital circuits research. He has authored over 100 peer reviewed publications in conferences and journals, over 60 invited papers and keynotes, five book chapters, and has more than 60 issued patents. Shekhar was an adjunct faculty at Oregon Graduate Institute, taught graduate course on VLSI design for more than 10 years. His research interests are low power, high performance digital circuits and system level optimization. Shekhar holds M.Sc. in Physics from University of Bombay in 1979, and MSEE from University of Notre Dame in 1981.