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भारतीय विज्ञान संस्थान

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Narrowing the energy efficiency gap between artificial and natural intelligence

Abstract: Improvements in compute performance have been a major enabler of the advances in AI over the past decade. However, we are at a point where demands from future AI workloads will far outpace expected improvements in hardware, threatening to greatly impede continued progress in the field of AI. This talk will review the challenges posed by AI workloads across the computing spectrum, examine the often-cited efficiency gap between artificial intelligence and biological intelligence, and provide a possible roadmap to narrowing this gap, including in-memory computing, algorithm-hardware co-design and neuromorphic computing.

Brief Bio: *Anand Raghunathan is Silicon Valley Chair Professor in Purdue University's School of Electrical and Computer Engineering. He holds the C. R. Muthukrishnan Visiting Distinguished Chair Professorship in Computational Brain Research at IIT Madras. He serves as Associate Director of the SRC/DARPA Center for Brain-inspired Computing and co-director of the Center for a Secured Microelectronics Ecosystem. His research interests include energy-efficient artificial intelligence and computing with beyond-CMOS devices. He received nine best paper awards, a ten-year retrospective paper award, NEC's Technology Commercialization Award, IBM and Qualcomm Faculty Awards, and the MIT TR35 Award. He received a B. Tech. (and Distinguished Alumnus Award) from IIT Madras and a Ph.D. from Princeton University. He is a Fellow of the IEEE.*