Neuromorphic computing promises to dramatically improve the efficiency of certain computational tasks, such as perception and decision making. While software and specialized hardware implementations of neural networks have made tremendous progress, both implementations are still many orders of magnitude less energy efficient than the human brain. This talk will introduce the current state of neuromorphic computing and discuss the recent hardware advances that have bolstered the progress of machine learning. I will discuss how a new superconducting platform, based on dynamically reconfigurable magnetic Josephson junctions with spiking energies less than one attojoule, could lead to large-scale neuromorphic systems with better energy efficiency than the human brain.

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