An All-in-One Bioinspired Neural Network

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Abstract:
The future of energy-efficient computing hinges on the seamless integration of sensing, computing, and storage capabilities within a single device, minimizing reliance on cloud servers and reducing both latency and unreliability. I will present the development my work on developing a 7 × 7-pixel edge device utilizing 196 integrated 2D MoS2 memtransistors. This device exemplifies the potential of multifunctional two-dimensional materials to perform in-sensor and near-sensor computing and storage tasks, thereby circumventing the fundamental bottlenecks of the conventional von Neumann architecture. Our device showcases not only integrated capabilities, but also superior device-to-device performance consistency.