

Machine Learning Accelerators for IoT2 Devices

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Per Bell's Law, the next class of computing systems will be the Internet of Tiny Things (IoT²), which extends current IoT devices to smaller form factors and greater ubiquity. To this end, over the past decade we have developed the Michigan Micro Mote (M³) for mm-scale wireless sensing applications. M³ is an ideal platform for implementing intelligence in IoT² devices. One main application area we have focused on is in audio sensing. We have developed ultra-low power always-on wakeup devices that can detect various objects in the environment and more recently the lowest power human voice activity detection reported to date. This work is currently being extended to keyword spotting and natural language processing, at unprecedented power levels. These approaches harness lightweight neural networks for accurate classification within nanowatt power budgets.