Always-On Voice powered by custom AI Silicon

Founded in 2017 and headquartered in Irvine, Calif., Syntiant's ultra-low-power AI processing solution enables Always-On Voice (AOV) control for consumer devices at power levels that are orders of magnitude lower than current market products. Syntiant® Neural Decision Processors™ (NDP100, NDP101) offer highly accurate wake-word detection in a tiny package with near-zero power consumption. Production-ready software support makes the integration into devices as small as earbuds to as large as laptops rather painless. For reliable voice control and the best customer experience, the NDP10x series delivers a power-performance combination unmatched by any other solution. Syntiant is backed by some of the world's strongest strategic investors, including Intel Capital, Microsoft M12, Bosch Ventures, and the Amazon Alexa Fund.
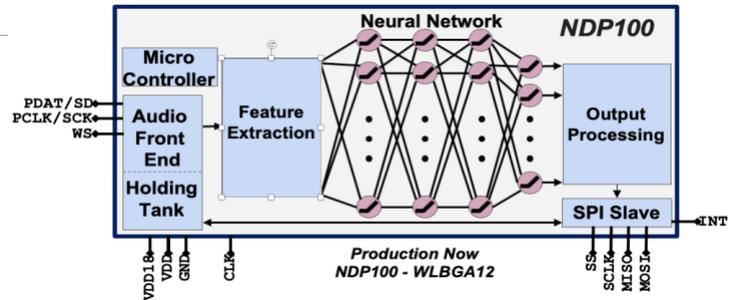
Problem to be solved, technical approach and its a novelty: Traditional semiconductor solutions are unable to support advanced machine learning applications at the device level today because of the high power costs of moving and processing data. Focused investments are being made in silicon architectures to reduce this power largely by building chips with memory closer to the computational units. These techniques are often costly and complex, and while they can reduce the data movement penalties, they cannot eliminate them.

Built from the ground up to run deep learning algorithms, Syntiant's architecture achieves breakthrough performance by slashing memory power consumption. Syntiant's processors enable devices to be approximately 200x more efficient, providing 20x the throughput over current low-power MCU solutions, enabling larger networks at significantly lower power.

Product Specifications:

◈ Power consumption: Less than 140µW

◈ Package size: 1.4mm X 1.8mm

◈ Neural Processing: Neural network with over 500k parameters for sensor-based applications

◈ Ease of Use: Multiple, flexible methods to access neural processing engine; full customization of application and post-processing

◈ Key Applications:

⇨ Keyword speech interface

⇨ Optimized for voice; prepared for any sensor
⇨ Wake-word detection   ⇨ Event detection
⇨ Speaker identification   ⇨ Other 'low-speed' tasks

Processor	NN Topology	OPS	Params	G10 Accuracy	Energy/ Frame	Inf. Time	Frames/ sec
*NDP10x	SYN FC	1.1M	557K	94%	3.4uJ	10 ms	100
Ambiq Apollo 3 Blue	TinyConv	756k	18k	66%	91uJ	268 ms	3.7
STM32L476	Small FC	159 k	80k	85%	139uJ	41.5 ms	24
STM32F476	Small FC	159 k	80k	85%	414uJ	11.8 ms	85
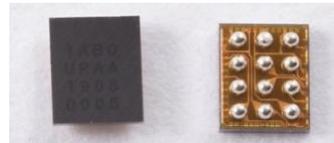
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