

Make Intelligence Smarter

Xylo™, an ultra-low power low-dimensional signal processor



About Xylo™

The Xylo™ family enables always-on real-time temporal signal processing and recognition applications, at ultra-low-power (100–200μW). Coupled with a range of efficient direct sensor interfaces, Xylo™ powers the next generation of intelligent edge sensory processing. Xylo™Audio enables audio home security, human speech detection and understanding, audio scene analysis and industrial audio applications.

All Xylo™ family devices feature an efficient, fully configurable spiking neural processor, for flexible application development and deployment. Xylo™ is highly suited for intelligent processing of a variety of signals, including micro-electromechanical systems (MEMS) microphones, temperature sensors, pressure sensors, vibration sensors, acceleration sensors, gyroscopes, electromyography (EMG), electrocardiography (ECG), and more.

Xylo™'s SNN core simulates up to 1000 leaky integrate-and-fire (LIF) spiking neurons for configurable and flexible inference applications. Xylo™Audio combines an energy-efficient and configurable audio encoding front-end with the efficient SNN inference core, to implement almost any audio analysis task.

Applications

Audio Detection

- Speech detection and analysis
- Scene classification
- Keyword and command detection

Smart Security

- Glass break and audio event security detection

Industrial Testing

- Industrial fault monitoring and predictive maintenance

Smart Agriculture

- Smart animal ear tags
- Behavior recognition

Wearable Devices

- Behavioral state detection
- Gait detection and analysis
- Breath detection
- ECG and EMG signal analysis



Baby crying detection based on Xylo™ Audio

an ultra-low power low-dimensional
signal processor



Baby crying detection

Xylo™ Audio enables always-on, intelligent monitoring for baby distress — alerting you immediately when something is wrong.

Integrated into an audio monitoring system, Xylo™ Audio detects baby cries and other household sounds of interest, in real time and at sub-milliwatt power levels.

The Xylo™ series of low-dimensional natural signal processors from SynSense processes temporal signals from a range of sensors. Xylo™ Audio is a low-power, always-on mixed-signal AI chip based on SNN technology, ideal for processing audio signals. It is highly compatible with a range of microphone technologies, and Xylo™ Audio's efficient audio front-end (AFE) converts audio input signals for analysis.

Xylo™ Audio and the example crying detection SNN model, combined with a regular analog microphone, enables high-precision baby crying detection/recognition within a range of 1.5 meters.

Based on Xylo™ Audio, sound events can be efficiently monitored within a designated range with sub-milliwatt-level ultra-low power consumption and millisecond-level ultra-low latency. SynSense empowers its partners in the infant care and companion toy industries with real-time sound detection and recognition capabilities.

Key benefits

Ultra low cost

System cost <\$2

Fast response

Response time <50ms (typical applications)

Ultra-low power consumption

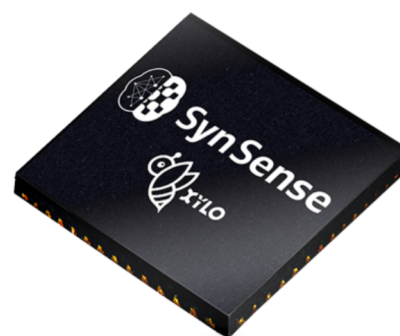
Power consumption <1mW (typical applications)

Privacy

Pure end-to-end computing of data streams:
no data transfer to the cloud

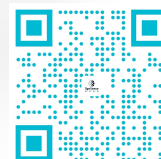
Highly integrated



On-chip integration of sensors and processors
High neuron density



Specifications

Circuit	Synchronous digital circuit
Neurons	1,000
Power consumption	<1mW



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