# Make Intelligence Smarter

Speck™, an all-in-one dynamic vision SoC

## About Speck™

Speck™ is a fully event-driven neuromorphic vision SoC. Speck™ supports large-scale spiking convolutional neural networks (sCNNs) with a fully asynchronous chip computational architecture.

Speck™ is fully configurable with up to a capacity of 320k neurons and integrates a state-of-art dynamic vision sensor (DVS), enabling fully event-driven, real-time, highly integrated solutions for a range of visual applications. For most applications, Speck™ provides intelligent visual processing at milli-Watt power levels, and with a response latency of down to a few ms.

## Features

### Power consumption <5mW

100-1000x lower than GPU solutions
An AA battery can power Speck™ for up to 100 days
Fully-asynchronous, always-on

### Application latency  <5ms

Real-time human interaction
Low latency / fast reaction use cases

### Privacy security

On-chip vision processing, no video stream recorded or transmitted
For privacy-sensitive applications

### Ultra-light weight

World's lightest complete smart vision system
Ubiquitous vision processing for any device

# Approach detection solution
## based on Speck™ SoC
an all-in-one dynamic vision SoC

SynSense

## Approach detection solution

SynSense's dynamic vision SoC series, Speck™, combines dynamic vision sensing and event-driven computing to provide a real-time, integrated and low-power dynamic vision solution for computing and sensing in edge applications.

Speck™ senses moving objects within 3 meters, and can detect and identify the approach and departure intentions of humans in real time with millisecond response time. SynSense's Speck™ chip uses event-driven technology to achieve efficient perception and computation, avoiding the waste of energy and computational resources caused by data redundancy and repeated computations in traditional vision systems.

SynSense's technology and products are widely used in smart home, smart security, smart logistics and other fields. Based on customer requirements for edge sensing and computing applications, SynSense empowers partners to build real-time, integrated, and low-power dynamic vision solutions for smart home, smart security, and other industries.

## Applications

- Smart door locks
- Smart buildings
- Smart lighting
- Smart security
- Car sentry

- Gate and access management
- Headcounting in shopping malls, museums, banks, etc.
- People control in public places

## Key benefits

**Ultra low cost**
System cost <$7

**Fast response**
Response time <50ms (typical applications)

**Highly integrated**
On-chip integration of sensors and processors
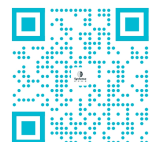High neuron density

**Ultra-low power consumption**
Power consumption <5mW (typical applications)

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

## Specifications

| | |
|---|---|
| Neurons | 320,000 |
| Integration | 19,800/mm$^2$ |
| Resolution | 128*128 |
| Dynamic range | 90dB |
| Power consumption | <5mW (typical) |

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