Ambiq: Enabling AI Everywhere with SPOT

July 2025
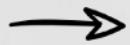
ambiq → ambient + IQ

Our Mission:

To enable intelligence (AI and beyond) everywhere by delivering **THE LOWEST-POWER SEMICONDUCTOR SOLUTIONS**

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AI Is Changing the World...and Quickly Advancing to the Edge

Edge AI

Cloud-Based AI

Edge AI

Heart and Sleep Analytics

On-Wrist Personal Trainer

Package Loading and Handling

Smart Hearing Enhancement

Visitor & Person Identification

Live Translation

Smart Speaker Virtual Assistant

Remote Patient Monitoring

Failure Prediction

Claude

ChatGPT Gemini

deepseek Llama

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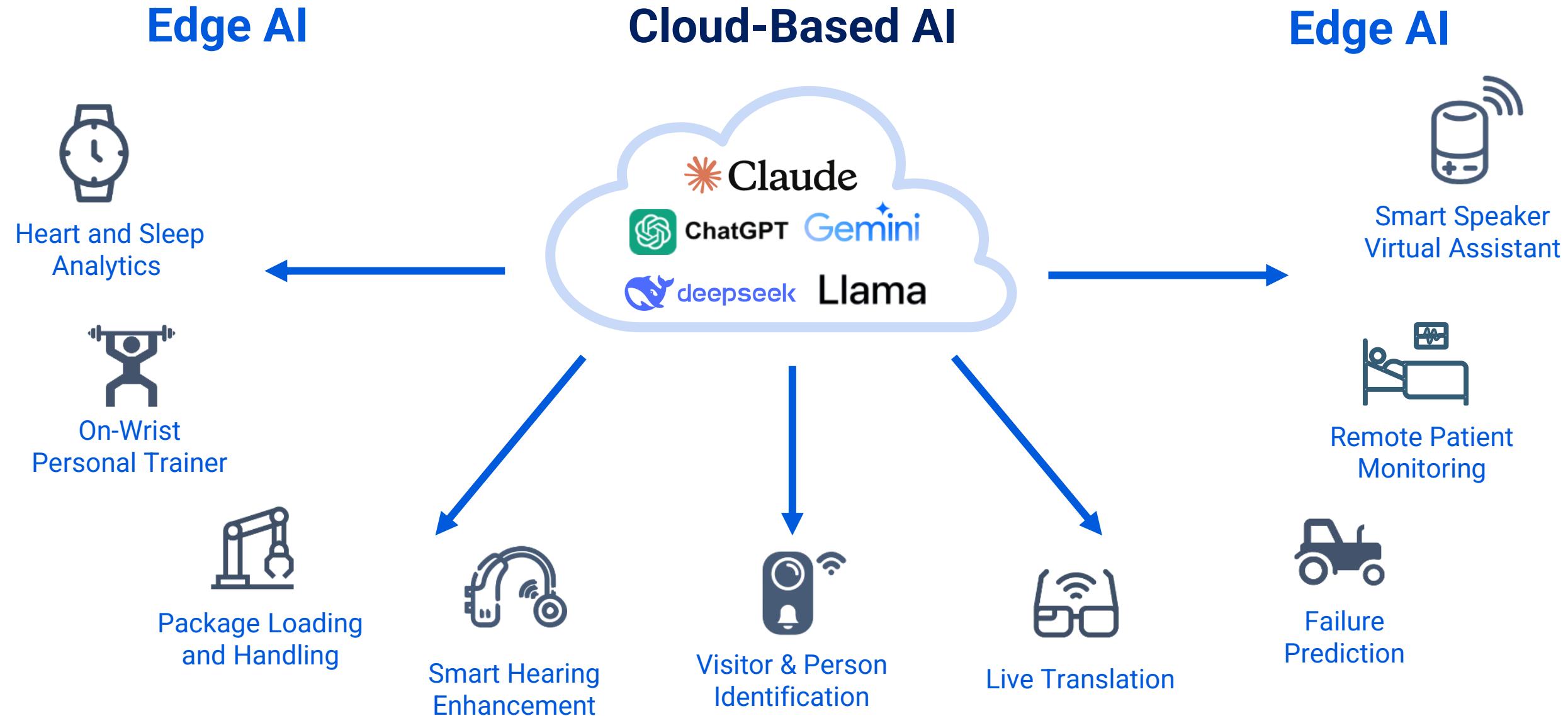
Latency, Energy, Privacy, and Cost Demand That AI Move to the Edge

CLOUD AI

Inference Happens Here

Key Benefits Driving AI to the Edge

- Lower Latency
- Reduced Energy
- Higher Availability
- Increased Privacy
- Reduced Cost

EDGE AI

Complete AI Stack at the Edge

Inference Happens Here
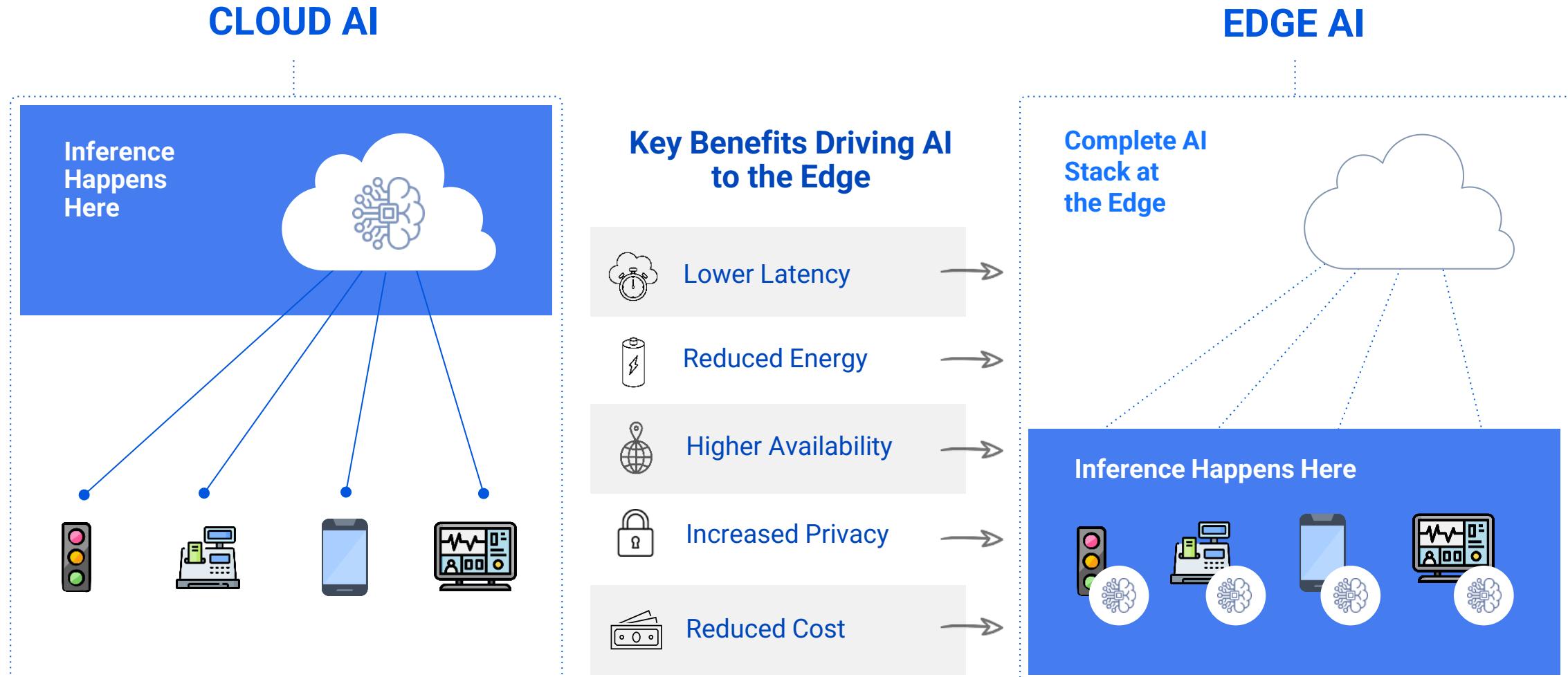
Power Is Important for AI in the Cloud but Is Existential at the Edge

> *"An energy breakthrough **is necessary for future artificial intelligence**, which will consume vastly more power than people have expected"*
>
> *"OpenAI CEO Altman Says in Davos That the Future of AI Depends on an Energy Breakthrough," Reuters, January 16, 2024*

AI Power Needs
Threaten the Total Cost of Ownership of Datacenters
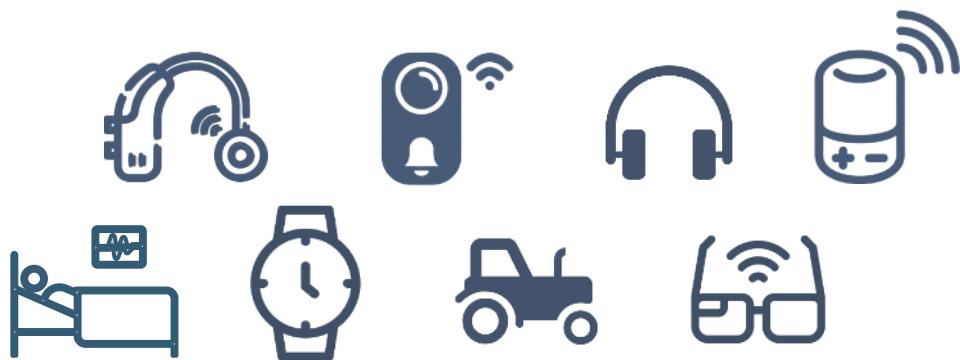
AI Power Needs
Are Existential to Edge AI

Ambiq: Enabling AI Everywhere with SPOT

Key Facts

📅 **Founded:** 2010

🏢 **Global HQ:** Austin, TX

**Other Key Locations:** Japan, Poland, Singapore, Taiwan, China

👥 **Key Investors:** Kleiner Perkins, EDBI, ARM, VentureTech, Conductive Ventures, Fujitsu Semiconductor Memory Solutions

Key Metrics

190 Employees[1]

80+ Patents Issued and Pending[2]

200+ Customers[3]

270M+ Units Shipped[4]

Key Market Segments

Personal Devices

Medical / Healthcare
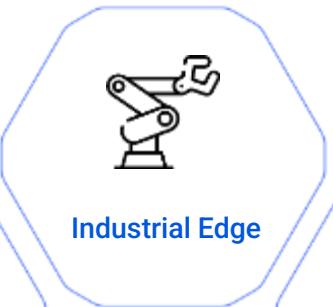
Industrial Edge

Smart Home & Buildings

Key Customer Wins

Smart Rings

Smart Watches

ECG Heart Monitoring Devices

AR Smart Glasses

Hearing Devices

Patient Monitoring

Smart Industrial Sensors

Animal Husbandry and Smart Farming

Source: Company information.
1. *As of 3/1/2025*
2. *As of 1/31/2025*
3. *Since June 2010*
4. *Since June 2010*

SPOT Platform For Next-Gen Power-Efficient Edge AI

Sub-threshold Power Optimized Technology (SPOT)

Energy ~ (Voltage)²

Voltage / Time

Conventional Circuit Design

Time
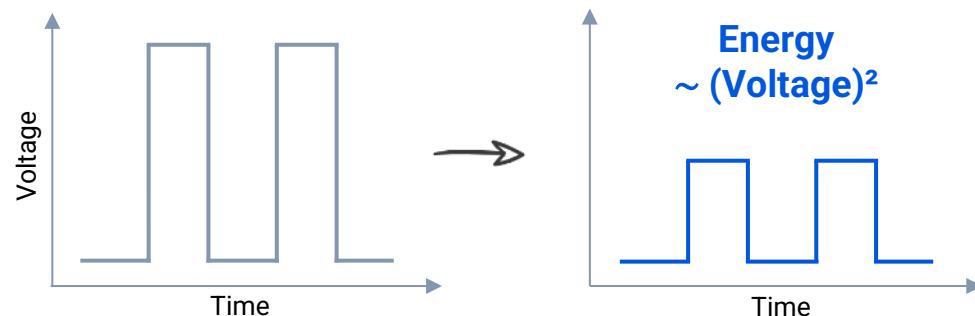
SPOT

SPOT Is Designed to Solve the Extreme Challenges of Sub-threshold

Manufacturing Variations

Voltage Variations

Temperature Variations

SPOT

Production Technologies

Memory Technologies

AI Acceleration

Digital Techniques

Analog Techniques
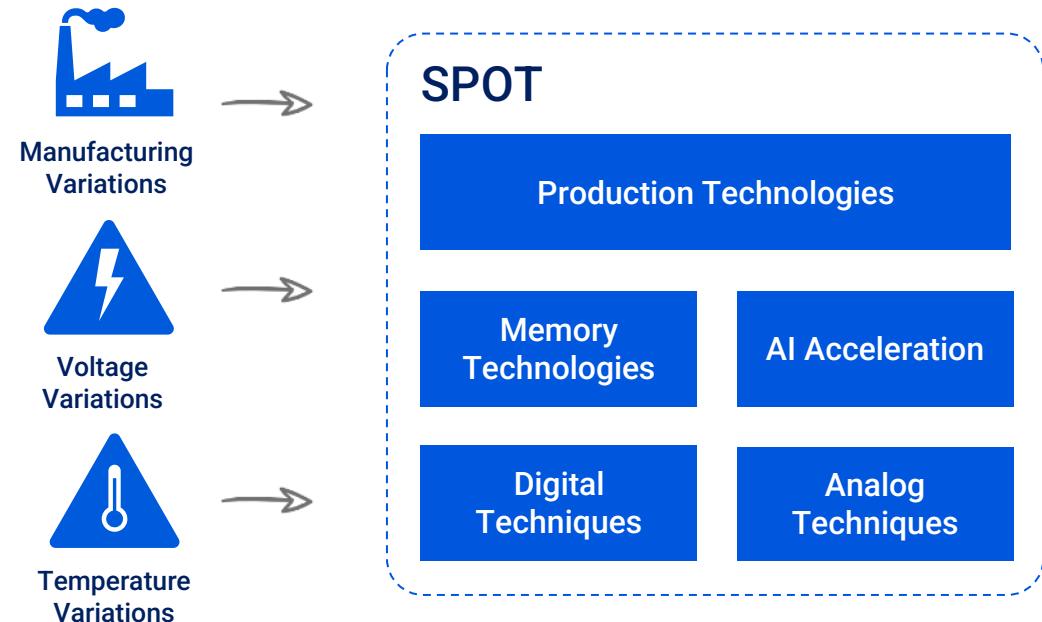
Strategic Partnerships and IP Protection

>80 Patents Issued/Pending Globally[1]

TSMC Strategic Partnership

Proven SPOT Design IP

SPOT Delivers a 2-5X Power Advantage

Replace Traditional Algo with AI Model

Enable Larger AI Models

Run Faster Inference Rates

1. As of 1/31/25

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SPOT Is the Foundation for a Full Stack Edge AI Solution

AI SDK

| heartKIT AI | speechKIT AI | audioKIT AI | physioKIT AI | neuralSPOT Edge | AI Profiler |

SOFTWARE

blueSPOT   secureSPOT   graphiqSPOT   turboSPOT   SPOTManager

neuralSPOT AI SDK

AmbiqSuite SDK Hardware Abstraction Layer   AI Inference Runtimes

HARDWARE

Apollo SPOT Hardware

| Digital | Analog | Memory | Production Technology | AI Acceleration | Power Optimized Architecture |

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SPOT Is a Platform That Enables a Broad Range of Products and Markets

Personal Devices

Industrial Edge

Smart Homes / Buildings

Medical / Healthcare

AR / VR

Mobile

Automotive

Datacenter

| MCU | Wireless | DSP | Application Processor | GPU | ISP/Vision | PMIC | NPU | .... |

SPOT

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AI Usage on SPOT Is Growing Quickly (In Volume and Complexity)

Software-Based AI (2018-Now)

Customers deploying AI on Apollo3 and 4

✓ Improved health analytics
✓ Speech processing
✓ Voice-based UI

Vector-Accelerated AI (2024-Now)

Apollo5 customers planning/implementing AI

✓ AI-enhanced voice calls
✓ Intuitive voice-based UI
✓ Image analytics

NPU-Enabled AI (Next Gen)

Growing new high-end use cases

✓ Video analytics
✓ Full speech recognition
✓ Domain-specific language models

Proven Demand From Blue-Chip End Customers

1st Gen
Atomiq
with NPU+HBM

atomiq

5th Gen
Apollo
vector
acceleration

Apollo4 Lite

Apollo4 Plus

4th Gen
Apollo
first audio

3rd Gen
Apollo

265 M+
Cumulative
devices sold

apollo

1M
Cumulative Apollo
SoC parts sold

2nd Gen Apollo
neural networks
first deployed

1st SPOT SoC
10X lower power

100M
Cumulative Apollo
SoC parts sold

Founded

2010	2015	2016	2017	2018	2020	2022	2023	2024
	IDEMIA	FOSSIL	GARMIN	HUAWEI	FITBIT	OPPO	XIAOMI	BOAT	COROS
		CITIZEN				SUUNTO		NOISE	

Ambiq's Edge AI Focus Is Broader Than GenAI Alone

Artificial Intelligence

Machine Learning

Deep Learning

Gen AI

Ambiq's Edge AI Focus
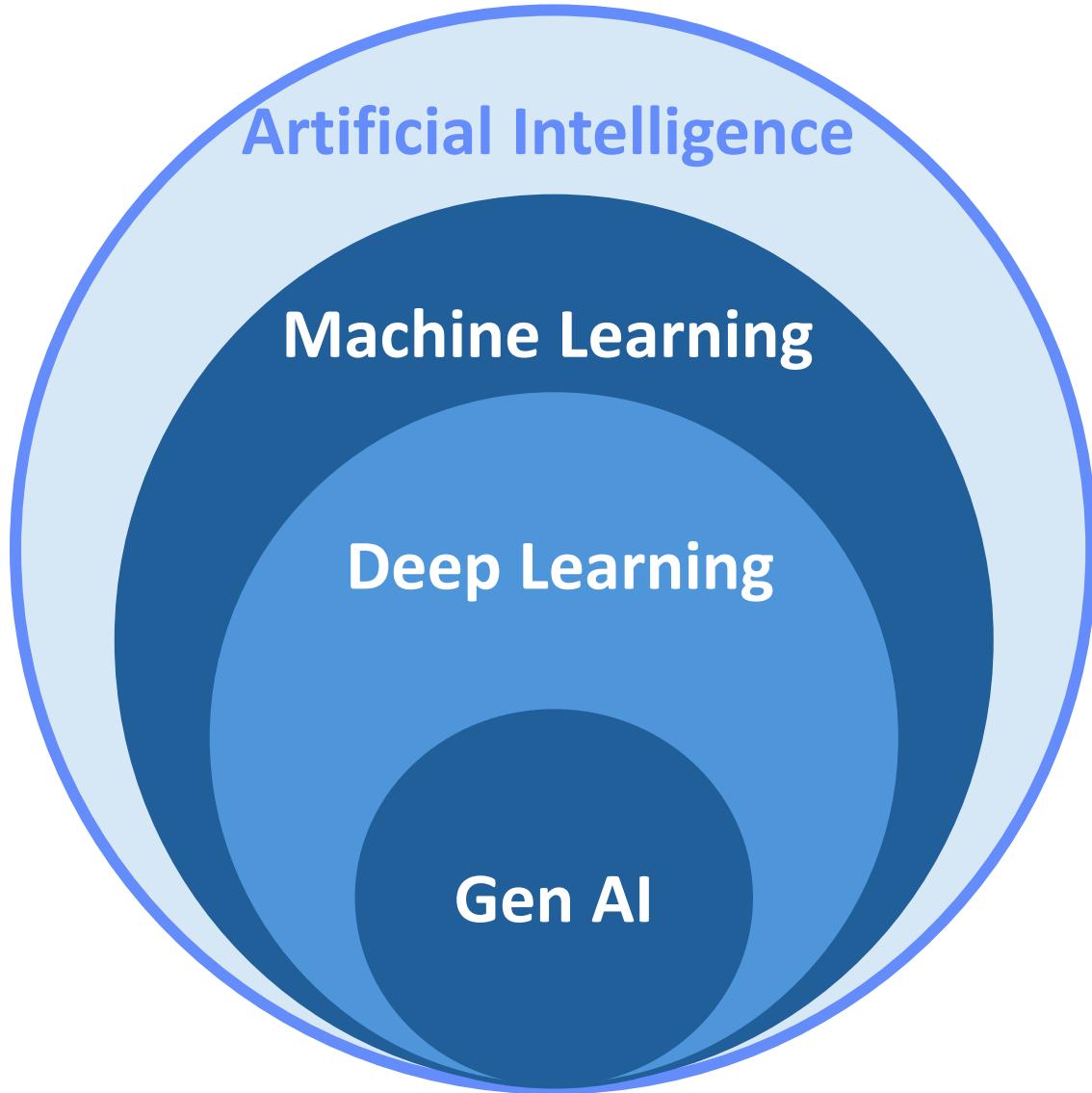
Typical Edge AI Deployments:

- Largely use deep learning (minus gen AI)

- Have memory needs from kilobytes to gigabytes

- Have performance needs from MOPS to TOPS

AI Classes in Edge Deployments:

- Class 1: Algorithm replacement

- Class 2: Detection, classification, and novel analysis

- Class 3: Complex intelligence

- Class 4: Advanced intelligence

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Ambiq Is Poised to Be a Leader in the Exploding Edge AI Opportunity

Fast growing edge AI opportunity with existential power issue
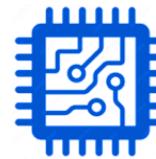
Proprietary Sub-threshold Power Optimized Technology (SPOT) platform

Proven demand with strong customer base growing in new segments

Scalable business model with a focus on profitable growth

Diverse $12.8B Opportunity Growing Quickly

Projected Market Size by End Markets ($B)

CAGR 2023-28

CAGR 12%

$22.5
- $1.3 — **Medical/Healthcare** — 8%
- $5.1 — Personal Devices — 7%
- $5.2 — **Smart Home / Buildings** — 16%
- $11.0 — **Industrial Edge** — 14%

$12.8
- $0.9
- $3.7
- $2.5
- $5.8

2023   2028
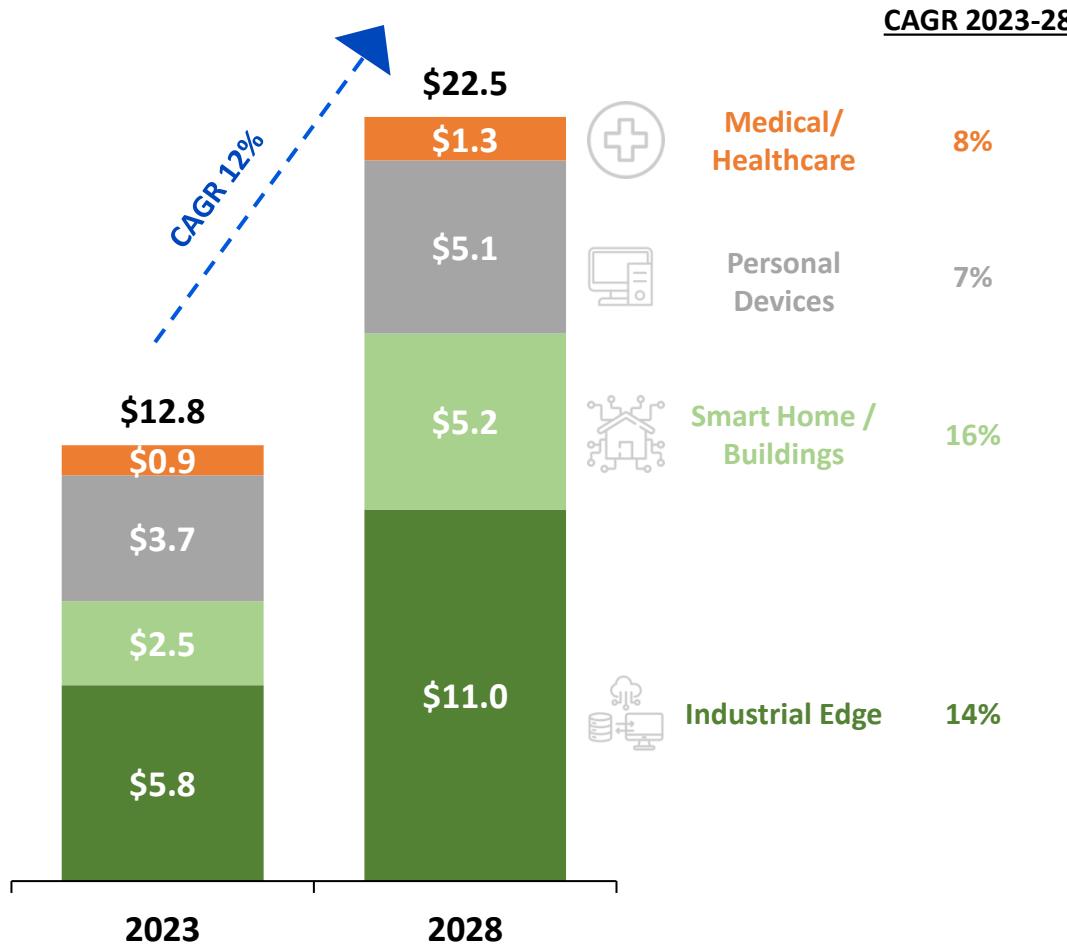
Personal Devices
- Wrist Worn
- Ear Worn
- Clothing
- AR / VR
- Other

Medical / Healthcare
- Pulse Oximetry
- Glucose Monitoring
- Heart Health

Industrial Edge
- Animal Husbandry
- Smart Farming
- Automation
- Utilities
- Oil and Gas

Smart Home & Buildings
- Security & Safety
- Energy Management
- Comfort & Lighting

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Experienced Management and Innovative Engineering Team

Fumihide Esaka
CEO
transphorm International IOR Rectifier   NIEC   accenture

Dr. Scott Hanson
Founder, CTO
ambiq

Jeff Winzeler
CFO
kandou   EVERSPIN TECHNOLOGIES

Sean Chen
President
mCube   intel   tsmc

Carlos Morales
VP of AI
nervana SYSTEMS   CISCO   intel

Dan Cermak
VP of Architecture &
Product Planning
intel

Jayesh Shah
VP of Software &
Solutions
ENTROPIC   MaxLinear   CONEXANT

Dr. Raghuram Tupuri
VP of Engineering
AMD   Aricent

Charlene Wan
VP of Corp Marketing &
Investor Relations
Western Digital   HDMI   SANDISK

Aaron Grassian
EVP of Global Sales &
Marketing

Kris Potrafka
VP of HR
AMD   CISCO

190[1]
Total Employees

68%[1]
Engineers

114[1]
Employees in R&D

AI ARTIFICIAL INTELLIGENCE EXCELLENCE AWARD 2023

BIG INNOVATION 20 22

embeddedaward2025
winner: Artificial Intelligence

embeddedaward2024
winner: Hardware

22
1. As of 3/1/2025

Board of Directors

Dr. Wen Hsieh
Chairman of the Board

MATTER VENTURE PARTNERS

KPCB | KLEINER PERKINS CAUFIELD BYERS

McKinsey & Company

Fumihide Esaka
Board Member
CEO

日本インター株式会社 **(Kyocera)**

International **IOR** Rectifier **(Infineon)**

transphorm

accenture

Dr. Scott Hanson
Board Member
CTO, Founder

ambiq

Timothy Chen
Board Member

VIA

WORLD ECONOMIC FORUM

UC Berkeley Engineering

Joseph Tautges
Board Member

worldpay

CDK Global

Hewlett Packard Enterprise

AON Hewitt

Dr. Ker Zhang
Board Member

ASR MICROELECTRONICS

CROSSBAR

PTK

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Thank You!