Intel Core Ultra Processors for Edge

New socketed PS series processors combine Intel Arc GPU and Intel AI Boost innovation with LGA flexibility for enhanced AI capabilities.

April 8, 2024 — Expanding its edge AI silicon portfolio, Intel Corporation today launched the PS Series of Intel® Core™ Ultra processors designed to power AI-enabled edge devices across multiple vertical markets. Offering up to **5.02x better image classification inference performance** compared with previous-generation processors,[1] the PS Series of Intel Core Ultra processors will help to advance artificial intelligence, visual computing and media processing at the edge.

What are the benefits of the PS series of Intel Core Ultra processors?

Traditionally, Intel customers in the retail, smart city and industrial sectors have gained significant advantages from utilizing Intel Core desktop or S series processors, thanks to their robust CPU performance and the versatility of LGA sockets. However, with the surge in edge AI applications, there's an emerging necessity for superior AI functionalities among these sectors. Integrating a discrete GPU or AI accelerator could remedy this, yet it poses challenges such as increased R&D expenses, greater system space requirements and higher power consumption. In response to these needs, Intel has introduced the PS series of Intel Core Ultra processors. This innovative range preserves the valued flexibility of LGA sockets while dramatically enhancing AI capabilities through a built-in Intel® Arc™ GPU and Intel® AI Boost (neural processing unit). This advancement redefines the benchmark for LGA-based processor technology in AI-focused tasks, marking a significant leap forward in Intel's offerings.

Who is the PS series of Intel Core Ultra processors for?

The new socketed system-on-chip (SoC) is designed to enable generative AI (GenAI) and demanding graphics workloads at the edge for retail, education, smart cities, and industrial customers, including GenAI-enabled kiosks, smart point-of-sale systems in brick-and-mortar retailers, interactive whiteboards for enhanced in-classroom experiences and AI vision-enhanced industrial devices for manufacturing and roadside units.

How does the PS series of Intel Core Ultra processors differ from other market options?

Moving away from the conventional setup where Intel Core desktop processors are combined with discrete GPUs, the PS series of Intel Core Ultra processors introduce an innovative integration of GPU and AI Boost functionalities directly within the processors, alongside the flexible LGA socket configuration. Offering four times the number of graphics execution units (EUs) compared to their predecessors in the S or desktop series, these processors deliver a powerful alternative for handling AI and graphics-heavy tasks. This design not only negates the necessity for an additional discrete GPU, thereby lowering costs and simplifying the overall design process, it also positions these processors as the go-to solution for those prioritizing efficiency alongside enhanced performance.

When will the PS series of Intel Core Ultra be available?

The PS series of Intel Core Ultra processors will be available in the second quarter of 2024.

What Our Customer and Partners are Saying

Iterate.AI: *"Our testing of the Intel Core Ultra processor (PS series) surpassed our expectations for time to first token (TTFT) and token generation rates in generative AI with 7B parameters, impressively without the need for a discrete GPU. This stellar performance allowed us to introduce a cost-effective, high-efficiency customer service chatbot for retail in-store use. Our edge-optimized AI solution enhances retail customer service,*

providing a smooth and insightful interaction, showcasing that advanced AI is not only accessible but also prioritizes privacy by processing sensitive data locally."

Brian Sathianathan, chief executive officer

JelloX Biotech Inc.: *"The PS series Intel Core Ultra processor showcases unparalleled power efficiency, delivering top-tier AI performance that rivals the previous-generation Intel Core desktop processor (i9-12900K) paired with RTX 3090Ti GPU in both semantic segmentation and object detection tasks, but at 90% less power consumption. Thanks to the Intel Arc GPU and Intel AI Boost (NPU) built into the processor, we are set to revolutionize next-gen entry-to-mid-level pathology analytics devices by incorporating advanced AI functionalities without relying on discrete GPUs. This breakthrough makes cutting-edge imaging technology more accessible and cost-effective, paving the way for broader adoption and innovation in the digital pathology field. Additionally, the flexibility of the processor's LGA socket ensures that our solutions are not just at the forefront of technology but also adaptable, providing our customers with future-proof diagnostic tools that evolve with their needs."*

Dr. Yen-Yin Lin, chief executive officer

SapientX Inc.: *"The PS series from the Intel Core Ultra lineup has showcased extraordinary capabilities in natural language processing and 3D rendering at 4K/8K resolutions for our AI character. In extensive testing, it realized a quadruple boost in resolution (from 2K to 8K) while significantly reducing power usage, courtesy of the built-in Intel Arc GPU. This marks a stark contrast to our existing digital signage solution powered by an 11th Gen Intel® Core™ processor paired with an Nvidia RTX 2060 GPU. Moreover, it met our rigorous response time and latency criteria for ChatScript AI-driven natural language processing, achieving these benchmarks without reliance on a discrete GPU. Such efficiency in energy use, combined with the processor's ability to support 4K/8K resolutions and real-time natural language processing, allows for the creation of advanced AI avatar functionalities within slimmer, more energy-conscious signage devices, thereby enhancing accessibility and reducing operational costs."*

David Colleen, chief executive officer

Shanghai Kaijing Information Technology Co. Ltd.: "As the leader in AI self-checkout POS systems for restaurants, we've seen transformative results with the PS series of Intel Core Ultra processor. In comprehensive tests, it delivered extraordinary performance, especially in object detection and classification tasks, achieving inferencing throughput improvements exceeding 915% and 455%, respectively, thanks to the built-in Intel Arc GPU. This marks a notable leap over prior-gen Intel Core desktop processors with no integrated GPU. With the improvements, our next-gen systems bring deeper insights into customer behavior, and smarter inventory and quality control to our clients. Furthermore, the processor's versatile LGA socket design allows our customers to easily scale with their growing demands, securing their investment in technology for the long term."

He, ZhengTing, information chief technology officer

About Intel

Intel (Nasdaq: INTC) is an industry leader, creating world-changing technology that enables global progress and enriches lives. Inspired by Moore's Law, we continuously work to advance the design and manufacturing of semiconductors to help address our customers' greatest challenges. By embedding intelligence in the cloud, network, edge and every kind of computing device, we unleash the potential of data to transform business and society for the better. To learn more about Intel's innovations, go to newsroom.intel.com and intel.com.

Intel does not control or audit third party data. You should consult other sources to evaluate accuracy.

Performance varies by use, configuration and other factors.

Your costs and results may vary.

[1]Performance varies by use, configuration, and other factors. Learn more at intel.com/processorclaims: Intel® Core™ Ultra processors, Edge. Results may vary.