Ambarella Expands N1 Edge GenAI Family With SoC Targeted at On-Premise Multi-Channel VLM and NN Processing in Under 20 Watts

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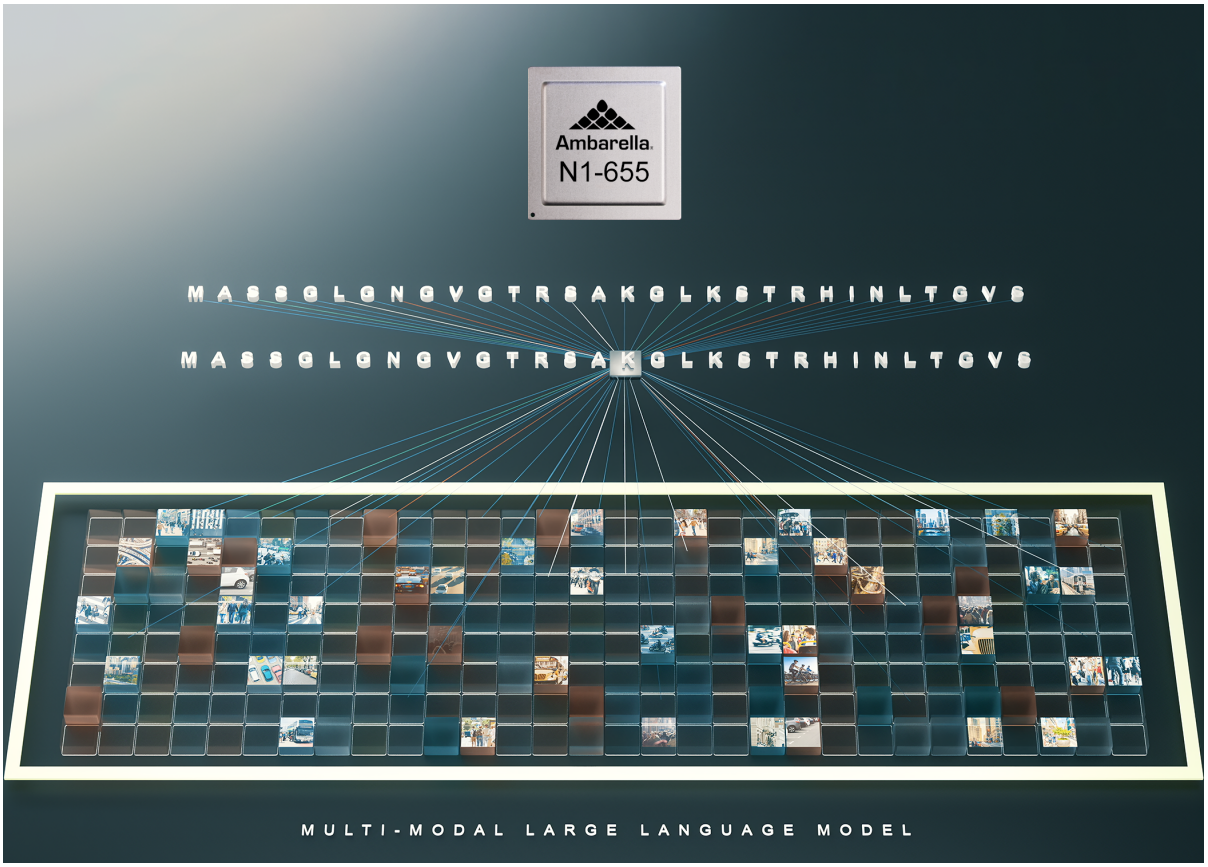
New AI SoC is Ideal for On-Premise AI Boxes, Autonomous Robotics and Smart City Security; Brings High-Performance GenAI to Power- and Cost-Constrained Edge AI Applications

SANTA CLARA, Calif., Jan. 07, 2025 (GLOBE NEWSWIRE) -- Ambarella, Inc. (NASDAQ: AMBA), an edge AI semiconductor company, today announced during CES the N1-655 edge GenAI system-on-chip (SoC), which provides on-chip decode of 12x simultaneous 1080p30 video streams, while concurrently processing that video and running a hybrid of multiple, multimodal vision-language models (VLMs) and traditional CNNs. This SoC's high AI processing performance supports most of the popular multimodal VLMs and large-language models (LLMs), while consuming only 20 watts of power—10-100x lower than cloud processors. For example, the N1-655 reliably runs the Phi, Gemma, LLaVA-OneVision and Llama models, without the need for an internet connection, on data inputs like visuals and speech in applications such as on-premise AI boxes, autonomous mobile robots (AMRs), and smart-city security video recorders.



Following its initial N1 SoC introduced last year, Ambarella is building up a family of edge GenAI SoCs for tasks that go beyond what can be done on-camera. Both of the current family members process GenAI models locally to improve privacy with state-of-the-art performance per watt, significantly reducing power consumption as well as the total cost of ownership compared to cloud-based inference processing.

"The N1-655 continues Ambarella's industry-leading levels of AI performance per watt, this time for AMRs and on-premise AI box applications that require the latest edge GenAI features while keeping power consumption under 20 watts," said Fermi Wang, President and CEO of Ambarella. "We tailored this new SoC to run faster, while fine-tuning the most popular LLMs and VLMs to make them even smaller, eliminating the need for high-bandwidth and cost-intensive cloud processing in this class of applications."

There is a trend toward doing more GenAI processing at the edge, due to cloud-based processing's bandwidth cost, ongoing service fees and high power usage, along with data security and privacy concerns. Ambarella employs cutting-edge fine tuning techniques such as QLoRA, which reduces the footprint sizes of popular GenAI models to enable their use in edge applications. The Company is at the forefront of this trend, as exemplified by the high performance and low power consumption of the new N1-655.

To support N1-655 based designs, Ambarella is also expanding its Cooper™ Developer Platform with the new Cooper Pro member of the Cooper developer kit family, which provides industrial-class performance. This kit is powered by the N1-655 and will begin shipping after CES. To register interest in the Cooper Pro, visit www.ambarella.com/cooper.

N1-655 samples are available now, upon request. This new SoC and the Cooper Pro kit are also being demonstrated at Ambarella's invitation-only exhibition during CES in Las Vegas this week. For more information or to schedule a demo during the show, please contact your Ambarella representative or visit www.ambarella.com/products/aiot-industrial-robotics.

About Ambarella
Ambarella's products are used in a wide variety of human vision and edge AI applications, including video security, advanced driver assistance systems (ADAS), electronic mirror, drive recorder, driver/cabin monitoring, autonomous driving and robotics applications. Ambarella's low-power systems-on-chip (SoCs) offer high-resolution video compression, advanced image and radar processing, and powerful deep neural network processing to enable intelligent perception, fusion and planning. For more information, please visit www.ambarella.com.

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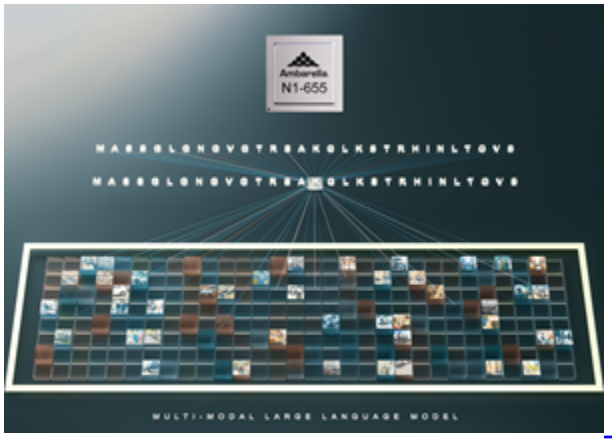

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