

Synopsys Expands Use of AI to Optimize Samsung's Latest Mobile Designs

Key Milestone Solidifies New Era of Autonomous Chip Design by Realizing Exceptional Results on Samsung's Most Advanced Process Technology



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Highlights of this announcement:

- Synopsys' groundbreaking AI-based system (DSO.ai) autonomously achieved highest frequency and lowest power consumption for Samsung's advanced mobile designs
- DSO.ai has been used for multiple chip design projects at Samsung, consistently delivering results previously deemed unachievable in significantly less time

Synopsys, Inc. (Nasdaq: [SNPS](#)) today announced that its AI-based design system has been used by Samsung to successfully complete a state-of-the-art, high-performance design at an advanced process technology, the most recent of several products designed using Synopsys artificial intelligence (AI).

"For decades, autonomous chip design existed only in science fiction," said Aart de Geus, chairman and co-CEO, Synopsys. "This pivotal moment in semiconductor history will breathe new life into Moore's law. We congratulate Samsung on this remarkable achievement, and we look forward to catalyzing its next 1000x."

The AI-designed product will be manufactured on Samsung's advanced manufacturing process. To achieve the high-performance and low-power market requirements in a timely manner, Samsung used Synopsys' [award-winning](#) autonomous AI system, [DSO.ai](#)™ (Design Space Optimization AI), driving the Synopsys [Fusion Compiler](#)™ RTL-to-GDSII solution. DSO.ai uses [reinforcement learning](#), an AI technology similar to that used in self-driving vehicles, to achieve better performance, power and area (PPA). Applied at every stage of design implementation, DSO.ai pushed operating frequency over 100 MHz beyond target and considerably reduced overall power consumption – all while saving Samsung weeks of manual design effort. An early development partner of Synopsys' autonomous design technology, Samsung began deploying DSO.ai to multiple projects in the fall of 2020.

"This is a remarkable milestone for our program to successfully introduce AI into the chip design process in collaboration with Synopsys," said Thomas Cho, EVP of Infrastructure & Design Technology Center, System LSI Business, Samsung Electronics. "Not only have we demonstrated that AI can help us achieve PPA targets for even the most demanding process technologies, but through our partnership we have established an ultra-high-productivity design system that is consistently delivering impressive results."

DSO.ai introduces a novel approach to searching vast problem spaces of chip design for optimal solutions, enabled by the latest advancements in AI and machine-learning. Traditional design space exploration has been a very labor-intensive effort, typically requiring months of experimentation, guided by past experiences and institutional knowledge. In today's hypercompetitive markets, a better design solution means faster software performance, extended hours of battery life and a more personalized user experience.

"This breakthrough marks the beginning of a journey where AI applications and reinforcement learning will help architects with physical design and even logic design," said Karl Freund, principal analyst at Cambrian AI

Research. "The possibilities are endless and very promising, with substantial reduction in applied resources, faster time to market and better power, performance and cost."

Using AI technology, DSO.ai can *autonomously* search design spaces for better solutions, massively scaling the exploration of choices in chip design workflows, while automating a high volume of less consequential decisions. DSO.ai unleashes architectural innovation with AI-grade productivity, opening a new growth trajectory for the semiconductor industry and paving a path to 1000x more powerful silicon applications.

Learn more about [DSO.ai](#).

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As an S&P 500 company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and offers the industry's broadest portfolio of application security testing tools and services. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing more secure, high-quality code, Synopsys has the solutions needed to deliver innovative products. Learn more at www.synopsys.com.

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