Synopsys Accelerates Development of Renesas R-Car V3H SoC that Achieves Cutting-edge Computer Vision

Synopsys Design Platform Enables Highly Power-Efficient R-Car SoC Hardware Accelerator

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Highlights:

- Collaboration accelerated development of Renesas' R-Car V3H SoC hardware accelerator that achieves cutting-edge computer vision
- Synopsys Design Platform, including Design Compiler Graphical, IC Compiler II, and PrimeTime, was adopted for development of R-Car V3H SoC designed for smart cameras in Level 3 and Level 4 autonomous vehicles.
- Synopsys enables full-flow optimization for concurrent clock and data (CCD), wire synthesis, and logic restructuring, delivering high performance for computer vision while supporting low power consumption and a high level of functional safety

Synopsys, Inc. (Nasdaq: SNPS) today announced it has worked with Renesas Electronics to contribute to the development of Renesas' latest R-Car V3H system-on-chip (SoC). The R-Car Family of SoCs is the core SoC family of the open, innovative, and trusted Renesas autonomy™ Platform which delivers end-to-end automotive solutions scaling from secure cloud connectivity and sensing to vehicle control. Synopsys enabled development of the highly power-efficient R-Car V3H SoC's hardware accelerator that provides cutting-edge computer vision capabilities for smart cameras in Level 3 and Level 4 autonomous vehicles.

Autonomous driving vehicles must sense the environment, control the vehicle, and conduct synchronized communications with the cloud. A wide range of technologies is necessary to realize these functions, and each technology must maintain high reliability to synchronize without any flaws.

Synopsys provides the industry's most comprehensive portfolio of certified tools and flows, as well as downloadable functional safety kits, enabling easy deployment by automotive OEMs, semiconductor, and component suppliers for their safety-related ASIL A through ASIL D designs.

The R-Car V3H SoC includes a new, highly power-efficient hardware accelerator for high-performance convolutional neural networks (CNNs). High performance is needed to detect traffic signs, lanes, pedestrians, vehicles, and other obstacles in real time. Front cameras are mounted next to the windshield where they are exposed to direct sunlight, so low power consumption is crucial to minimize further heat dissipation. Synopsys Design Compiler Graphical and IC Compiler II enable full-flow optimization for concurrent clock and data (CCD), wire synthesis, and logic restructuring, delivering high performance for computer vision while supporting low power consumption and a high level of functional safety.

"We were pleased to collaborate with Synopsys on our R-Car SoC Family to speed up development and time-to-market," said Masahiro Suzuki, Head of Automotive Product and Engineering, Automotive Solution Business Unit at Renesas Electronics Corporation. "By leveraging Synopsys' Design Platform to develop automotive-grade products, Renesas delivers SoCs that achieve high performance with minimal power consumption and mounting area. The collaboration also resulted in realizing an innovative hardware accelerator for our R-Car V3H SoC that enables ultra-low-power CNN processing."

"Using end-to-end solutions provided by the Renesas autonomy Platform, automotive system manufacturers can achieve both functional safety and development flexibility," said Michael Jackson, corporate vice president of marketing and business development for the Design Group at Synopsys. "By adopting our solution to develop the state-of-the-art R-Car V3H, Renesas was able to improve development efficiency and shorten the development time of its highly-scalable SoC."

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 the world's 15th largest software company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and is also growing its leadership in software security and quality solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest security and quality, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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