Synopsys and Hillcrest Labs Announce Ultra-Low Power Sensor Processing Solution for Always-On Applications

Combination of Synopsys' Sensor and Control IP Subsystem with ARC EM Processor and Hillcrest Labs' Freespace MotionEngine Software Enables Power-Efficient Sensor Processing for Mobile and Wearable Devices

Disclaimer: GlobalFoundries acquired the Synopsys Processor Solutions business on June 1, 2026. Clickhere to learn more.

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Highlights:

- Hillcrest's MotionEngine software now optimized to run on Synopsys' DesignWare Sensor and Control IP Subsystem
- DesignWare Sensor and Control IP Subsystem includes ARC EM processors and integrated hardware accelerators for sensor-specific functions that boost performance and reduce power consumption by up to 85 percent compared to discrete solutions
- Power-efficient hardware-software sensor solution is ideal for a range of mobile and IoT applications including activity tracking, intelligent context awareness, intuitive gesture recognition and accurate navigation functions

Synopsys, Inc. (Nasdaq: SNPS) and Hillcrest Labs today announced that Hillcrest's Freespace® MotionEngine™ software optimized for Synopsys' DesignWare® Sensor and Control IP Subsystem. Hillcrest's MotionEngine software transforms sensor data into high quality, contextual information that powers sensor-enabled features on a wide range of devices. Synopsys' Sensor and Control IP Subsystem offers designers a pre-verified, system-on-chip (SoC)-ready IP platform optimized to meet sensor and control processing requirements common in "always-on" Internet of Things (IoT) applications. The combination of Hillcrest's intelligent sensor processing software stack and Synopsys' energy-efficient DesignWare Sensor and Control IP Subsystem enables developers of sensor-enabled devices to implement high quality, always-on sensor processing functionality with extremely low power consumption.

"Sensors and sensor processing software are fundamental to compelling, new user experiences in an expanding array of mobile, wearable and IoT devices," said Chad Lucien, senior vice president of sales and marketing at Hillcrest Labs. "The combination of Synopsys' ultra-low power DesignWare Sensor and Control IP Subsystem and our MotionEngine software can achieve the power savings required by the always-on, high performance sensor-enabled applications that are at the forefront of today's consumer electronics market."

Hillcrest's patented Freespace MotionEngine technology provides ultra-low power sensor processing to enable always-on sensing. The software can dramatically extend battery life through context-aware power savings, enabling greater use of a variety of new applications including advanced activity tracking, intuitive gesture recognition and pedestrian navigation. The MotionEngine software intelligently combines data from an array of motion, environmental and biometric sensors to provide a cost-effective way to deploy sensor hubs and enhance mobile, wearable and IoT devices with advanced sensor features.

The highly integrated DesignWare Sensor and Control IP Subsystem processes data from digital and analog sensors and always-on audio sources, consuming only a fraction of the power of discrete processor-based solutions. Hillcrest's software has been optimized to take advantage of the subsystem's low-power capabilities to provide always-on sensing without compromising accuracy, reliability or functionality. The configurable subsystem includes a choice of ARC® EM processors for varied performance needs, and tightly integrated pulse-width modulation (PWM), serial peripheral interface (SPI), Inter-Integrated Circuit (I^2C) and Analog to Digital Converter (ADC) and Digital to Analog Converter (DAC) interfaces for a wide range of off-chip sensor and actuator connections. Hillcrest's MotionEngine software utilizes the Sensor and Control IP Subsystem's optional IEEE 754-2008 compliant floating-point unit (FPU) to support applications requiring single- or double-precision floating point operations. The combined hardware-software sensor hub solution is optimized for sensor fusion applications in which an extensive amount of raw sensor input must be processed and transformed into application-ready data while consuming as little energy as possible.

"The proliferation of motion-sensing capabilities in IoT devices requires a new breed of SoCs that deliver extensive processing capabilities, while maintaining low power consumption and a small footprint," said John Koeter, vice president of marketing for IP and prototyping at Synopsys. "We are pleased that Hillcrest ported their MotionEngine software to Synopsys' DesignWare Sensor and Control IP Subsystem. The combined solution provides designers with a power-efficient, pre-integrated sensor hub solution that can be rapidly deployed into SoCs for always-on applications."

Availability and Resources

Synopsys' DesignWare Sensor and Control IP Subsystem is available now from Synopsys and Hillcrest's MotionEngine software is available now from Hillcrest Labs.

About Hillcrest Labs

Hillcrest Labs is a leading global supplier of software and hardware for sensor-enabled products. Our Freespace® technology transforms sensor data into contextual information to power a wide range of advanced applications. With a decade of development and many unique patented features, products come to life with Freespace motion. Companies that have licensed or use Hillcrest's motion technology include: Alcatel OneTouch, Atmel, Coolpad, Hisense, Intel, Lenovo, LG Electronics, Oppo, Roku, Skyworth, SMK Electronics, Sony Computer Entertainment Inc., TCL Multimedia, Universal Electronics (UEI), and more.

Hillcrest has received numerous awards and recognitions including the prestigious CES Innovations Honoree Award multiple times, IMS Research's TV Innovation Awards, EE Times' ACE Award, PC World's 100 Best Products and Greatest Tech Designs, Popular Mechanics' Editors Choice, ECN's Reader's Choice Tech, and many others. Additional information about Hillcrest's broad portfolio of motion control products is available at: www.HillcrestLabs.com. Follow Hillcrest on Facebook at www.facebook.com/HillcrestLabs or Twitter at @HillcrestLabs.

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 a leader in software quality and security testing with its Coverity® solutions. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing applications that require the highest quality and security, Synopsys has the solutions needed to deliver innovative, high-quality, secure products. Learn more at www.synopsys.com.

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