NovuMind: Pioneering Intelligent Internet of Things (I2oT)

Dr. Ren Wu, the Founder and CEO of NovuMind, established the company in 2015 with a vision to make artificial intelligence (AI) "preeminent" and "everywhere." The company disrupts the traditional internet of things (IoT) set up which requires edge devices to transmit data to cloud for processing by bringing superb computing power (preeminent) to the network terminals (everywhere). In addition, to reduce power consumption at the computing terminals, the company adopts a vertical approach rather than the traditional layered one to process data. NovuMind's ability to combine big data, deep learning, high-performance computing, and heterogeneous computing has transformed the IoT into the intelligent internet of things (I2oT). "NovuMind is dedicated to improving your life through AI by making things think," remarks Dr. Wu.

With the rich experience of having served as Chief Software Architect of AMD Heterogeneous Systems, Chief Researcher of HP Labs CUDA Research Center, and Baidu Distinguished Scientist, Dr. Wu now creates full-stack AI solutions based on state-of-the-art algorithms, massively scale-out training systems, and dedicated application-specific integrated circuits (ASIC) for inference.

The company's NovuTensor is the most power-efficient AI chip that facilitates embedded AI. In contrast to other AI chips that take incremental approaches, NovuTensor is a complete architecture re-design and focuses only on AI computation. It offers GPU/TPU class of performance for AI inference while staying under the power budget of the embedded system. Consuming no more than 5 watts, it executes 15 teraflops of calculation. This superior performance can be transformed to the capability of handling high-volume AI tasks in real-time.

While NovuTensor is vital for AI inference, the company's NovuStar, a supercomputer specially designed for AI provides industry-leading performance for AI training. Armed with such tremendous computational power, AI expert can have high productivity generating smart AI models. The combination of NovuTensor and AI models trained by NovuStar emulates the function of the brain such as sense, process, react, and adapt to the environments intelligently. In 2017, such a combination led to the development of an AI endoscope diagnosis device which provides ultra real-time feedback to the doctor on the probability of each disease with very high accuracy. As per the data published by West China Hospital of Sichuan University, the endoscope's diagnosis accuracy was around 92-96 percent, surpassing that of a human doctor.

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In comparison to other embedded chips, the NovuTensor delivers 10X performance and 10X power-efficiency. With such performance and power-efficiency, NovuTensor makes a variety of AI applications possible. For instance, the chip can enhance the traditional TV's standard image rate of display to 4K quality visual effects through real-time AI operation. Moreover, "The NovuMind chip is on the radar of many autonomous driving companies, since our chip is competitive in supporting both L4 and L2/L3 applications," says Dr. Wu.

In addition to smart health and autonomous driving, NovuTensor can also be applied to fields such as smart city, face recognition, data center, and intelligent manufacturing. Trondheim, a city in Norway that implements green transportation policy, is adopting NovuTensor to a build smart bicycle counter that tracks usage of bicycles and traffic flow all without a need to transmit images to the cloud, meeting privacy norms."Expert capability in chip designing and AI training to solve different problems in different verticals is the key advantage of NovuMind," extols Dr. Wu.

To facilitate a wide range of IoT applications, NovuMind also offers a plug-and-play module for embedded intelligence called the NovuBrain that aims to enter all walks of life to provide the most optimized combination of deep learning models and ASICs. The NovuBrain is driven by NovuStar's AI training facilitating fast, easy, and scalable integration of AI technology into the customer's existing business operations.

With its full-stack development of AI technology, Novumind is well-positioned to explore the massive deployment of their modules and chips, along with the establishment of a computing capability of equivalent intelligence in the cloud. Without curbing its potential, NovuMind is motivated to achieve much more while making things smarter.