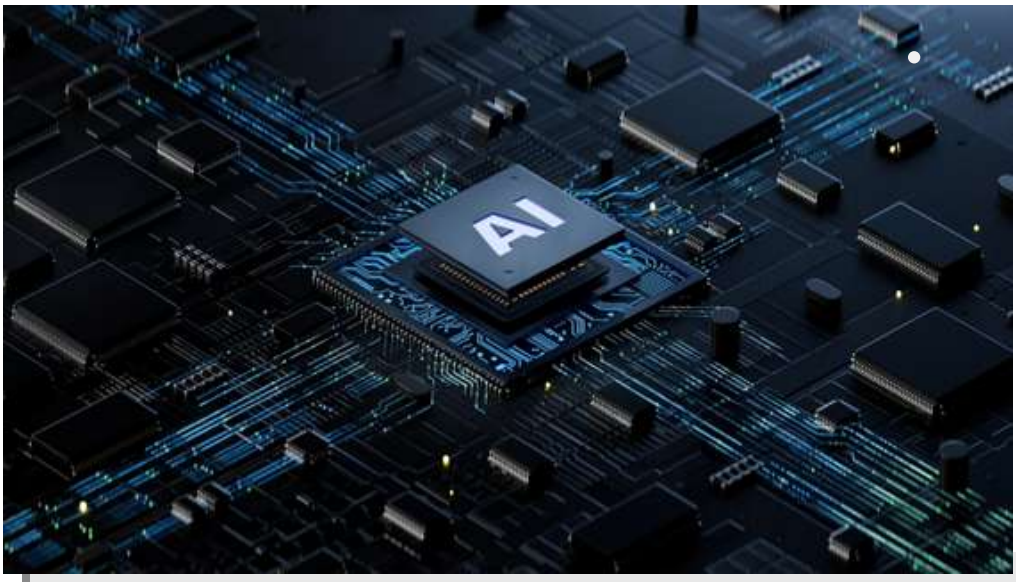
COMPUTEX TAIPEI InnoVEX

COMPUTEX Focus 2024 Ep. 1

The Rise of Generative AI is Driving Innovation across Industries, with Taiwanese Companies Playing a Crucial Role in the Global Supply Chain



"The Dawn of Generative AI Has Come!" This new chapter in the course of human technological evolution was first introduced by NVIDIA's founder, Jensen Huang. Qualcomm's CEO, Cristiano Amon, also shares this optimism, foreseeing the rapid integration of generative AI into mobile applications poised to revolutionize the smartphone industry. Similarly, Intel has declared the onset of the "AI PC" era, signaling a major shift in computing-related technologies and applications.

From Cloud to On-premise, the Optimization of AI Features is Expected to Propel the Growth of AI PCs

AI is transitioning from cloud computing to on-premise computing. Various AI PCs and AI smartphones are being introduced to the market, offering a wide range of selections. This year, 2024, is referred to as the "Year of AI PC," with brands such as Asus, Acer, Dell, Lenovo, and LG actively releasing new products to capture market share. With the rapid rise of AI PCs and AI smartphones, revolutionary changes are expected to occur in workplaces and people's daily lives. Furthermore, the PC and smartphone industries are also expected to be reinvigorated with new sources of demand. An AI PC refers to a laptop (notebook) computer capable of performing on-device AI computations. The main difference from regular office or business laptops lies in its CPU, which includes an additional neural processing unit (NPU). Examples of AI CPUs include Intel's Core Ultra series and AMD's Ryzen 8040 series. Additionally, AI PCs come with more DRAM to meet the demands of AI computations, thereby supporting related applications like those involving machine learning. Microsoft's role is crucial in this context, as the company has introduced a conversational AI assistant called "Copilot" that aims to seamlessly integrate itself into various tasks, such as working on Microsoft Office documents, video calls, web browsing, and other forms of collaborative activities.

With Copilot, adding a direct shortcut button for AI on the keyboard is now possible, offering comprehensive collaboration features that further enhance the AI PC experience. Looking beyond AI chips, various computer functions will continue to be optimized through AI. Moreover, the barriers to using services such as ChatGPT through the Internet are expected to be broken. AI-based apps on PCs could one day be run offline. Such a capability is also one of the most anticipated features among PC users this year.

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AI-enabled applications are not limited to PCs and smartphones. An increasing number of cloud companies have started providing services that leverage AI in various domains, including passenger cars, household appliances, home security devices, wearable devices, headphones, cameras, speakers, TVs, and more. These services often involve processing voice commands and answering questions using technologies like ChatGPT. As we advance, AI-enabled applications will become ubiquitous in people's daily lives. Not to be overlooked is the development of large language models (LLMs) by worldwide enterprises. This will increase demand for AI servers, thus promoting overall market growth. Furthermore, edge AI servers are expected to become a significant growth contributor in the future as well. Small-sized businesses are more likely to use LLMs that are modest in scale for various applications. Therefore, they are more likely to consider adopting lower-priced AI chips offering excellent cost-to-performance ratios. Regarding the development of AI chips in 2024, the focus is on the competition among the B100, MI300, and Gaudi series, respectively, released by NVIDIA, AMD, and Intel. Apart from these chips, another significant highlight of this year is the emergence of in-house designed chips or ASICs from cloud service providers. In addition to AI chips, the development of AI on PCs and smartphones is undoubtedly another major driving force behind the technology sector in 2024. Intel's Core Ultra series and AMD's Ryzen 8000G series are expected to make a notable impact in the market for CPUs used in AI PCs. Qualcomm's Snapdragon X Elite has also garnered significant attention as it could potentially alter the competitive landscape shortly. Turning to the market for SoCs used in AI smartphones, the fierce competition between Qualcomm's Snapdragon 8 Gen 3 and MediaTek's Dimensity 9300 series is a key indicator. Another development that warrants attention is the adoption of AI chips in automotive hardware, such as infotainment systems and advanced driver assistance systems. The automotive market is undoubtedly one of the main battlegrounds among chip suppliers this year. The supply chain in Taiwan has played a crucial role in providing the hardware that supports the advancement of AI-related technologies. Looking across the AI ecosystem, including chip manufacturing and the supply chains for AI servers and AI PCs, Taiwan-based companies are the important contributors.

Taiwanese Supply Chain is Ready for the Coming Wave of AI-related Rising Demand

Taiwan's supply chain, semiconductor foundries and OSAT providers such as TSMC, UMC, and ASE have always been key suppliers, while ODMs or OEMs companies including Wistron, Wiwynn, Inventec, Quanta,

The COMPUTEX 2024 will converge the global AI ecosystem under the theme "Connecting AI."

Gigabyte, Supermicro, and Foxconn Industrial Internet have become major players in the supply chains for AI servers and AI PCs. Regarding components, AI servers have a power supply requirement that is 2-3 times greater than that of general-purpose servers, driving the power supply units used in AI servers to offer specification and performance upgrades. As for AI PCs, they also have higher demands for both computing power and energy consumption. Therefore, advances in the technologies related to power supply units represent a significant observation indicator this year with respect to the overall development of AI servers and AI PCs. Companies including Delta Electronics, LITE-ON, AcBel Polytech, CWT, and Chicony are expected to play key roles in specification improvement and product supply. Also, as computing power increases, heat dissipation has become a pressing concern for hardware manufacturers looking to enhance their products further. This year, solution providers such as Sunon, Auras, AVC, and FCN will address the advancements in heat dissipation. In addition to the companies mentioned above, Taiwan is home to many key component suppliers related to AI PCs. The table below lists notable component providers operating on the island. With the advent of generative AI, the technology sector is poised for a boom across its various domains. From AI PCs to AI smartphones and a wide range of smart devices, this year's market for electronics-related technologies is characterized by diversity and innovation. Taiwan's supply chain plays a vital role in the development of AI PCs and AI servers, including chips, components, and entire computing systems. As competition intensifies in LLMs and AI chips, this entire market is expected to encounter more challenges and opportunities.

Overview of Taiwan's Supply Chain for AI PCs

Component	Company
Power Supply Unit	Delta Electronics, LITE-ON, Acbel, CWT, Chicony
Heat Dissipation Solution	SUNON, Auras, AVC, FCN
Touch Panel	ELAN, Parade-KY, ENE
Microphone	ZILLTEK
CCL	Golden Circuit, ITEQ
PCB	PSA, Tripod Technology
Bearing	SZS Group, JARLLYTECH
Keyboard	SUNREX, Corndi & Wincap (DARFON)
Optical Film	UBright, GLT-KY, Koja-KY
Device Casing	Catcher Technology, Bin Chuan Enterprise (Hamagawa)

COMPUTEX 2024 is scheduled to take place from **June 4th to 7th at the Taipei Nangang Exhibition Center Halls 1 and 2**. With the theme "Connecting AI," this year's exhibition will focus on showcasing the latest global AI technologies and industry trends. The event is expected to attract **1,500** international and local exhibitors, utilizing **4,500** booths across six major areas: AI Computing, Advanced Connectivity, Future Mobility, Immersive Reality, Sustainability, and Innovations. International **visitor registration opens in March**. Visitors from all industries are welcome to participate and experience Taiwan's exceptional AI strength.

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