

A TECH TO WATCH

Connecting our Laptops to our Brains?

Why analysts are optimistic about user interface technology



Will we one day communicate directly with our devices without lifting a finger? As the point of human-computer interaction, consumers today expect the user interface (UI) on their devices to be intuitive and easy to use.

But smaller and more powerful portable and wearable devices is challenging the continuous power requirements of UIs by substituting a design that offers lower power consumption compared to always-on displays. This allows for power resources to be dedicated to performance and functionality.

The global UI service market is dominated by the consumer tech segment followed by education and health care, according to Market Research Future (MRFR) based in Maharashtra, India. The firm predicts the global UI market size will touch US \$50 billion at a 16% CAGR between 2019 and 2027.

MRFR estimates the UI market is on the cusp of significant change — it will not be limited to screens anymore. Rather interactions will provide a real-world experience. Virtual reality (VR) has primarily been used in gaming but it now is also being employed in the health care and education sectors.

Frost & Sullivan's report, *Future of User Interfaces Shaping New Consumer Experiences* found UIs have moved beyond the concept of merely representing machines to their users to enabling sophisticated and personalized interactions. Frost & Sullivan believes biometric technologies will drive growth opportunities as the adoption rate rises and organizations realize the productivity

gains UIs make possible. As vendors integrate biometric technologies with artificial intelligence (AI) and machine learning, it will create a strong market for high-end biometric interfaces.

A combination of iris, vein, fingerprint and palm, facial recognition and voiceprint interfaces for verification offer extra security without compromising the user experience. Successful implementations, however, will require high-speed communication networks. Frost and Sullivan predicts global biometrics market revenue will reach nearly \$55 billion in 2025.

Further Down the Road

Interfaces that connect human brains to computers could arrive in the next few years. Neural interfaces could have a significant impact on the restoration of vision and hearing, treatment of mental health disorders, and alleviating pain through electrical stimuli by focusing on the appropriate areas of the brain.

The gaming community also is pioneering new gaming control mechanisms based on brain signals using electroencephalography (EEG) headsets.

Just this past year, Elon Musk's company Neuralink demonstrated that brain link UI technology is possible. Neuralink is developing a whole brain interface using an implanted chip to allow a user to communicate wirelessly with the

cloud, computers and in theory with anyone who has a similar interface.

With a small brain-to-computer implant embedded in her snout, the "Cyberpig" Gertrude can wirelessly transmit her brain activity to a computer. The pig's brain implants were surgically added without any detriment to her health.

Next-Generation Gesture Interfaces

With gesture interfaces, you do not need to physically touch a device. With a simple finger, hand or body movement, various actions are executed.

Apple has been working on in-air gesturing for years. Recently the company was granted a patent for a Hand Gesturing Based User Interface. Apple's gesture-based UI includes a movement monitor configured to observe a user's hand and to provide a signal based on the hand movements. A processor is configured to actuate different commands in which a cursor, in response to the signals from the movement monitor, moves within the display.

According to the patent, beyond hand gesturing, the invention could be in context with other future movements such as leg and finger movements.

UIs will continue to evolve to satisfy the needs of end users but how we connect to our devices in the future remains to be seen. ■

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