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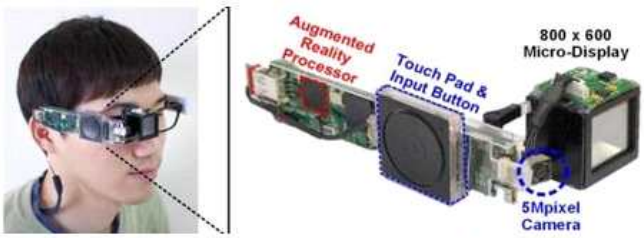
Google Glass Gets Korean Upgrade

SAN FRANCISCO — Researchers in Korea have leapfrogged Google's Project Glass with a custom chip geared to deliver augmented reality experiences on a heads-up display. They will detail their work and show a relatively crude prototype at this week's International Solid-State Circuits Conference (ISSCC) here.

Augmented reality (AR) is a future computer interface that merges online data and physical objects. Most demos of the approach use bar codes or other markers on physical objects to cue systems to retrieve related web data.

A better approach is to ask computers to automatically recognize physical objects, but that's a hard job for today's wearable displays, according to researchers from the Korea Advanced Institute of Science and Technology (KAIST). For example, on Google Glass, "markerless AR for a VGA input-test video consumes ~1.3W power at 0.2 frames/second throughput, with TI's OMAP4430, which exceeds power limits for wearable devices," according to the KAIST paper.



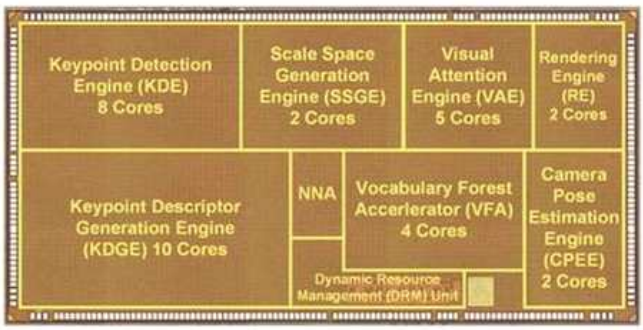
KAIST showed at ISSCC a prototype of glasses using its chip.

So KAIST researchers created their own augmented-reality processor to accelerate the work. Their 65 nm, 8.32 million gate chip delivers 1.22 tera-operations/second peak performance when running at 250 MHz and consuming 778 milliW on a 1.2V power supply. They claim the resulting 1.57TOPS/W power efficiency represents a 76% improvement over the best device described to date.

The chip uses 36 cores of at least nine different varieties. They are linked on a 2D mesh on-chip network. It can support a heads-up display with a 720-progressive high definition display.

The cores "are merged into six different SIMD clusters, where each cluster is dedicated to a different vision or 3D graphics operation. Two dedicated accelerators assist with resource management or NoC bandwidth regulation."

KAIST does not make commercial chips or systems, so don't expect a Korean version of Project Glass anytime soon. However, the work does point the way forward for anyone looking to design wearable glasses with a next-generation user interface. Someday a Samsung or LG might use similar silicon in a future Galaxy Glass product.



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— Rick Merritt, Silicon Valley Bureau Chief, EE Times