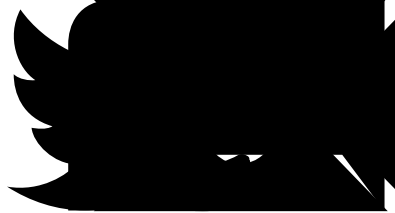# AI chip startup Wave to buy Silicon Valley old-timer MIPS

Maybe your car will get better processor brains for things like spotting pedestrians.
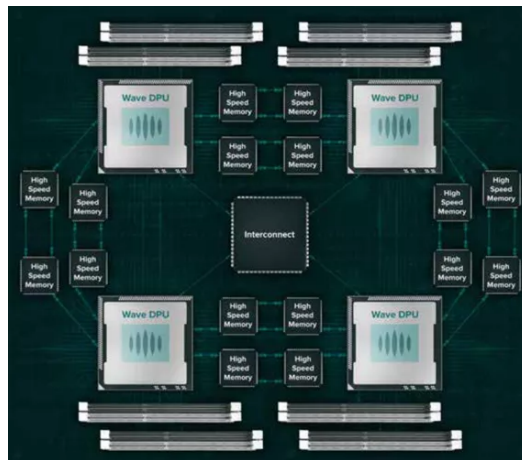
BY **STEPHEN SHANKLAND** JUNE 15, 2018 10:42 AM PDT

Update: Wave confirmed its acquisition of MIPS on Friday.

Call it a May-December marriage: A hot new AI chip startup called Wave Computing has acquired a veteran in the processor business, MIPS Technologies, CNET has learned.

Wave Computing has been aiming its AI chips at powerful computers, but acquiring MIPS will let it reach small devices, too.

Wave Computing

Wave, founded in 2010, aims to speed up the artificial intelligence technology with its custom processors. But those chips are geared for companies with a big appetite for in-house AI work or for the data centers packed with computers that often supply computing power to others. By acquiring MIPS, Wave has a chance to disperse its technology from those central areas to the much wider world of devices in our lives.

Wave didn't comment for this story, first published Wednesday.

AI is a broad term, but these days it generally refers to technology called deep learning or neural networks that are based loosely on human brains and that dramatically reshape computing. Instead of giving computers specific instructions -- "raise a fraud alert if a credit card holder makes a purchase in a different country," for example -- AIs are schooled in spotting patterns after being trained with lots of real-world data. In the fraud example, it would be lots of examples of transactions that are labeled as fraudulent or legitimate.

But AI is taxing work -- especially the training phase, but also the "inference" phase, when AIs apply what they've learned. Because of this, Silicon Valley is racing to build AI chips or to add AI abilities to existing processors. The result should be a lot more computing smarts for all of us.

In phones, chipmakers shipped more than 250 million processors with built-in AI smarts in 2017, according to Strategy Analytics. So yes, AI chips are already a big deal. AI can handle a wide variety of important tasks, like understanding voice commands or figuring out what a camera is seeing.

Wave chips are designed both for the training and inference phases of AI, the company said. Nvidia is king of the heap when it comes to training now, but on one speed test with a data set called word2vec, Wave boasts it's faster. A system with dual Intel processors and four Nvidia V100 processors takes 4 minutes and 20 seconds for training compared with 1 minute and 41 seconds for the Wave Computing system, Chief Technology Officer Chris Nicol said at an April conference.

MIPS, founded in 1984, has a long history in Silicon Valley. One of its founders was John Hennessy, who just received the prestigious Turing Award for being one of the inventors of a chip technology called RISC, short for reduced instruction set computing. After MIPS, Hennessy became president of Stanford University and is now chairman of Google. MIPS, meanwhile, was acquired by Silicon Graphics and later Imagination Technologies but has been independent since late 2017.
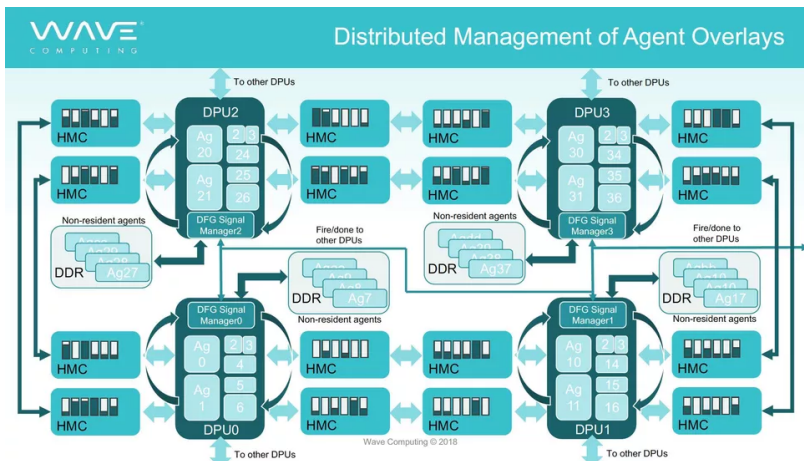
Wave Computing boasts its AI chip technology outpaces rivals like Nvidia.
Wave Computing

MIPS licenses its chip designs to others that need processors for their devices. Wave and MIPS aren't likely to get much of a place in the phone market, though, because essentially all phones use processor designs from MIPS' top rival, Arm.

There are other computing devices out there, and MIPS has an existing business in markets such as cars, appliances and low-

end computing devices, said Creative Strategies analyst Ben Bajarin.

"MIPS has some great intellectual property and can get Wave in front of a larger customer base," said Creative Strategies analyst Ben Bajarin. "If Wave enhances some MIPS technology with Wave IP then they can find themselves in some interesting places."