



## 'Sprinting' chips could push phones to the speed limit

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WORLD-CLASS sprinters push themselves to the limit to achieve record-breaking speeds, but even Usain Bolt can't keep going for an hour. Now the same principle is being used to create faster computer chips. Designed for quick "sprints" of computation rather than sustained performance, the chips could make your smartphone 10 times faster without frying the battery.

"Really we're proposing making computers that can get tired," explains [Milo Martin](#) at the University of Pennsylvania in Philadelphia. "But the plus side is you can do a lot more for short bursts of time."

Martin and colleagues' idea is to build computer chips with over a dozen processing cores - far more than today's multi-core chips, which usually have two or four. A phone would use a single core to carry out normal operations, then switch on all its cores for less than a second during heavy-duty computation, completing the job faster but causing the phone to reach its maximum heat output. The extra cores would then switch off and cool down before the next sprint.

To let the chip go faster for longer, the team suggests incorporating a block of [phase change material](#), such as paraffin wax, into it as such materials absorb heat without large swings in temperature.

When the team simulated a sprinting chip with 16 cores they found it could boost performance by a factor of 10 while sticking to the design constraints of a single-core mobile device. They now plan to build a physical version of the system.

Sprinting chips would speed up any tasks that involve short, intense periods of processing, such as stitching images into a panorama. By performing computation on your phone, they could also speed up services such as Google Goggles or the iPhone's Siri, which currently upload images or audio to remote servers for processing.

[Michael Taylor](#) at the University of California, San Diego, says the concept is "very exciting" but the challenge will be for manufacturers to find phase change materials that are compact enough for a mobile device but still absorb heat without the phone becoming too hot.

People might have to adapt to a phone that can't always keep up the pace, too. "You're only going to be able to do so many of these sprints in a given time period," says Martin. He plans to explore the best way to take advantage of sprinting without confusing the user.

The team will present [their work](#) at the [High Performance Computer Architecture](#) conference in New Orleans this month.



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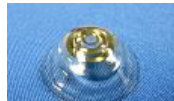
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