

3.253 seconds: Robot solves Rubik's Cube in record time at Birmingham fair (w/ video)

March 17 2014, by Nancy Owano



(Phys.org) —A robot that works with Lego Mindstorms modules and a Samsung smartphone smashed the world speed record in solving a Rubik's Cube, it was announced Saturday.

Cubestormer 3, performing at The Big Bang Fair in Birmingham, UK,

unscrambled the cube in 3.253 seconds. The Cubestormer creators are David Gilday, principal engineer at Cambridge-based ARM, and Mike Dobson, an engineer at Securi-Plex, which specializes in electronic security systems. Dobson worked on the [robot](#) design. Gilday worked on the algorithm and robot software. The two engineers took 18 months, in their spare time, to design and build the robot. (Their efforts were rewarded on Saturday with a show of speed that smashed the previous record of 5.27 seconds set by the same design team in 2011 with their Lego robot, Cubestormer 2.)

Guinness World Records editor-in-chief, Craig Glenday, was invited to adjudicate at the event. As *Engadget's* Saturday story title marveled, "Lego Cubestormer robot solves Rubik's Cube in less [time](#) than it takes to read this headline."

A Samsung Galaxy S4 smartphone and ARM processors are key elements. The S4 device is the "intelligence" component, which serves to analyze the cube. The phone is powered by an Exynos 5 Octa application processor with an eight-core ARM big.LITTLE implementation, featuring four Cortex-A15 and four Cortex-A7 processors (Exynos 5 Octa is an ARM based Octa-core mobile CPU).

After analyzing the cube the phone tells four robotic hands to do the manipulations. ARM processors also power the Mindstorms EV3 bricks.

Gizmodo [noted](#) how the robot hands must be "amazingly precise" to move so smoothly and quickly. This is but one of the challenges that confronted the engineers in crafting their high-speed entry. Commented Gilday in a published statement: "As well as working out the solution, the ARM-powered Exynos processor has to instruct the robot to carry out the moves. This is more complex than it seems because Cubestormer 3 uses a speed cube which allows twists before the sides are fully-aligned. It means the robot is effectively mirroring the same

kind of judgment and dexterity that a human speed cube has to apply. "



In the end, he said, the efforts the two made to ensure motor and intelligence functions were properly synchronized paid off. "Our big challenge now is working out if it's possible to make it go even faster."

The speed-record event took place at The Big Bang, which is a technology and engineering fair held at the National Exhibition Center in Birmingham, to inspire young people as the future generation of scientists and engineers.

More information: [www.businesswire.com/news/home ...](http://www.businesswire.com/news/home...)

[05008/en/ARM-Powered%C2%AE-Robot-Breaks-World-Speed-Record-Solving#.UyXSRvldUu7](#)

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