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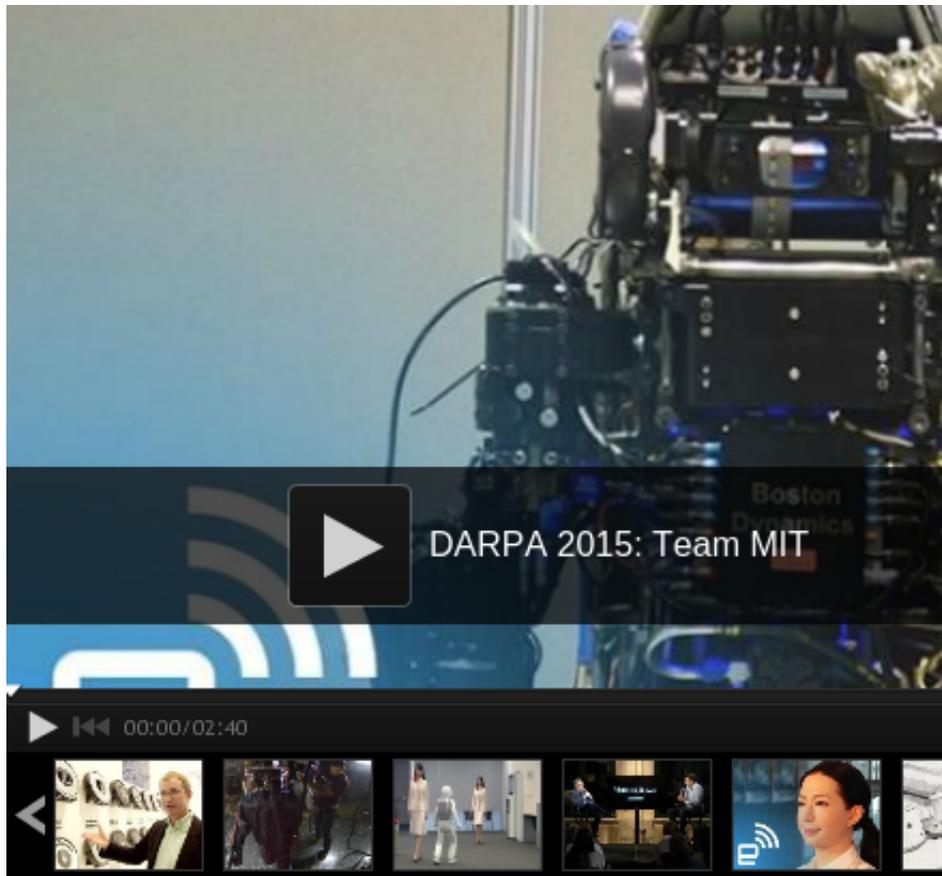
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Team MIT's robot lost the DARPA challenge but won over the crowd

by [Mona Lalwani](#) | [@monalalwani](#) | June 12th 2015 at 12:30 pm

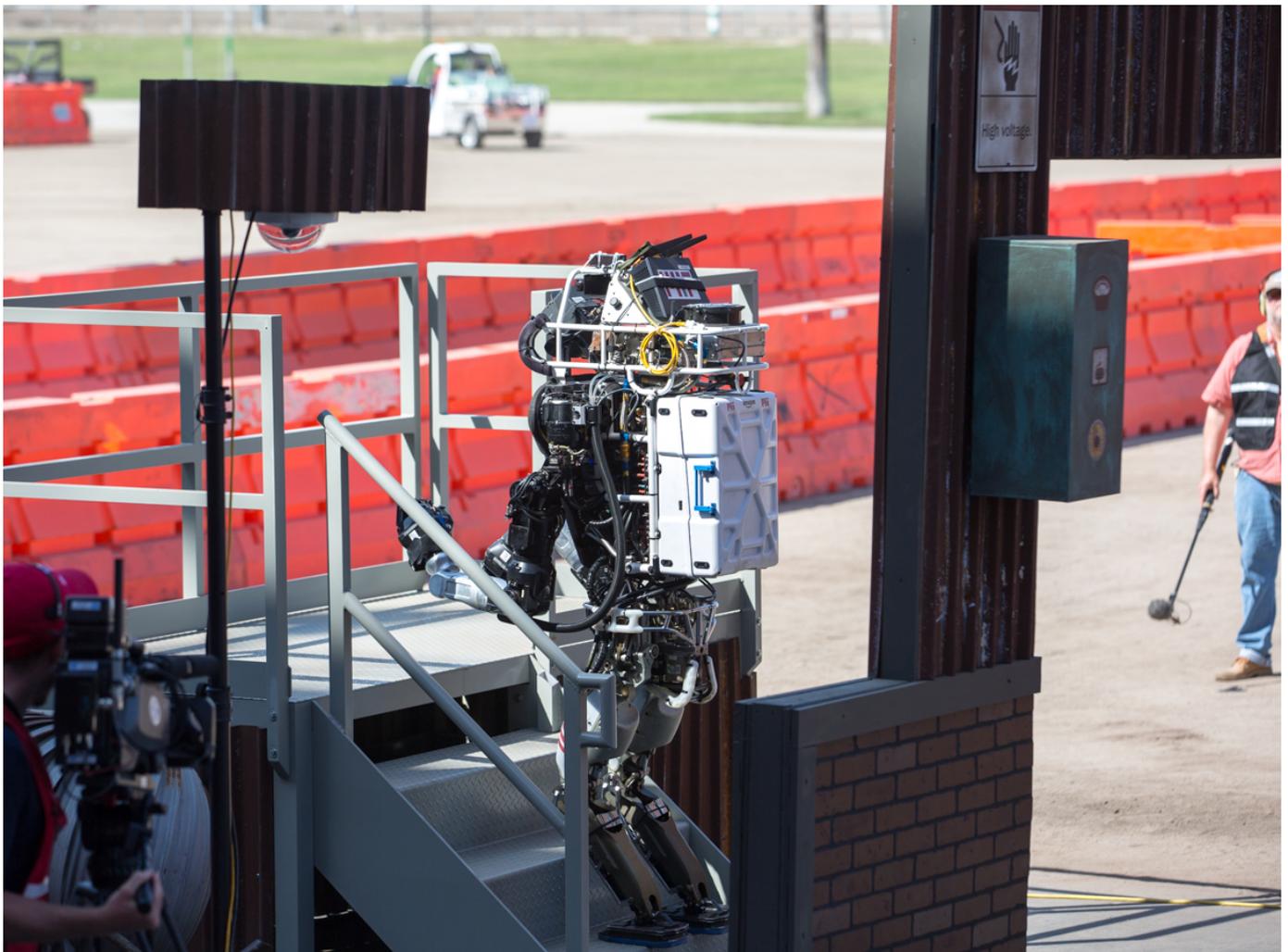
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in a red UTV. The vehicle
 floor of a simulated disaster
 building. The driver, a six-foot-two Atlas humanoid, sat motionless for many minutes. About
 half a dozen researchers wearing blue "TEAM MIT" vests looked on, like anxious parents
 waiting for their child to pick up the pace in a crucial race. When their robot eventually turned
 its body to get out of the vehicle, it shook uncontrollably for seconds before it leaped out of
 the car and fell flat on its face. The crowd collectively gasped and a loud aw-ww rippled through
 the arena. The crowd's reaction was so loud that it was heard by the other teams. The crowd
 became the underdog.

"I'm heartbroken that our robot fell," said Russ Tedrake, professor at MIT's Computer Science and Artificial Intelligence Lab. "We've spent so many hours with this robot. I don't think of it as human or anything but I love this robot. To watch it crash face first into the ground... I didn't know if it was going to get up."

Atlas showed persistence. Soon, it was back on its feet, with the help of its team and a metal rig, but it broke its right wrist in the fall. Most of the remaining tasks in the race required hand movements; the robot needed to cut through a wall, pull a lever and rotate a valve. Luckily, the team and their software had the required intelligence to improvise. After the fall, when the robot's encoders went nuts, the team detected that failure and switched sensor modes. "We told the robot your right arm is no good, use your left arm," said Scott Kuindersma, Team MIT's project and control lead. "So we were able to pick up where we left off." The crowd roared as Atlas walked up a four-step stairway to complete its first run.



The human-machine relationship is usually perceived as one of codependence. But at the recent robotics race, there was constant give and take between the human operators and their corresponding machines. The operator sat behind a purposely degraded link that restricted sensor feedback and communication, since that might be the case in the event of a real disaster -- the sort of scene the robots are being trained for. When Atlas was out on the field, it wasn't remote-controlled by an operator. It relied on its own perception codes that

pointed out objects in its environment. The codes then became the cues for the optimization algorithm that ran through the metallic veins of the machine.

The Atlas was one of seven advanced humanoids supplied by Boston Dynamics to the participating teams. Like most other teams, MIT stripped the pre-loaded software and replaced it with algorithms that gave the robot its own unique personality. "Our Atlas perceives the world differently and walks differently," said Kuindersma. His team developed a software system for bipedal locomotion, state estimation and perception. "The hardware, in principle, is capable of running fluidly through the environment, doing precise and delicate manipulation and carrying heavy loads," he said. "I think the limitation is fundamentally a software problem. So it's really on us, computer scientists and control engineers, to raise the capabilities through software to make them do the things that they're capable of doing."



At the end of day one, the team spent the night repairing the damage — the broken wrist, the faulty encoders and probably their morale. The next day, when Atlas drove back for its final run, it made it out of the vehicle and through the door effortlessly. But half way through the obstacle course, it lost its balance and slammed to the ground again. In the end, MIT's Atlas didn't win the challenge. But its falls in the race made robots, as a mechanical species, more relatable and less apocalyptic.

Having empathy for robots isn't an issue for everyone, though. "How could you not like

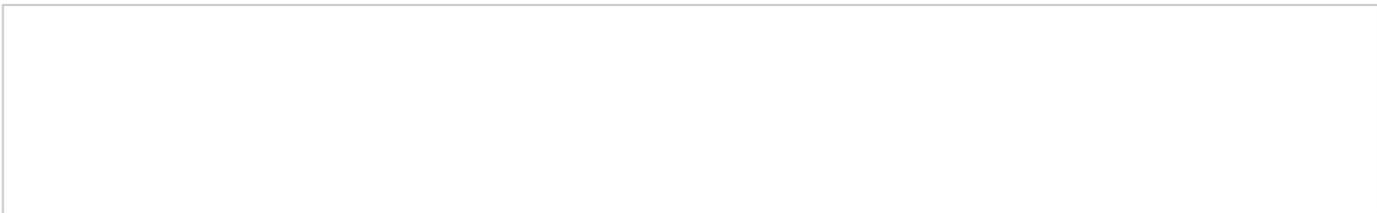
robots? That's like saying you don't like puppies," said Tedrake. "Some people are worked up about robots taking our jobs or the apocalypse. We're far from that...[but] the technology has come to a point, where robots can work outside of a machine factory. They're able to get out and do meaningful work."

TAGS: [DARPA](#), [DarpaRoboticsChallenge](#), [mit](#), [MitCsail](#), [MITrobot](#), [Robots](#), [uk-feature](#), [video](#)

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zorkind

16 hours ago

I prefer the KAIST's hubo bot, it did so damm good. :)

Like Reply



h4ldol

2 days ago

The MIT team won the crowd by using a robot supplied by a robot making company, basically only developing the algorithms that led their robot to fall on its face at least twice? Awesome.

1 Like Reply



CharlesFabook

2 days ago

If my child had been accepted by MIT that robot would not have failed.

1 Like Reply



zorkind

16 hours ago

@CharlesFabook hahahaha i am laughing so much right now ^_^ thanks for that :P

Like Reply



lovequotes

3 days ago

I have no idea what you're talking about.. <http://kquotes.com/>

Like Reply



MelissaMcD

4 days ago

robots can't take all the jobs. if nobody has a job, nobody can buy the stuff the robots are building.

1 Like Reply



farrellj

3 days ago

Robots can and will take most of the jobs. If everyone has a basic income, then everyone can buy the stuff the robots and ai are producing. FTFY.

Like Reply



gr689

2 days ago

The 1% can.... And they wouldn't need us to build it for them either..

Like Reply



Ingusmw

4 days ago

from the video, "people will lose jobs and they'll just have to adapt, like when PC's came out." and "over all society will be better." are not great closing statements. first line sounds condescending, and the jury is still out for that 2nd line conclusion...

1 Like Reply



NooYawkah

4 days ago

It's like a bad teen movie! American team comes up short but wins the crowd. And taking home the prize.. an Asian country.

1 Like Reply



Peter Mug

4 days ago

"Win the crowd."

- Proximo

8 Like Reply



salient1

4 days ago

@Peter Mug Too bad "the crowd" doesn't offer up multi-million dollar defense contracts.

1 Like Reply



Peter Mug

4 days ago

@salient1 @Peter Mug You're assuming I read a single word of this article (other than the title). I have no idea what you're talking about.

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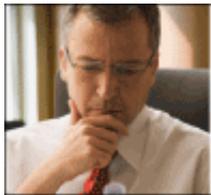
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The best iPhone 6 and iPhone 6 Plus battery cases

 by The Wirecutter | June 12th 2015 at 12:00 pm





This post was done in partnership with [The Wirecutter](#), a list of the best technology to buy. Read the full article below at [TheWirecutter.com](#).

We've spent more than 140 hours testing 21 different battery cases (18 for the iPhone 6 and three for the iPhone 6 Plus), and we think the best battery case for most people is [Anker's Ultra Slim Extended Battery Case](#). It provides an above-average 117 percent of a full charge to the iPhone 6 one full charge plus another 17 percent and at only \$40, it's by far the least expensive. The result is the highest ratio of charge percent per dollar and the lowest cost per full iPhone recharge out of all the models we looked at. It's also the lightest and thinnest battery case we tested.

Why you might want a battery case

Depending on how you use your iPhone, draining its battery during an average day can be easy. If you rely on your phone to last a full day, and you don't have the time (or physical access) to plop down next to a wall outlet, a battery case which puts a moderate-capacity rechargeable battery inside a bulky iPhone case can be a smart choice. In the best circumstances, a battery case can double the battery life of your iPhone and then some. And unlike with [stand-alone battery packs](#), you don't need to bring a separate cable or figure out how to carry both devices together. You just slide or snap your iPhone into the battery case to get protection and power in a single unit. If you're looking only for some protection, we can also recommend a [regular case](#).

How we picked and tested



Eighteen of the iPhone 6 and iPhone 6 Plus battery cases we tested.

To test each battery case, we installed a fully drained iPhone 6 and set it to Airplane mode in the fully charged case. When the iPhone reached a 100 percent charge or when it stopped charging we removed it from the case and drained the phone's battery again. Assuming the battery case still had charge remaining, we then installed the phone in the case a second time, noting the phone's battery percentage when the case stopped charging it. We recorded the charge percentages and times for each test, as well as the physical dimensions and weight of each battery case. We repeated each test a few days later and then once more for a total of three tests. We then averaged the charge results.

We also tested each case for subjective aspects of usability, such as how easily we could press the phone's buttons and how the encased phone feels in the hand.

Additionally, we used a micro-USB cable to connect each battery case to a computer to test whether each case allows pass-through charging (the capability to charge the iPhone while it's in the case) and data syncing.

Our pick



Anker's Ultra Slim Extended Battery Case is the iPhone 6 battery case with the best combination of good performance, price for the capacity, and least amount of additional bulk. It can provide 117 percent of a full charge to an iPhone 6, and its \$40 price tag is crazy low for a battery case. Anker originally released the Ultra Slim at a higher price, but the price has dropped considerably, and the company has confirmed that \$40 is the new "regular" price. The Ultra Slim offers the best charge value (2.9 percent of a full iPhone 6 charge per dollar, or \$34.34 for a full charge) of any of the cases we tested by far. And it adds only 84 grams of weight, and just 6.1 millimeters of thickness.



The Ultra Slim's buttons aren't covered, but the cutouts are properly sized and shaped.

When it comes to installation, most iPhone battery cases use either of two types of design: sliders or front frame. Anker's Ultra Slim employs the slider design. You remove a short plastic cap at the top to slide the iPhone in place, and then reinstall the cap. Doing so is very easy compared with using the trickier front-frame design of Incipio, Odooyo, and some other cases, which requires you to remove a frame, install the iPhone in the base, and then snap the frame into place around the entire phone.

Runners-up



The Anker Ultra Slim and the Tylt Energi Sliding Power Case.

Anker's [Premium Extended Battery Case](#) (\$60) is the larger-capacity sibling of the Ultra Slim and a great alternative for anyone more concerned about getting raw power over size or cost though even in those respects, it's a strong performer compared with the competition. With its 3,100-mAh cell, the Premium Extended can deliver 142 percent of a full iPhone 6 charge.

For \$30 more than our runner-up, Tylt has an intriguing alternative. The company's [Energi Sliding Power Case](#) (\$92) includes a 3,200-mAh battery that, in our testing, delivers a 133 percent charge so it doesn't match the Premium Extended in terms of absolute charge. What makes the Energi different is its two-piece design: Your phone first fits into a fully protective case, and that case then slides into a separate battery pack. This design lets you use the phone in the smaller case when you don't need the battery, sliding the battery on only when necessary. And that inner case is pretty good on its own, considering that it's not a stand-alone product.

What if you own an iPhone 6 Plus?



Tylt's Energi has a detachable inner case.

The iPhone 6 Plus version of [Tylt's Energi Sliding Power Case](#) (\$100) is our top pick for Apple's larger handset. It has the same design as the iPhone 6 edition, but it's sized to fit the 6 Plus. In our testing, the case delivered 83 percent of a full charge to a depleted iPhone 6 Plus in just under an hour and a half, better than either of the competitors we tested.

Wrapping it up

Six months after the release of the iPhone 6, we (finally) have a good selection of battery cases for the latest Apple handset. The best of the bunch is [Anker's Ultra Slim Extended Battery Case](#), which at \$40 is a screaming-good deal. It provides more than enough charge to keep most people going, and it comes in an appreciably small package.

This guide may have been updated. To see the current recommendation, please go to [TheWirecutter.com](#).

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