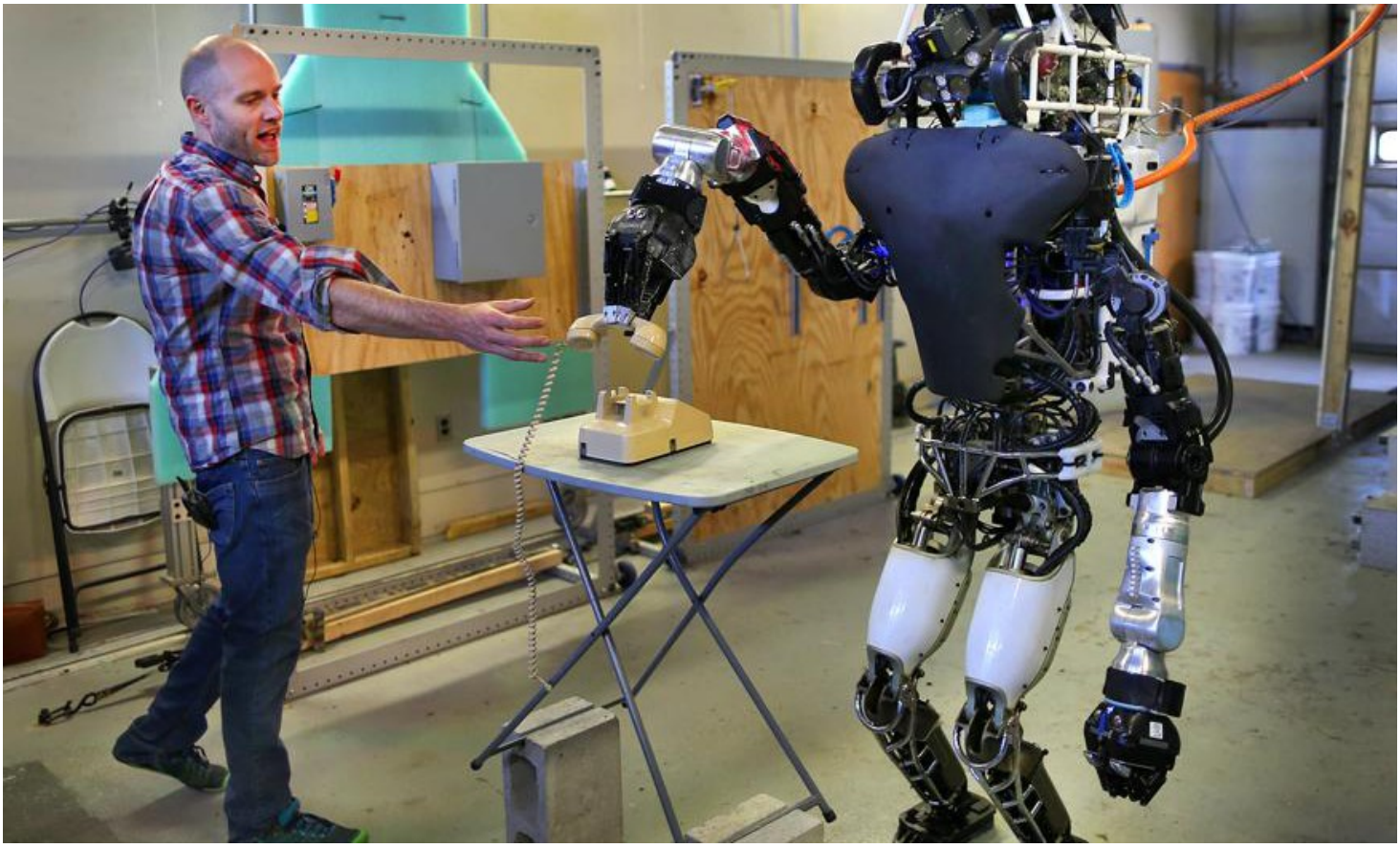
ROBOTICS (HTTP://WWW.BETABOSTON.COM/NEWS/TAG/ROBOTICS/)

Watch Atlas turn a valve, answer a phone before DARPA Robotics Challenge



Can you hear me now? Photo: John Tlumacki/The Boston Globe

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Globe Staff

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TOPICS

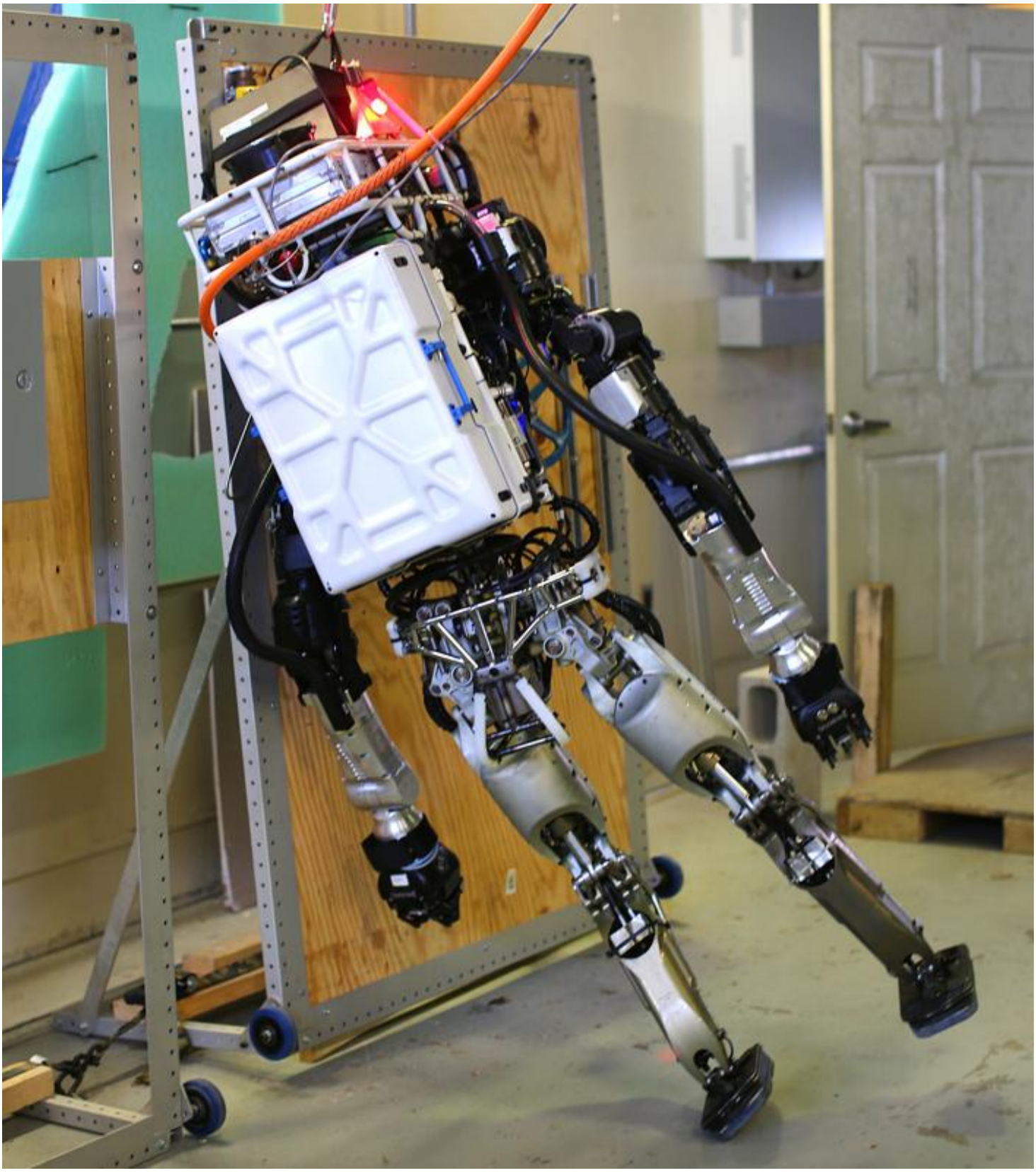
Robotics, Google, Darpa Robotics Challenge, Atlas, Robots, DARPA, Boston Dynamics, MIT

With only two weeks to go until the robot olympics, Atlas pulled up with a bum hip in training.

Atlas is the 6-foot, 2-inch, 345-pound humanoid robot that the Massachusetts Institute of Technology has entered in an international competition hosted by the Defense Advanced Research Projects Agency, or DARPA. The MIT team showed off Atlas's latest skills during a demonstration Wednesday at a warehouse on campus.

(http://static.betaboston.com/uploads/2015/05/Tlumacki_fMITrobot_business325.jpg)

That's what the practice round is for: During a trial session Wednesday, Atlas teetered, crashing into the wooden boards to its side. John Tlumacki/The Boston Globe.



With the student team issuing commands to Atlas remotely, the robot successfully completed a series of tasks that could be encountered in a real-life rescue situation: opening a door and walking through it into the next room and turning and approaching a wheel attached to a plywood frame; from there, as if opening a valve, Atlas turned the wheel with its three-fingered hand.

But then, trouble.

Atlas leaned too keenly on one leg and crashed sideways into a nearby wooden frame, but was rescued from toppling over by safety cabling.

The diagnosis: A faulty hip part. Replacement parts would be on the way.

The MIT students are among the 25 teams that will compete in the DARPA Robotics Challenge in California in June, each vying for the top spot, reserved for the most dextrous and most independent rescue robot made.

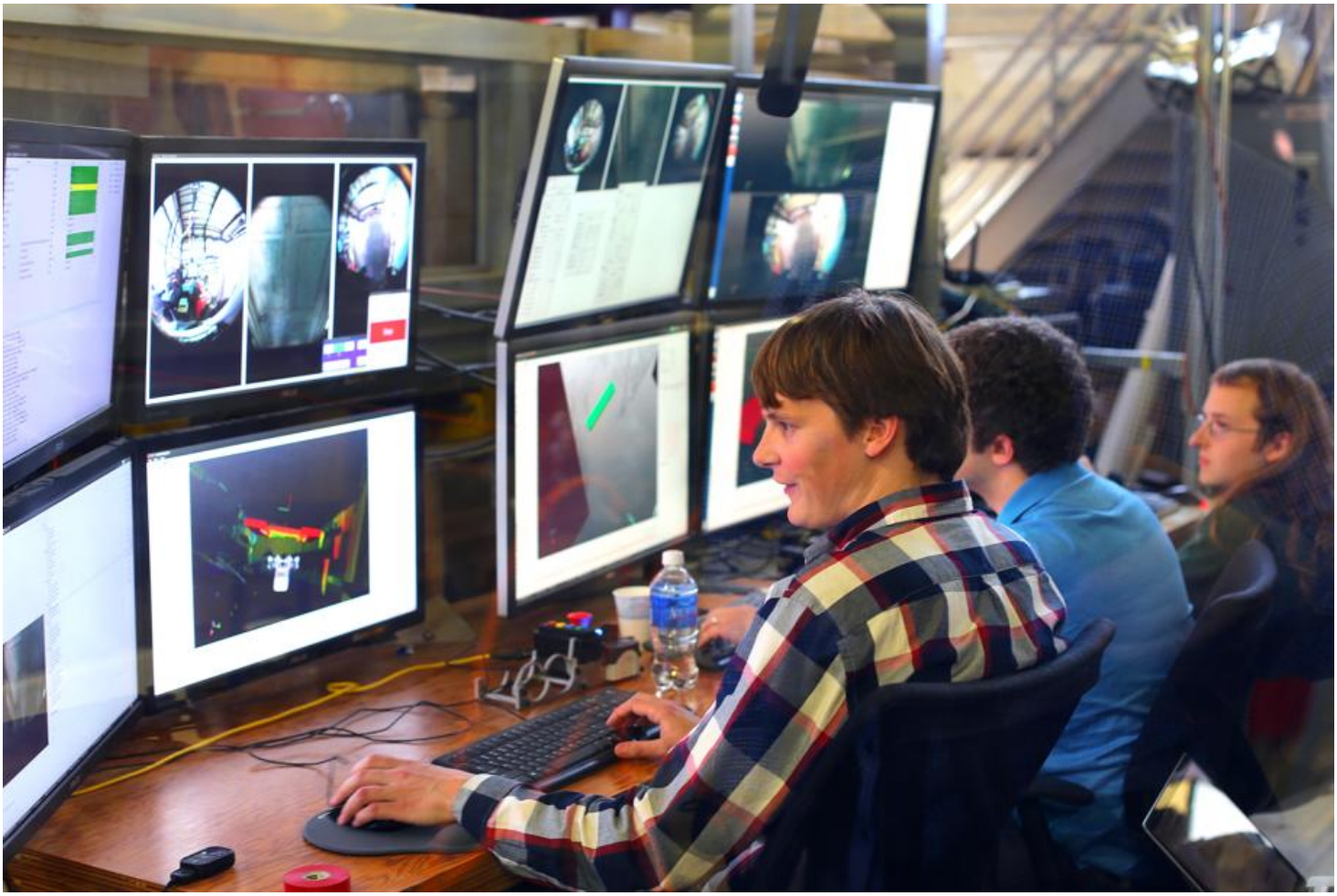
The contest was prompted by the earthquake and tsunami in Japan that crippled the Daiichi nuclear power plant. Following the destruction, companies such as Bedford-based iRobot Corp. sent robotic repairmen to places inside the plant that were deemed too radioactive for human workers.

(http://static.betaboston.com/uploads/2015/05/Tlumacki_fMITrobot_business603.jpg)

The drilling challenge is among the more complicated tasks that Atlas and the team will encounter at the DARPA Robotics Challenge. Photo:John Tlumacki/The Boston Globe.

DARPA will award $2 million to the team whose robot best navigates a realistic obstacle course and performs complicated tasks: climbing stairs, clambering over uneven terrain, even driving a car solo.

In one of the early qualifying rounds of the competition, MIT was among the groups that DARPA paired with the Google-owned company Boston Dynamics, which built Atlas.

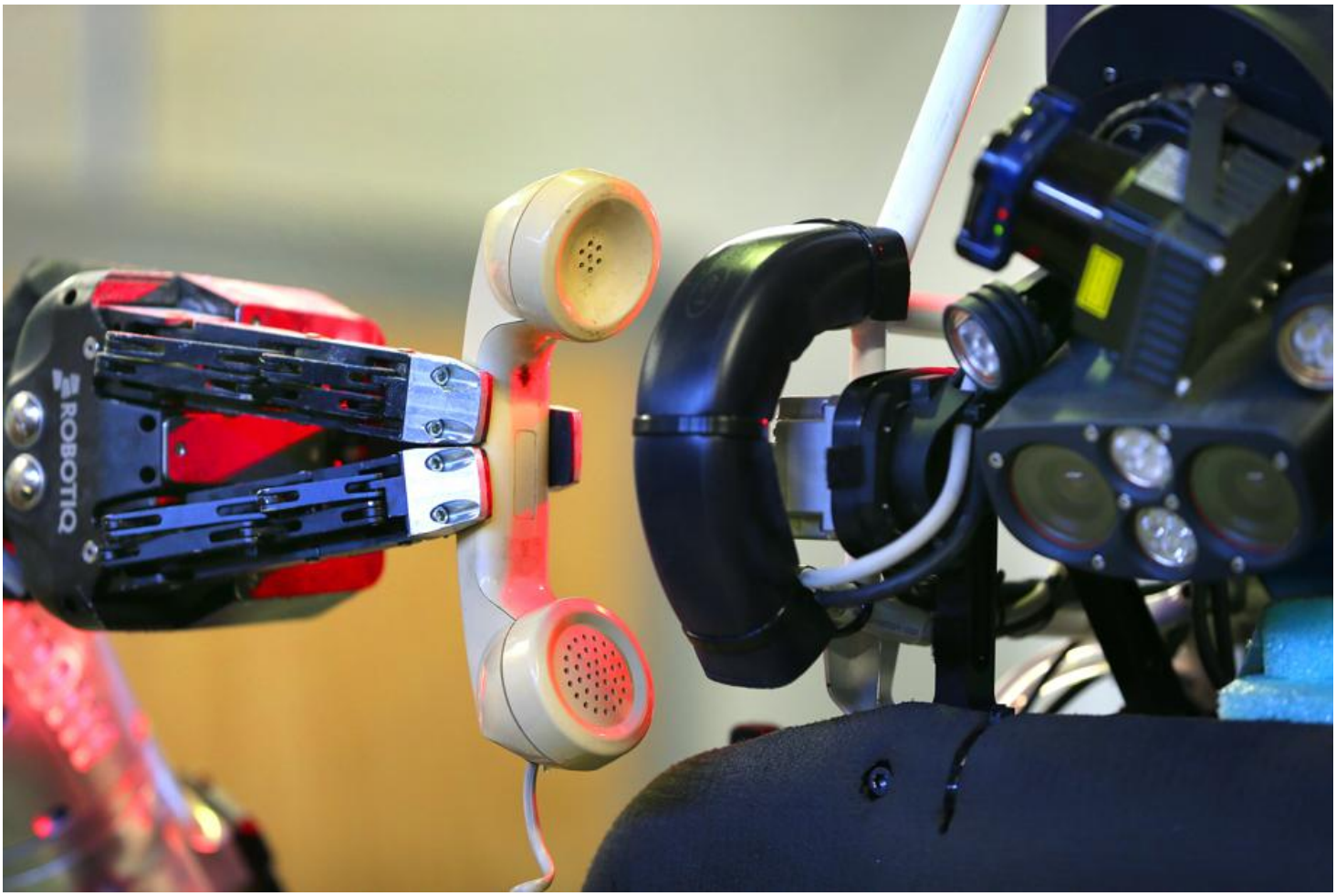


(http://static.betaboston.com/uploads/2015/05/Tlumacki_fMITrobot_business307.jpg)

Software engineer Pat Marion watches a live view of what Atlas sees through it's onboard cameras. Photo: John Tlumacki/The Boston Globe.

"This is the most advanced, sophisticated machine I've ever worked on," said Russ Tedrake, the professor who leads the MIT team.

After taking his spill Wednesday, Atlas walked up to a power drill, picked it up, and turned it on, then cut a hole in a sheet of plywood. As a surprise task — something the team had not done before — the robot walked up to a broken phone, picked up the handset, and held it to its ear.



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Can you hear me now? Photo: John Tlumacki/The Boston Globe

But then, while attempting to climb a set of stairs, Atlas hooked its shin on a step and took another tumble.

DARPA has warned the teams that the final round of the contest will be tough, and that even the most prepared teams should brace for failures and missteps.

“If a robot falls, and we imagine that a large number of them will, it will face the danger of being injured, and perhaps not being able to continue. If it does fall, it will have to get up on its own,” Gill Pratt, the DARPA program manager for the challenge, told reporters during a briefing last week.

According to Tedrake, even if Atlas breaks an arm during the finals, the robot would still be able to complete most tasks.

However, during the competition DARPA won’t let teams use the kind of safety cable that saved Atlas from falling over Wednesday.

“We’re doing everything we can to not fall,” Tedrake quipped.

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