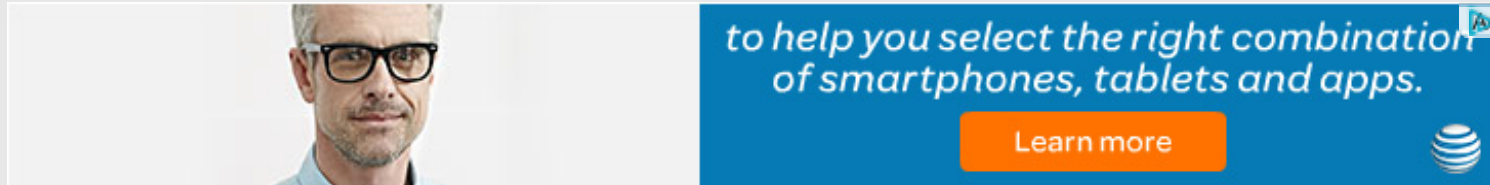




NEWS


Home | Video | World | US & Canada | UK | Business | Tech | Science | Magazine | Entertainment & Arts | More ▾

ADVERTISEMENT



to help you select the right combination
of smartphones, tablets and apps.

Learn more

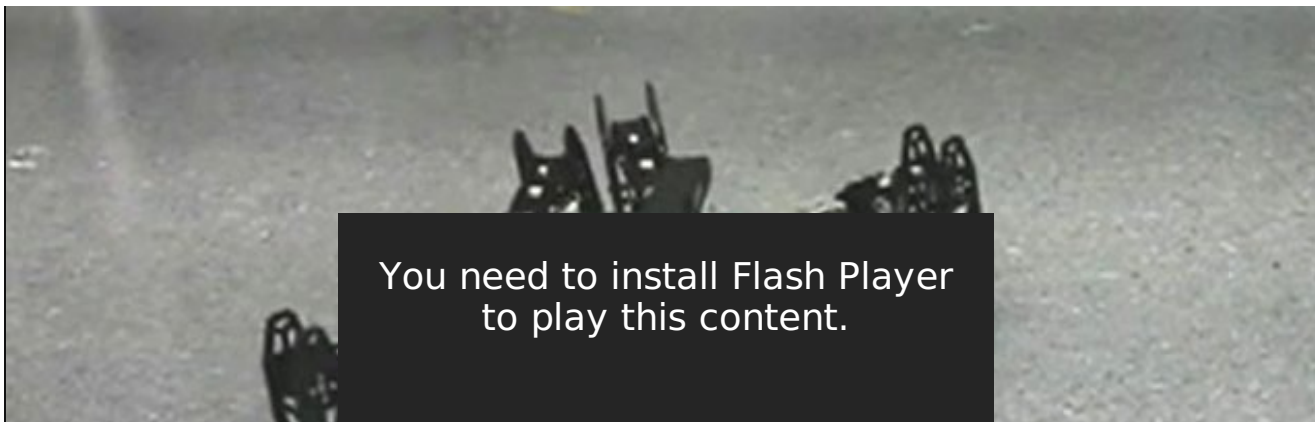


Science & Environment

Adaptable robots 'on their way' to the home

By Pallab Ghosh
Science correspondent, BBC News

🕒 27 May 2015 | [Science & Environment](#)



Top Stories

Hundreds missing as China ship sinks

One person is dead and hundreds are missing after a ship capsizes during a storm on the Yangtze River in southern China, say state media.

🕒 37 minutes ago

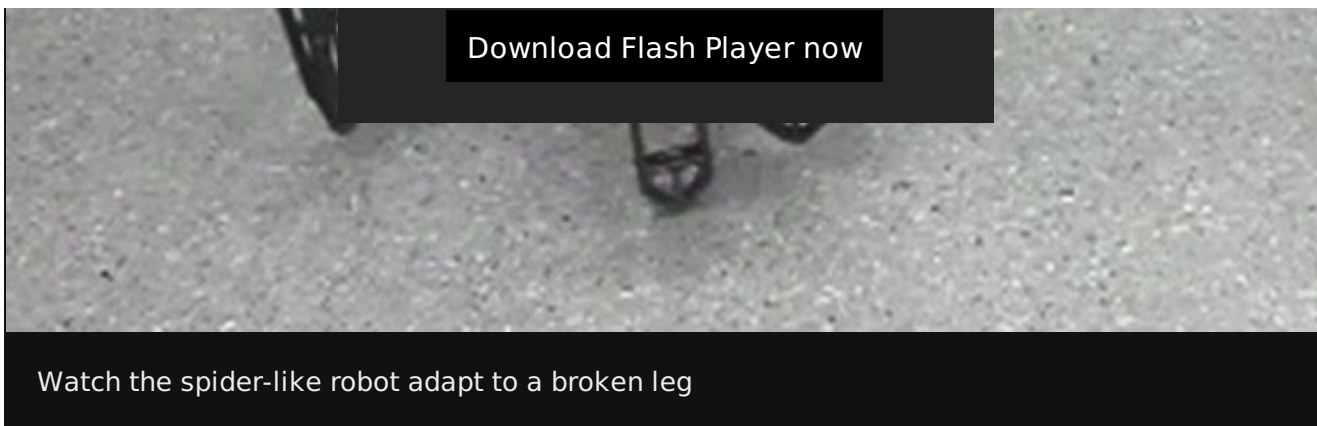
S Korea has first two Mers deaths

🕒 5 hours ago

Anti-IS coalition to discuss action

🕒 1 hour ago

ADVERTISEMENT



Researchers have developed robots that learn to live with damaged parts in less than a minute, instead of the many hours needed by traditional self-learning systems.

The system paves the way for robots to be used in a wide variety of settings, coping with damage that occurs in the real world.

Possible applications include robots looking after the elderly, rescuing earthquake victims or doing housework.

Details are **in the journal Nature**.

We marvel at the robots we see in films: some try to wipe out humanity, such as Ultron in the recent Avengers film, while others like C-3PO in Star Wars are helpful albeit slightly annoying. But they are still the stuff of science fiction, partly because if the slightest thing goes wrong with a real-life robot it usually stops working altogether.

In a step towards making the machines of the movies a reality, French and US researchers



Having the kind of intelligent robots you see in the movies is much closer than people realise

Dr Jeff Clune, University of Wyoming

2015 US Open
American Express® Presale
now – June 6 at 11:59PM ET.

Get Tickets

US OPEN 2015
AMERICAN EXPRESS

Features & Analysis



A world of inquiry

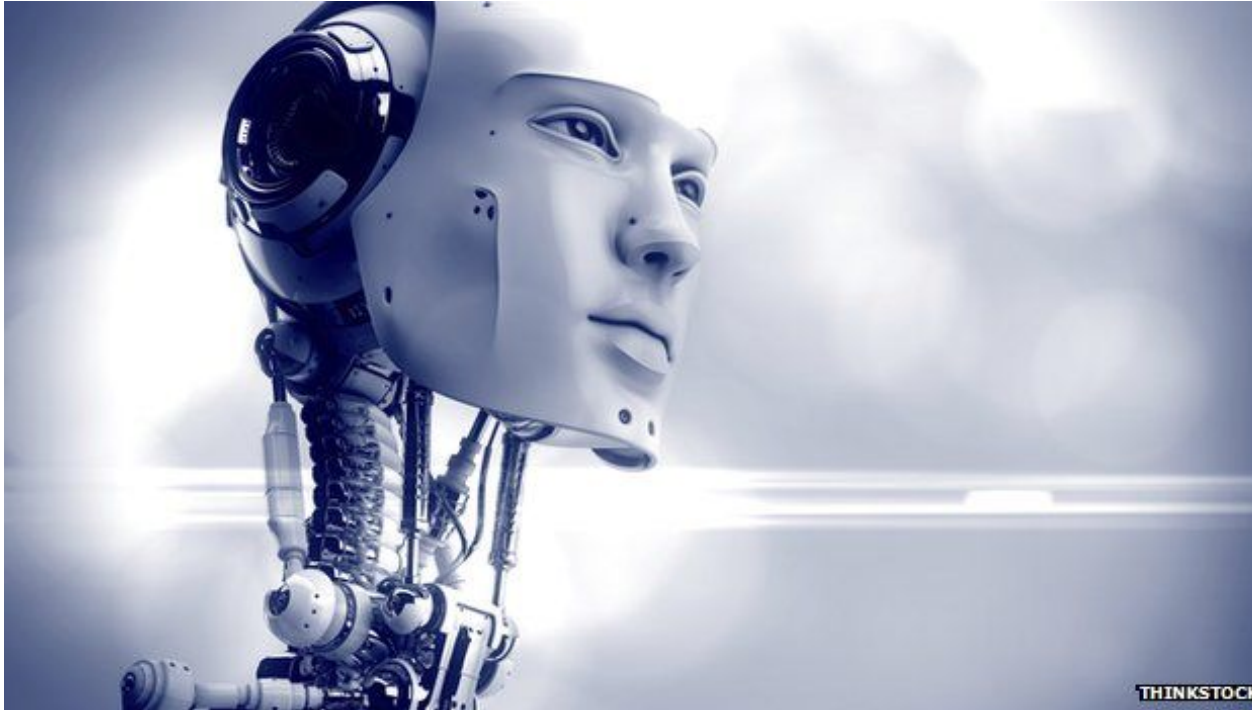
Many countries are investigating Fifa



A trim a shave and a book

have developed a learning algorithm that enables robots to adapt very quickly when they are damaged.

Factory and laboratory robots have a strictly pre-defined way of operating. So if a component breaks, it normally has to be replaced for the robot to continue with its task.



The friendly face of the future? The robots we see in films may be closer than many people realise

Most self-learning systems that seek alternative ways of continuing with the task are too slow, because they try out billions of possibilities. Using software that filters out the ineffective strategies, the new system vastly speeds up the process.

The team demonstrated the principles with a six-legged, spider-like robot that found a new way of crawling across the floor after one of its legs was

Can barbershops help raise literacy in black boys?



Talking animals

Why humans are fascinated by the language of apes



Chic but leaky

The Paris apartments in need of a good plumber



The Vocabularist

Where does the term 'whistle-stop' come from?

broken. They also unveiled a robotic arm that could adapt to a broken joint and learn a new way to drop a ball in a bin.

In both instances, the robots were able to learn a new strategy to complete their task **in less than a minute**. Traditional self-learning systems would have taken days.

According to Dr Jeff Clune of the University of Wyoming, the development represents an important first step toward robots that are able to operate independently, outside of the carefully controlled confines of a laboratory or factory floor.

"Having the kind of intelligent robots you see in the movies is much closer than people realise. Our algorithm should in principle work on any kind of robot no matter how complex it is," he told BBC News.

"If anyone can get a working C-3PO, our algorithm could help it to deal with unforeseen situations and damage."

Sampling strategies

The new system uses a computer simulation to filter out all the possible solutions that will not work well. It then collects the ones that are both effective and different from each other, so that the robot does not waste time testing out similar strategies.

Next, the robot tries out what the simulation predicts will be the best solution. If that fails, it tries out something entirely different. It carries on doing this until it finds a strategy that works.



We would like to put these robots outside of factories to help in the outside world, where anything can happen

Dr Jean-Baptiste Mouret,
Pierre and Marie Curie
University



Dogs for dinner

International campaign targets Chinese festival



My Name Is...

Activists target Facebook over 'real name' policy



Ghosts of the Mediterranean

The ships' graveyard that reveals a gruesome story

The research points the way to robots that are more robust, adaptable and cheaper to maintain than today's machines, according to senior author Jean-Baptiste Mouret, from Pierre and Marie Curie University in Paris.



Is this spider robot that the first of a new generation of adaptable machines?

"If you have robots in your home they would probably be expensive and you would not want them to stop working if a small part breaks," he told BBC News.

"Robots are used in factories because they are a controlled environment and nothing unexpected can happen to them. We would like to put these robots outside of factories to help in the outside world, where anything can happen."

Alongside recent advances in artificial intelligence, such as the **self-**



Fighting back

The musicians refusing to dance to IS's tune

Most Popular

Read

Watched

Hundreds missing as China ship sinks

1

Russian planes fly near US warship

2

Virgin-born sawfish found in Florida

3

US airport security reforms ordered

4

Anti-IS coalition to discuss action

5

Drips, leaks and blocked drains in chic Paris

6

learning system developed by Google's DeepMind Technologies, this development could see the emergence of new uses for robots.

"The things (DeepMind) is working on are amazing," says Dr Clune. "(Together) we will bring closer a future where robots are helping humans.

"We should be sending robots into Fukushima instead of asking human volunteers to take lethal doses of radiation. Robots should be putting out forest fires so we don't have to risk human lives and they should be used to help us in our homes," he said.

Home help

Among the ideas for household robots are machines for cleaning, **cooking**, or loading and unloading dishwashers.

Most of the development of the system was done by Antoine Cully, a PhD student working with Dr Mouret. He says one of his principal motivations was to help those who are infirm.

"I hope we can have robots that are assistants for the elderly," he said.

Dr Clune, though, believes this technology could have applications at the



Does the march of the machines start now? Recent advances in artificial intelligence could soon lead them out of the factory floor and into the home.

S Korea has first two Mers deaths **7**

Chinese dog-eating festival outrages foreigners **8**

Paris cuts 'love locks' from bridges **9**

Ex-Georgia head gives up citizenship **10**

From Around the Web

🔗 **Lost ship's weird message to the universe on 'Other Space' episode 3**
(Yahoo!)

🔗 **Common Behaviors Adults with ADD and ADHD Exhibit**
(HealthCentral)

🔗 **The 12 Last Presidents Ranked from Worst to First**
(InsideGov)

🔗 **Pictures: Billions of Blue Jellyfish Wash Up on American Beaches**
(National Geographic News)

🔗 **11 Surprising Causes of Male Dysfunction**
(HealthCentral)

other end of the age spectrum.

He has very recently become a father, whose newborn child has been keeping him awake into the early hours of the night. He confesses that he has spent the extra sleepless hours pondering "long and hard" whether he could use the new system to create a robot that can soothe a crying baby.

"Necessity is the mother of invention, so maybe that will be my next invention," he joked.

But I was left with the impression that his comments were not entirely in jest.

Follow Pallab [on Twitter](#)

Share this story About sharing



More on this story

Dexterous robot gets to grips with folding clothes

7 May 2015

'Robot chef' aimed at home kitchen

14 April 2015

Google machine learns to master video games

25 February 2015

[↗](#) **There Are Four Common Types of German Surnames. Which One Is Yours?**

(Ancestry)

Promoted content by Outbrain

Ads by Google

PolySync Autonomy OS

Plug and play OS. The fast, easy way to build a self driving car.
www.harbrick.com

16.1% 2014 Annuity Return

True Investor Returns with no Risk. Find out how with our Free Report.
advisorworld.com/CompareAnnuities

AndyMark Inc.

Your Robot Parts Experts Gearboxes, Mecanum Omni Wheels Etc.
www.andymark.com

Related Internet links

University Pierre and Marie Curie

University of Wyoming

Nature

The BBC is not responsible for the content of external Internet sites

More Science & Environment stories >



Virgin-born sawfish found in Florida

🕒 4 hours ago



'Moon shot' call on clean energy

🕒 3 hours ago



Solar Impulse lands safely in Japan

🕒 1 June 2015

Elsewhere on BBC

Islamic State: Women who join discover 'harsh realities'

BBC News

A brief encounter: The evolving attitudes to beachwear

BBC Culture

Liverpool cafe owner with secret 'fire trap' living quarters jailed

BBC News

Eerie images of Chinese theme parks

BBC Culture

'Perverted' man, 64, jailed for

What is the best car to drive

BBC News Services

 [On your mobile](#)

 [On your connected TV](#)

 [Get news alerts](#)

 [Contact BBC News](#)

Explore the BBC

[News](#)

[Capital](#)

[CBBC](#)

[Music](#)

[Sport](#)

[Culture](#)

[CBeebies](#)

[Nature](#)

[Weather](#)

[Autos](#)

[WW1](#)

[Local](#)

[Shop](#)

[Future](#)

[Food](#)

[Earth](#)

[TV](#)

[iWonder](#)

[Travel](#)

[Radio](#)

[Bitesize](#)

[Terms of Use](#) [About the BBC](#) [Privacy Policy](#) [Cookies](#) [Accessibility Help](#) [Parental Guidance](#) [Contact the BBC](#)

Copyright © 2015 BBC. The BBC is not responsible for the content of external sites. [Read about our approach to external linking.](#)