

Welcome to TimesPeople  
Get Started

TimesPeople recommended: [Drilling, Disaster, Denial](#)

1:38 PM

Recommend

HOME PAGE MY TIMES TODAY'S PAPER VIDEO MOST POPULAR TIMES TOPICS

Try Times Reader 2.0 | Log In | Register Now

The New York Times

# Science

Science All NYT Search

WORLD U.S. N.Y. / REGION BUSINESS TECHNOLOGY SCIENCE HEALTH SPORTS OPINION ARTS STYLE TRAVEL JOBS REAL ESTATE AUTOS

ENVIRONMENT SPACE & COSMOS

OBSERVATORY

## Nine-Inch Robot Walks Like a Man, Climbs Hills Too

By HENRY FOUNTAIN  
Published: July 17, 2007

Compared with a human, the typical two-legged walking robot can make only baby steps. That's because people have a better biomechanical system (legs, hips, etc.) and more complex neuronal control over it. A bipedal robot may be able to walk on a smooth, level surface, but throw in a few bumps or hills and it is likely to fall flat on its silicon posterior.

[Enlarge This Image](#)



University of Gottingen

Researchers at the University of Göttingen in Germany are reporting progress in developing a robot that can adapt to different terrain, adjusting its gait and posture after a few learning experiences.

The 9-inch-high machine, called RunBot, has already been shown to be able walk at a good clip (about 3.5 leg lengths per second, compared with a sprinter's 4 to 5 per second). But in a [paper](#) in the open-access online journal PLoS Computational Biology, Florentin Wörgötter and colleagues describe its adaptive capabilities.

The robot has ground-contact sensors on its feet and motors at its knees and hips that are controlled through a series of electronic circuits that simulate receptor and motor neurons. There are two levels of control — a basic, almost reflexive control that occurs in reaction to the foot sensors, and a higher-level control that takes into account, among other things, the timing of signals in the system.

With these dual control levels, RunBot can do things like adapt to terrain with bumps and depressions, and adjust its gait and posture to walk up an 8-degree slope. When walking uphill it's not immune to falling on its backside, but unlike other robots it learns after a couple of falls.

[Sphere: Related Blogs & Articles](#)

SIGN IN TO RECOMMEND

TWITTER

SIGN IN TO E-MAIL OR SAVE THIS

PRINT

REPRINTS

SHARE

More Articles in Science »

Ads by Google what's this?

**The New Robot Guitar**  
The Gibson Robot Guitar is Here! New Limited Edition Color. [Gibson.com/RobotGuitar](#)

**AIMS Math Practice**  
Arizona-aligned math practice. Comprehensive and FUN for students! [www.ixl.com/math](#)

**Used Pick & Place Gear**  
Used Pick & Place Equipment Browse our current inventory now! [www.eslsmt.com](#)

**Science Signaling Pathway**  
Science Signaling Pathway Database now available for pathway analysis. [www.AriadneGenomics.com](#)

**The Science & Art of Nano**  
Applications for Nanotechnology are being developed in many industries [www.america.gov/nanotechnology.html](#)

**Induction Lighting SOLARA**  
Offering the greatest cost savings in lighting solutions [www.amko.com.tw/SOLARA](#)

Advertise on NYTimes.com

### Related

Observatory: [Near Miss by Hurricane Can Bring a Big Chill to Overheated Coral Reefs](#) (July 17, 2007)

Observatory: [Researchers Find a Use for Jellyfish. The Many, Many Jellyfish.](#) (July 17, 2007)

[More Observatory Columns »](#)

### Web Link

[Adaptive, Fast Walking in a Bipedal Robot under Neuronal Control and Learning](#) (PLoS Computational Biology)

Sign in to Recommend

[More Articles in Science »](#)

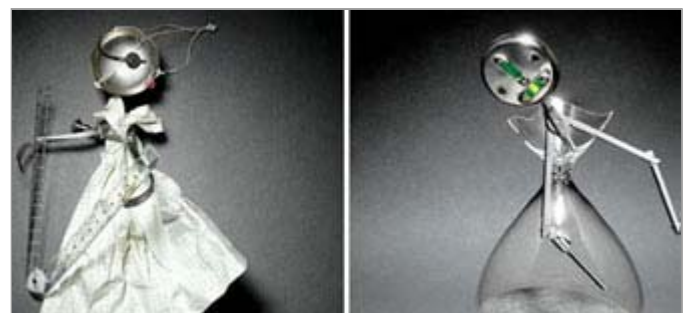
Times Reader 2.0: Daily delivery of The Times - straight to your computer. Subscribe for just \$4.62 a week.

### MOST POPULAR

E-MAILED BLOGGED SEARCHED VIEWED

1. [Shanghai Is Trying to Untangle the Mangled English of Chinglish](#)
2. [Nicholas D. Kristof: Who Can Mock This Church?](#)
3. [Well: The Talents of a Middle-Aged Brain](#)
4. [Children's Tylenol and Other Drugs Recalled](#)
5. [Paul Krugman: Drilling, Disaster, Denial](#)
6. [Steven Strogatz: Group Think](#)
7. [Frank Rich: If Only Arizona Were the Real Problem](#)
8. [Op-Ed Contributor: Founding Amateurs?](#)
9. ['Fantasticks' Pays Back for 50 Years](#)
10. [Despite Push, Success at Charter Schools Is Mixed](#)

[Go to Complete List »](#)



## The data-driven life

Also on NYTimes.com  
We have met the enemy and he is PowerPoint  
Dave Barry's fun house

nytimes.com

Ads by Google what's this?

**The New Robot Guitar**  
The Gibson Robot Guitar is Here! New Limited Edition Color. [Gibson.com/RobotGuitar](#)

**Is Jesus Really God?**

Scholars examine the facts about Jesus' claims to be God  
[www.Y-Jesus.com/JesusFacts](http://www.Y-Jesus.com/JesusFacts)

**Metal house Co., Ltd**

we're tin toy robot maker in Japan. the limited dino robot now on sale!  
[www.metalhouse-tokyo.com/](http://www.metalhouse-tokyo.com/)

**Tips**

To find reference information about the words used in this article, double-click on any word, phrase or name. A new window will open with a dictionary definition or encyclopedia entry.

**Past Coverage**

- [In Latest Robotics, New Hope for Stroke Patients \(July 10, 2007\)](#)
- [Old Drugs In, New Ones Out \(June 30, 2007\)](#)
- [Flexible and Fearless, Seeking Rescue Work \(June 25, 2007\)](#)
- [Driver Not Included in This Performance Test \(June 15, 2007\)](#)

**Related Searches**

[Robots](#)

ADVERTISEMENTS

Vote for the collectible car of the year

Follow The New York Times on Twitter

Watch today's top videos

See the news in the making. Watch TimesCast, a daily news video.




The New York Times **WINE CLUB**  
[nytwineclub.com](http://nytwineclub.com)

Save \$20 on your first shipment with code: WEB2  
[Learn More](#)

**INSIDE NYTIMES.COM**



THEATER »



'Fantasticks' Pays Back for 50 Years

OPINION »



Op-Ed: Founding Amateurs?

TECHNOLOGY »



A Tech Incubator in New York Grows a Following

WORLD »



Some in Guyana Push to Revive Jonestown

OPINION »

**Editorial: Sudan's Other Crisis**  
Sudan's tainted election must not divert attention from another potential crisis there: the danger of renewed civil war.

U.S. »



Learning to Love the Sea, Then Torn From It

[Home](#) | [World](#) | [U.S.](#) | [N.Y./Region](#) | [Business](#) | [Technology](#) | [Science](#) | [Health](#) | [Sports](#) | [Opinion](#) | [Arts](#) | [Style](#) | [Travel](#) | [Jobs](#) | [Real Estate](#) | [Automobiles](#) | [Back to Top](#)  
 Copyright 2007 The New York Times Company | [Privacy Policy](#) | [Search](#) | [Corrections](#) | [RSS](#) | [First Look](#) | [Help](#) | [Contact Us](#) | [Work for Us](#) | [Site Map](#)