



Blue Heron Bio GeneMaker - Gold standard gene synthesis
Technology leader www.blueheronbio.com/

NewsArticlesVideosImagesBooks

Health & MedicineMind & BrainPlants & AnimalsEarth & ClimateSpace & TimeMatter & EnergyComputers & MathFossils & Ruins

Science News

ShareBlogCitePrintEmailBookmark

Ads by Google

Search

Visual System That Detects Movement, Colors And Textures

ScienceDaily (June 11, 2009) — Mimicking the way in which a retina works is a hard as it sounds. Scientists from Stanford University, in the United States, have spent the past two years working on imitating the way in which information is processed in biological systems, in other words through the transmission of events in specifically connected networks (where information is captured and transmitted at the same time).

See also:

Health & Medicine

- Immune System
- Sports Medicine
- Disability
- Diseases and Conditions
- Children's Health
- Infant's Health

Reference

- Peripheral vision
- Functional neuroimaging
- Vitreous humour
- Human brain

Now a research team from the University of Granada has evaluated the degree of precision of different models in estimating movement, and have combined the responses of four movement detection cells, two of which are static (on and off), and two transitory (decrease and increase). "One of our developments is a multimodal attention operator, which can detect movement in objects of different colours and textures", Fran Barranco, one of the researchers involved in this project, tells SINC.

The objective of this study, which has been published in the latest issue of the journal IEEE Transactions on Systems Man and Cybernetics, was

to combine movement and attention based on information provided by the artificial retina, a visual system capable of selectively capturing moving objects in real time.

The use of an event-driven model, which makes it possible to focus only on areas of activity, has been fundamental, both in the movement processing model as well as in the multimodal selective attention model created in Granada.

One of the most interesting results of the study is the ability to estimate movement reasonably precisely using the responses from each of these cells alone (4% of the information provided by a camera). "By selecting only 10-20% of the information, which we selected on the basis of reliability of the measurements, we obtained precise results at a lower computational cost and with greater stability", explains Barranco. This point is very important in enabling the model to be used in applications with broadband limitations.

The Spanish researchers have also developed 'advanced integrated intelligent sensors', which can pre-process a scene in a manner similar to that used by retinas.

A science fiction future

"We are carrying out reverse engineering. In other words we are trying to study how Nature behaves in order to imitate it, because thousands of years of evolution have created a highly-advanced model adapted to the task for which it evolved", says Barranco.

The devices created have been designed for use in video surveillance and monitoring applications. However, their low energy consumption could make them of great interest in the future for implants in patients or in work to understand the functioning of the brain, and particularly the visual system.

Journal reference:

Francisco Barranco; Javier Díaz, Eduardo Ros, Begoña del Pino. **Visual System Based on Artificial Retina for Motion Detection.** *IEEE Transaction on Systems Man and Cybernetics Part-B Cybernetics*, Volume 39 (3), pages 752-762; 2009

Adapted from materials provided by [FECYT - Spanish Foundation for Science and Technology](#), via [EurekAlert!](#), a service of AAAS.

Email or share this story: | [More](#)

Need to cite this story in your essay, paper, or report? Use one of the following formats:

☒ APA

FECYT - Spanish Foundation for Science and Technology (2009, June 11). Visual System That Detects Movement, Colors And Textures. *ScienceDaily*. Retrieved June 15, 2009, from <http://www.sciencedaily.com/releases/2009/06/090608131148.htm>

☐ MLA

Search ScienceDaily

Number of stories in archives: 44,032

Find with keyword(s):

Search

Enter a keyword or phrase to search ScienceDaily's archives for related news topics, the latest news stories, reference articles, science videos, images, and books.

Ads by Google

Advertise here

Innovative Gas Detection
Fixed systems & portable monitors for your safety from GfG
www.gasdetection.biz

Oferta para Funcionarios
Consigue más seguro y menos precio Precio especial para este colectivo
www.EmpleoDirecto.com/Funcionarios

Fix Your Damaged Heart
Your Stem Cells Can Fix Your Heart! A Finer Quality of Life is Possible

Just In:
[What Really Prompts The Dog's 'Guilty Look'](#)

Science Video News

Detecting Toxins: Saving Lives
Electrical engineers have developed a new, portable lab that identifies chemicals by their unique color signatures. It is the first such device to be. ... > [full story](#)

[Engineers Develop Technology To See Through Walls](#)
[Colors Are Key To Keeping Your Eyes On The Game](#)
[Computer Scientists Program Robots To Play Soccer, Communicate With Bees](#)

[more science videos](#)



Breaking News

... from [NewsDaily.com](#)

NASA delays launch to Wednesday

Alaska's Rat Island rat-free after 229 years

Researchers uncover how nanoparticles may damage lungs

Researchers uncover how nanoparticles may damage lungs

New flu has been around for years in pigs: study

[more science news](#)

REUTERS

Ads by Google

V V

Vaseco Leak Detection
Environmental testing UKAS Vacuum Pressure Hire Leak Detectors
www.vaseco.com

The Ubiquitin system
Topical themes in cellular roles Read the Insight free online
www.nature.com/nature

In Other News ...

[Mousavi supporters plan rally in Tehran](#)
[Netanyahu bows to Obama, accepts Palestinian "state"](#)
[CIA chief believes Cheney almost wants U.S. attacked](#)
[Pakistan orders offensive against Taliban chief](#)
[Lack of votes seen for Obama healthcare program](#)
[Suspected Miami cat killer caught, police say](#)
[Yemen says arrests Saudi financier of al Qaeda](#)
[Threats, violence seen eroding U.S. abortion rights](#)

[more top news](#)

Copyright Reuters 2008. See [Restrictions](#).

Free Subscriptions

... from [ScienceDaily](#)

Get the latest science news with our free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

[Email Newsletters](#)
[RSS Newsfeeds](#)

Feedback

... we want to hear from you!

Tell us what you think of the new ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?
Your Name: