

TECHNOLOGY ROUNDUP

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- International Conference on Science, Engineering & Technology
- International Conference on Information and Education Innovation
- International Conference on Green Energy and Technology
- International Conference in Recycling and Waste Management
- International Conference on Engineering and Technology
- International Conference on Science, Technology & Management
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Fire Fighting Autonomous Robot

In most of the offices in Pakistan, the water spray is usually used as a fire extinguisher agent to control moderate fire. This traditional practice smothers the fire at the cost of damage in terms of electronics equipment and documents located in the vicinity of the fire.

To reduce the damage rate, an autonomous firefighting robot is developed that first detects fire with the help of flame sensors, then automatically reach to the fireplace and extinguishes the fire through releasing the cloud of carbon dioxide gas. Moreover, it is capable of sending notification through Short Message Service (SMS) to the concerned person or rescue departments.

A series of tests have been performed on an implemented robot and the results show that it functions well as intended.

Source:

Usama Bin Abad, Muhammad Asif, Maaz Bin Ahmad, Toqeer Mahmood, Ammar Hashmi, Muhammad Ahmed Cheema. Fire Fighting Autonomous Robot. 2019 Vol 24 No 02 Technical Journal. <http://tj.uettaxila.edu.pk/index.php/technical-journal/article/view/944>

Recognition of Off-Line Hand-Written Alphabets Using Knowledge-Based Computational Intelligence

The handwritten character recognition is considered an active recognition problem under the field of image processing and pattern recognition.

Both area of research has gained so much popularity in few last years due to technology advancements and necessity of time. The handwritten character recognition also becomes popular due to globalization and technology improvements. In previous time, the information was stored in written form only. To utilize that information, one needs such an advanced method which can do this task efficiently and without reliance on human.

This work provides such a simplified and accurate method for the recognition of handwritten characters. A system is proposed to recognize characters using convolutional neural network and is evaluated on a benchmark dataset named as EMNIST to show the performance of the proposed technique. The proposed system gained the accuracy of 97.62% which is better than various existing methods.

Source:

Ghulam Abbas. Recognition of Off-Line Hand-Written Alphabets Using Knowledge-Based Computational Intelligence. Vol 2 No 1 (2019): 08: Pakistan Journal of Engineering and Technology. <https://sites2.uol.edu.pk/journals/index.php/pakjet/article/view/47>

Male Contraceptive Compound stops Sperm without Affecting Hormones: Study in Monkeys

A new study shows how a compound called EP055 binds to sperm proteins to significantly slow the overall mobility of the sperm without affecting hormones, making EP055 a potential "male pill" without side effects. There are hormonal drugs in clinical trials that target the production of sperm, but these affect the natural hormones in men much like female contraceptives affect hormones in women.

During the study, thirty hours following a high-dose intravenous infusion of EP055 in male rhesus macaques no indication of normal sperm motility was found. Further, no physical side effects were observed. At 18 days post-infusion, all macaques showed signs of complete recovery, suggesting that the EP055 compound is indeed reversible.

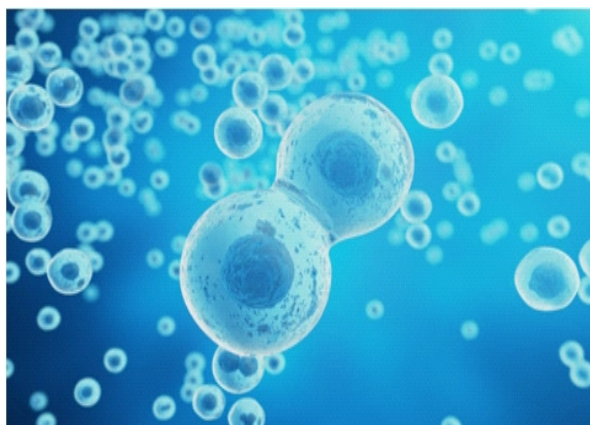
More work is needed before EP055 becomes available for human use. The pill containing this compound will eventually be used to conduct a mating trial of EP055's effectiveness against pregnancy.

Source:

www.sciencedaily.com/releases/2018/04/180419172654.html

Nano-Thermometer takes Temperature inside Cells

Scientists have developed a nano-thermometer able to take temperatures inside cells. The technique takes advantage of the fluorescent properties of a modified molecular rotor and the viscosity of the cell.



Cells illustration (stock image). Credit: © rost9 / [Adobe Stock](#)

A biocompatible molecular rotor known as boron dipyrromethene (BODIPY, for short) was modified to reveal temperatures inside single cells. The molecule is ideally suited to the task. Its fluorescence lasts only a little while inside the cell, and the duration depends heavily on changes in both temperature and the viscosity of its

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environment. But at high viscosity, the environment in typical cells, its fluorescence lifetime depends on temperature alone. It means that at a specific temperature, the light turns off at a particular rate, and that can be seen with a fluorescence-lifetime imaging microscope.

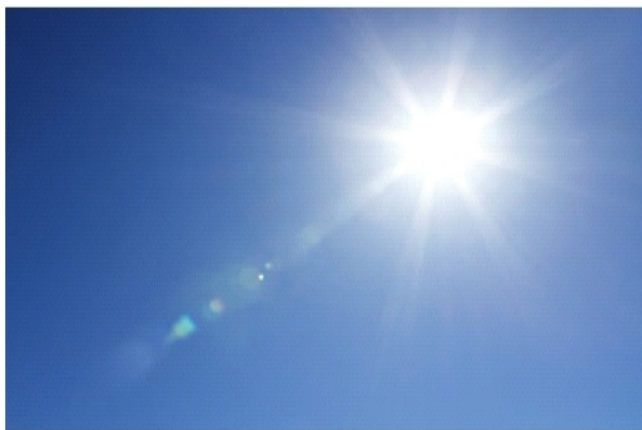
The technique might be useful for quantifying the effects of tumor ablation therapy, where heat is used to destroy cancer cells, or in simply measuring for the presence of cancers.

Source:

www.sciencedaily.com/releases/2019/08/190822165012.html

Materials that can Revolutionize how light is harnessed for Solar Energy

Scientists have designed organic molecules capable of generating two exactions per photon of light, a process called singlet fission. The exactions can live for much longer than those generated from their inorganic counterparts, which leads to an amplification of electricity generated per photon that is absorbed by a solar cell.



Shining sun, clear sky (stock image). Credit: © rangizzz / Adobe Stock

All modern solar panels operate by the same process -- one photon of light generates one exciton. The exciton can then be converted into electric current. However, there are some molecules that can be implemented in solar cells that have the ability to generate two excitons from a single photon -- a process called singlet fission. These solar cells form the basis for next-generation devices, which are still at infancy. One of the biggest challenges of working with such molecules, though, is that the two excitons "live" for very short periods of time (tens of nanoseconds), making it difficult to harvest them as a form of electricity.

The design strategy should be useful in separate areas of scientific study and have many other yet-unimaginable applications.

Source:

www.sciencedaily.com/releases/2019/08/190819112721.html

Artificial Intelligence helps Banana growers protect the world's most Favorite Fruit

Using artificial intelligence, scientists created an easy-to-use tool to detect banana diseases and pests. With an average 90 percent success rate in detecting a pest or a disease, the tool can help farmers avoid millions of dollars in losses.



Bananas (stock image). Credit: © Worawut / Adobe Stock

Artificial intelligence-powered tools are rapidly becoming more accessible, including for people in the more remote corners of the globe. This is good news for smallholder farmers, who can use handheld technologies to run their farms more efficiently, linking them to markets, extension workers, satellite images, and climate information. The technology is also becoming a first line of defense against crop diseases and pests that can potentially destroy their harvests.

A new smartphone tool developed for banana farmers scans plants for signs of five major diseases and one common pest. In testing in Colombia, the Democratic Republic of the Congo, India, Benin, China, and Uganda, the tool provided a 90 percent successful detection rate. This work is a step towards creating a satellite-powered, globally connected network to control disease and pest outbreaks.

Bananas are the world's most popular fruit and with the global population set to reach 10 billion in 2050, pressure is mounting to produce sufficient food. The pests and diseases -- Xanthomonas wilt of banana, Fusarium wilt, black leaf streak (or Black sigatoka), to name a few -- threaten to damage the fruit.

The tool is built into an app called Tumaini -- which means "hope" in Swahili -- and is designed to help smallholder banana growers quickly detect a disease or pest and prevent a wide outbreak from happening. The app aims to link them to extension workers to quickly stem the outbreak. It can also upload data to a global system for large-scale monitoring and control. The app's goal is to facilitate a robust and easily deployable response to support banana farmers in need of crop disease control. The novelty in this app is that it can detect symptoms on any part of the crop, and is trained to be capable of reading images of lower quality, inclusive of background noise, like other plants or leaves, to maximize accuracy.

Source:

www.sciencedaily.com/releases/2019/08/190812130827.html

Gene Editing Transforms Gel into Shape-Shifting Smart Material The CRISPR technique can trigger the new material to release drugs or pick up Biological Signals

Scientists have wielded the gene-editing tool to make scores of genetically modified organisms, as well as to track animal development, detect diseases and control pests. Now, they have found yet another application for it: using CRISPR to create smart materials that change their form on command. The shape-shifting materials could be used to deliver drugs, and to create sentinels for almost any biological signal.



Credit: [Evgenii Leontev](#) Getty Images

The working was carried out with water-filled polymers that are held together by strands of DNA, known as DNA hydrogels. A form of CRISPR was used to alter the properties of these materials which uses DNA-snipping enzyme called Cas12a. (The gene-editor CRISPRCas9 uses the Cas9 enzyme to snip a DNA sequence at the desired point.). The Cas12a enzyme can be programmed to recognize a specific DNA sequence. The enzyme cuts its target DNA strand, then severs single strands of DNA nearby. Hydrogels were created that were programmed to release enzymes, drugs and even human cells for instance, as part of a therapy in response to stimuli.

CRISPR hydrogels are an improvement on other responsive hydrogels because scientists can easily determine what triggers a change in the material. Past efforts to create smart hydrogels used enzymes that either did not cut specific DNA sequences or cut only a small number of specific sequences, limiting their adaptability.

Source:

www.scientificamerican.com/article/gene-editing-transforms-gel-into-shape-shifting-smart-material

How does Wireless Charging Work?

As our gadgets evolve, so do the ways we charge them.



Credit: CLASSEN RAFAEL / EYEEMGETTY IMAGES



This is a Contemporary illustration of Faraday's magnetic induction experiment, as documented in an electricity textbook from 1892. COMPUTER HISTORY MUSEUM

It's near magical the first time you set your phone on a wireless charger, but it's a technology that goes back nearly 130 years. But despite the fact that its story measures in centuries, the tech is only now becoming ubiquitous in things you buy. Mostly, your next (new) phone will have it and even some cars include them in the front seat.

The wireless power market is expected to grow to one billion charging units by 2020, according to IHS, a market research firm in London. Wireless charging actually isn't a novel idea. It's even older than the Ford Model T. In 1831, the English physicist Michael Faraday first discovered the underlying magnetic and electrical ideas that led to induction charging, which transfers energy wirelessly between two receivers. He described his experiment, which produced a "current of electricity by ordinary magnets," in an 1831 series of lectures at the Royal Society in London. Faraday had used a liquid battery to send an electric current through a small coil. Then when it moved in or out of a larger coil, the magnetic field changed it created a momentary voltage in the smaller coil.

Source:

www.popularmechanics.com/technology/gear/a28679177/how-wireless-charging-works

Forthcoming Tech Events

Pakistan

International Conference on Science, Engineering & Technology

28-29 October, 2019

Rawalpindi

www.allconferencealert.net

International Conference on Information and Education Innovations

17 November, 2019

Lahore

www.researchsociety.co

International Conference on Green Energy and Technology

28-29 October, 2019

Rawalpindi

www.allconferencealert.com

International Conference on Recycling and Waste Management

25 December, 2019

Lahore

www.researchsociety.co

International

International Conference on Engineering & Technology

5th November, 2019

Washington DC, USA

www.allconferencealert.net

International Conference on Science, Technology & Management

7th December, 2019

Port Moresby, Papua New Guinea

Www.allconferencealert.net

9th International Conference on Education and Management Innovation

13-15 February, 2020

Barcelona, Spain

www.wikicfp.com

8th International Conference on Information and Education Technology

28-30 March, 2020

Okayama University, Japan

www.iciet.org

Tech & Trade Offers

Imperial Electric Company Pvt Ltd.

IEC has a separate division to undertake medium & large turnkey projects which include design, engineering, installation, testing, commissioning, operation and maintenance in the following disciplines.

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- ✍ Reverse Osmosis” Water Purification Plants
- ✍ Power Generation” L.V. & H. V. (11 KV)
- ✍ Airfield Lighting” Installation, testing & commissioning
- ✍ Other Electrical Installations

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- ✍ Design, Supply & Installation of 132 KV Grid Stations.
- ✍ Design, Supply & Installation of Airfield Lighting System on Military & Civil Airports.
- ✍ Design, Supply, Installation, Commissioning & Operation of Water Desalination Plant to produce drinking water from sea.
- ✍ Design, Supply, Installation, Testing & Commissioning of over 6000 Diesel Generators.



About PASTIC

PASTIC serves as a gateway for Scientific & Technological Information for R&D by catering to the information needs of researchers, entrepreneurs, industrialists, educationists, policy makers and planners through anticipatory and responsive information services.

Technology Information Section works exclusively for support and promotion of technological information on trade and industry in the country. “Technology Roundup” is a news bulletin that provides latest and innovative technology news, forthcoming events, etc. It also promotes products, technologies and services globally in sectors such as Agro-Industry, Bio-Technology, Building Material, Business, Chemicals, Electronics, Energy, Fisheries, Food Processing, Machinery, Packaging, Mining Pharmaceuticals and Textiles.

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