SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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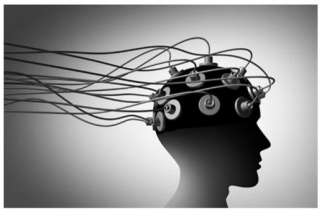
WHAT'S NEW IN SCIENCE

How you and your friends can play a video game together using only your mind?

Telepathic communication might be one step closer to reality thanks to new research from the University of Washington. A team created a method that allows three people to work together to solve a problem using only their mind.

In BrainNet, three people play a Tetris-like game using a brain-to-brain interface. The team published its results in the Nature journal 'Scientific Reports', Published in Washington, DC, USA.

As in Tetris, the game shows a block at the top of the screen and a line that needs to be completed at the bottom. Two people, the Senders, can see both the block and the line but can't control the game. The third person, the Receiver, can see only the block but can tell the game whether to rotate the block to successfully complete the line. The team asked five groups of participants to play 16 rounds of the game. For each group, all three participants were in different rooms and couldn't see, hear or speak to each other.



The Senders each could see the game displayed on a computer screen. The screen also showed the word "Yes" on one side and the word "No" on the other side. Beneath the "Yes" option, an LED flashed 17 times per second. Beneath the "No" option, an LED flashed 15 times a second.

"Once the Sender makes a decision about whether to rotate the block, they send 'Yes' or 'No' to the Receiver's brain by concentrating on the corresponding light," said first author Linxing Preston Jiang, a student in the Allen School's combined bachelor's/master's degree program.

The Senders wore electroencephalography caps that picked up electrical activity in their brains. The selections were then translated into a "Yes" or "No" answer that could be sent over the internet to the Receiver.

If the answer was "Yes, rotate the block" then the Receiver would see the bright flash. If the answer was "No" then the Receiver wouldn't see anything. The Receiver received input from both Senders before making a decision about whether to rotate the block. Because the Receiver also wore an electroencephalography cap, they used the same method as the Senders to select yes or no.

The Senders got a chance to review the Receiver's decision and send corrections if they disagreed. Then, once the Receiver sent a second decision, everyone in the group found out if they cleared the line. On average, each group successfully cleared the line 81% of the time, or for 13 out of 16 trials.

Courtasy :
Shri Durgaram Manchhaham Mehta Nagar Prathamic School No. 28

SCIENTIST OF THE MONTH

Homi Nusserwanji Sethna

Homi Nusserwanji Sethana was born on August 24, 1923 at Bombay (Mumbai) in Maharashtra. He did his Bachelors in Science from the University of Bombay in 1944.

Earlier in his career, he had full technical responsibility for setting up of the Thorium extraction plant at always, Kevala India, for separation of rave earth from Monazite Sands. The construction of the Thorium plant and the plant for producing nuclear grade Uranium metal at Trombay was also completed by him. The plutonium plant at Trombay was designed and constructed completely by Indian Scientists and engineers under Sethna as the Project Engineer in 1959. The Uranium Mill at Jaduguda, Bihar was also construction under his guidance in 1967. Sethna was the guiding force for the first peaceful nuclear explosion in India in May 1974. He received the Padma Shri in 1959, Shanti Swarup Bhatnagar Prize in 1960, Padma Bhushan in 1966 and Padma Vibhushan in 1975.

Courtasy :
Shri Durgaram Manchhaham Mehta Nagar Prathamic School No. 28

SCIENCE FACTS AUGUST 2019

2 August 1861	Indian Scientist Sir Prafullchandra Ray was born.
4 August 1956	India's first Nuclear Reactor "Apsara" was estlablished at ' Trombay' (BARC-Bhabha Atomic Research Centre)
5 August 1930	Neil Alden Armstrong (First person to set foot upon the moon) was born.
6 August 1881	Prof. Alexander Fleming (discoverer of Penicillin) was born.
7 August 1976	"Viking 2" Spacecraft of America entered into Orbit of Mars.
8 August 1901	Ernest Lawrence (inventor of Cyclotron) was born.
12 August	International Youth Day. (by U.N.)
12 August 1919	Well known Indian Scientist Dr.Vikaram Ambalal Sarabhai was born.
14 August1888	Johan Logie Baird (inventor of colour Television) was born.
17 August 1870	Frederick Russell (inventor of first successful typhoid fever vaccine) was born
21 August 1754	William Murdoch (inventor of Gas lighting) was born
22 August 1920	Denten Cooley (who conducted the first artificial heart transplant) was born.
25 August 1989	Space Craft 'Voyager 2's closest approach to Planet Neptune was noted.
26 August 1906	Albert Sabin (inventor of oral polio vaccine) was born
29th August	International Day against Nuclear Tests. (by U.N.)
	U. N. : United Nations WHO : World Health Organization

Ans:- 1. c 2. a 3. a 4. b 5. c

Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday & Public Holidays
11.00 am to 6.30 pm

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KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

Fun Mirrors

Stand in front of the curved mirrors and look at your own image. Does it look funny?

A concave mirror give you an elongated image whereas a convex mirror gives you a squeezed image. Rotate the mirror while watching your image. What is happening to your face? As the convex mirror rotates it squeezes your image sometimes vertically and sometimes horizontally.

SCIENTIFIC QUESTION

What is Resistor? (Part-2)

Nonideal Properties

Practical resistors have a series inductance and a small parallel capacitance; these specifications can be important in high-frequency applications. The temperature coefficient of the resistance may also be of concern in some precision applications.

The unwanted inductance, excess noise and temperature coefficient are mainly dependent on the technology used in manufacturing the resistor. A family of discrete resistors is also characterized according to its form factor, that is the size of the device and the position of its leads (or terminals) which is relevant in the practical manufacturing of circuits using them.

Fixed resistor:

Lead arrangements

Through-hole components typically have "leads" leaving the body "axially," that is, on a line parallel with the part's longest axis. Others have leads coming off their body "radially" instead.

Carbon composition

Carbon composition resistors (CCR) consist of a solid cylindrical resistive element with embedded wire leads or metal end caps to which the lead wires are attached. The body of the resistor is protected with paint or plastic. Early 20th-century carbon composition resistors had uninsulated bodies; the lead wires were wrapped around the ends of the resistance element rod and soldered. The completed resistor was painted for color-coding of its value.

The resistive element is made from a mixture of finely powdered carbon and an insulating material, usually ceramic. A resin holds the mixture together. The resistance is determined by the ratio of the fill material (the powdered ceramic) to the carbon. Higher concentrations of carbon, which is a good conductor, result in lower resistance.

Carbon composition resistors are still available, but relatively expensive. Values ranged from fractions of an ohm to 22 megohms. Due to their high price, these resistors are no longer used in most applications. However, they are used in power supplies and welding controls.

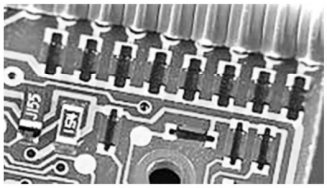
Carbon pile

A carbon pile resistor is made of a stack of carbon disks compressed between two metal contact plates. These resistors are used when an adjustable load is required, for example in testing automotive batteries or radio transmitters. A carbon pile resistor can also be used as a speed control for small motors in household appliances (sewing machines, hand-held mixers) with ratings up to a few hundred watts. The principle is also applied in the carbon microphone.

Carbon film

A carbon film is deposited on an insulating substrate, and a helix is cut in it to create a long, narrow resistive path. Compared to carbon composition they feature low noise, because of the precise distribution of the pure graphite without binding. Resistances available range from 1 ohm to 10 megohm. The carbon film resistor has an operating temperature range of −55 °C to 155 °C. It has 200 to 600 volts maximum working voltage range. Special carbon film resistors are used in applications requiring high pulse stability.

Printed carbon resistor



Carbon composition resistors can be printed directly onto printed circuit board (PCB) substrates as part of the PCB manufacturing process. Although this technique is more common on hybrid PCB modules, it can also be used on standard fibreglass PCBs.

Courtesy :
Shri Durgaram Manchhaham Mehta
Nagar Prathamic School No. 28

SCIENCE QUIZ

1. Joule is the unit of...

a). Temperature, b). Pressure, c). Energy, d). Heat

2. Centigrade and Fahrenheit scale give same reading at.

a). -40, b). -32, c). -273, d). -100

3. Alexander Fleming discovered.

a). Penicillin, b). X-ray, c). Streptomycin, d). Telephone

4. Oncology is study of..

a). Birds, b). Cancer, c). Mammals, d). Soil

5. The Velocity of light was first measured by..

a). Einstein, b). Newton, c). Romer, d). Galileo

SCIENCE PROJECT

Surat Municipal Corporation had organized 'Science Fair' at Ground Floor, Art Gallery, Science Centre, Surat on 03rd and 04th August 2018. Shri Durgaram Manchhaham Mehta Nagar Prathamic School No. 28 had presented their project on 'Air Purification Plant'.

The Aim of this project is to purify the Air.

The method is as follows: First take wooden stand. Fit the P.V.C pipe with dri-kalp. Joint with heavy altimeter. Place filter between Tri-kalp and P.V.C pipe. Fit the edges of P.V.C pipe and Tri-kalp with solution and place funnel (nozzle) on the top of pipe and plug the altimeter and on the switch. Switch turned on and fan rotates. Which will pull out the particles (dust) of outside air and particles (dust) will be deposited below. Clean air will come out on top.

The advantages of this project is to place this project in company and society also on cross-roads. So that dust can be removed and enhance the environment, this can prevent you from diseases of the lungs such as Asthma, Cough etc.

SCIENCE CENTRE

Science Centre forms the main part of the entire complex; it displays thematic galleries in the field of Science and Technology. The ground floor of Science Centre showcases 3D Theatre and Souvenir Shop. The first floor of Science Centre showcases Planetarium, Fun Science Gallery and Power of Play Gallery and second floor of Science Centre showcases Diamond Gallery, whereas Entering into Space, Cosmos Gallery under development.

3d Show	Tuesday to Friday (Time)	Saturday, Sunday & Holidays (Time)
English	09:15, 11:20, 12:00, 02:40, 04:00	11:20, 12:00, 02:40, 04:00
Hindi	10:00, 10:40, 12:40, 01:20, 02:00, 03:20	12:40, 01:20, 02:00, 03:20, 04:40, 05:20, 06:00

Science Centre + Planetarium + Museum + Diamond Gallery	
Above 18 Years	Rs. 100
3 Years to 18 Years	Rs. 65
Science Centre + Museum + Diamond Gallery	
Above 18 Years	Rs. 60
3 Years to 18 Years	Rs. 40
Science Centre + Planetarium + Museum + Diamond Gallery + 3D Show	
Above 18 Years	Rs. 120
3 Years to 18 Years	Rs. 80
Planetarium	
Above 18 Years	Rs. 50
3 Years to 18 Years	Rs. 40
3D Show	
Above 18 Years	Rs. 60
3 Years to 18 Years	Rs. 40

Planetarium

Tuesday to Friday		Saturday, Sunday & Public Holidays	
09:30 to 10:20	English	11:30 to 12:20	Gujarati
10:30 to 11:20	Gujarati	12:30 to 01:20	English
11:30 to 12:20	Gujarati	01:30 to 02:20	Hindi
12:30 to 01:20	English	02:30 to 03:20	Hindi
01:30 to 02:20	Hindi	03:30 to 04:20	Gujarati
02:30 to 03:20	Hindi	04:30 to 05:20	English
03:30 to 04:20	Gujarati	05:30 to 06:20	Gujarati