

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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WHAT'S NEW IN SCIENCE?

NASA has discovered our Solar System's twin with 8 planets.

NASA has found our Solar system's twin more than 2500 light-years away. Using data from the Kepler Space telescope, researchers have found an eight planet at the Kepler-90 system, tying our own system for the highest number of known planets. Google software engineer Christopher Shallue and Andrew Vanderburg at the University of Texas at Austin used a neural network a type of machine learning that mimics the connections between neurons in a brain to look for new planets in old Kepler data. They trained their algorithm on 15,000 signals that had already been examined by human Scientists and either labeled as real exoplanets or not. "The machine learning model was simply able

to look at more signals than it would be reasonably possible to expect humans to be able to look at", Shallue said in a press conference. It only took the model about 2 hours to go through the 15,000 signals in its training data set, he said. When it was applied to a set of Kepler signals from 670 stars, the model found two new planets. One, called Kepler-80g, orbits a star about 1100 light-years away that has 5 other planets. The other, Kepler-90i, is the eight planets in its system.



SCIENTIST OF THE MONTH

Devendra Lal

Devendra Lal was born on February 14, 1929 at Banaras in Uttar Pradesh. He did his B.Sc. and M. Sc. from the Banaras Hindu University, and got the degree of Ph.D. from Bombay University in 1960. He worked in the field of cosmic radiation using nuclear emulsion as a detector. He mainly contributed to the area of composition and energy spectrum of contemporary and ancient cosmic radiation. To his credit he has developed a number of techniques for dating and training in geophysics and for the study of evolution of history of planetary objects. He has also



published more than 200 research papers and has worked as the regional editor of 'Earth and Planetary Sciences Letters'. Professor Lal received the Shanti Swarup Bhatnagar Prize in 1967, the Padma Shri in 1971, Jawaharlal Nehru Award in 1986, Raman Birth Centenary Award in 1997 and the Goldschmidt Medal in 1997. He was the Director of Physical Research Laboratory and Vice-President of Indian Academy of Sciences. He died on December 1, 2012 at his residence in San Diego, California at the

KNOW THE EXHIBIT

MMU (Manned Manoeuvring Unit)

Manned Manoeuvring Unit (MMU) was a backpack thrust device that allowed astronauts to work outside the space shuttle without the need for safety tethers. Using hand controllers mounted on arms on either side of the unit, the astronaut achieves six degree of freedom (right, left, up, down, front and back).

The MMU is painted white so that during operations, astronaut can be easily seen by observers of space shuttle and by mission control on ground. Initially, three MMUs were built, all of which were used on space shuttle missions during 1984. However, following the 'challenger space shuttle accident' in 1986, NASA decided not to use MMU any further.





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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SCIENCE FACTS FEBRUARY 2021

2 Feb	World Wetlands Day (recognized by U.N.).
4 Feb	World Cancer Day.
5 Feb 1971	Apollo-14 landed on the moon.
6 Feb	International Day against Female Genital Mutilation.
8 Feb 1834	Dimitri Ivanovich Mendeleiev (Formulator of Periodic Table) was born.
11 Feb 1847	Thomas Alwa Edison (Inventor of Dynamo) was born.
12 Feb 1941	Sir Alexander Fleming did first experiment of Penicillin.
13 Feb	World Radio Day (UNESCO)
14 Feb 1929	Devendra Lal (Vise President of Indian Academy of Science and Ex-Director of PRL) was born
15 Feb 1564	Galileo Galilee (Famous Astronomer) was born.
16 Feb 1919	Jyoti Bhushan Chetarjea (Discoverer of Haemoglobin-E) was Born.
18 Feb 1745	Alessandro Volta (Inventor of Electric Battery) was born.
19 Feb 1473	Nicolaus Copernicus (Famous Astronomer) was born on this day.
20 Feb	World Day of Social Justice (recognized by U.N.)
20 Feb 1962	John Glenn the first American Astronaut to orbit the Earth.
21 Feb	International Mother Language Day. (UNESCO)
24 Feb 1940	Sengamedu Shrinivasa Badrinath (Specialist in Vitreo Retina Surgery) was born.
25 Feb 1988	First successful test fire of "PRUTHVI - 1 MISSILE" by India was done.
28 Feb	National Science Day is celebrated in India to mark the discovery of the "Raman effect".
	U. N. : United Nations UNESCO United Nations Educational Scientific & Cultural Organization

Ans : 1.B , 2.B , 3.C , 4.A , 5.D

SCIENTIFIC QUESTION

What is Inside a Typical Satellite?

Satellites come in a variety of shapes and sizes and perform different functions but they all have several things in common.

- All of them have a metal or composite frame and body, usually known as the bus. The bus holds everything together in space and provides enough strength to survive the launch.

- All of them have a source of power (usually solar cells) and batteries for storage. Arrays of solar cells provide power to charge rechargeable batteries. Newer designs include fuel cells. Power on most satellites is precious and very limited.

Nuclear power has been used on space probes to other planets. Power systems are constantly monitored and data on power and all other onboard systems is sent to Earth stations in the form of telemetry signals.

- All of them have an on-board computer to control and monitor the different systems.

- All have a radio system and antenna. At the very least, most satellites have a radio, transmitter/receiver so that the ground-control crew can request status information from the satellite and monitor its health. Many satellites can be controlled in various ways from the ground to do anything from change the orbit to reprogram the computer system.

- All of them have an Attitude Control System (ACS). The ACS keeps the satellite pointed in the right direction.

As you might expect, putting all of these systems together isn't easy. It can take years. Every thing begins with a mission objective. Defining the parameters of the mission enables engineers to

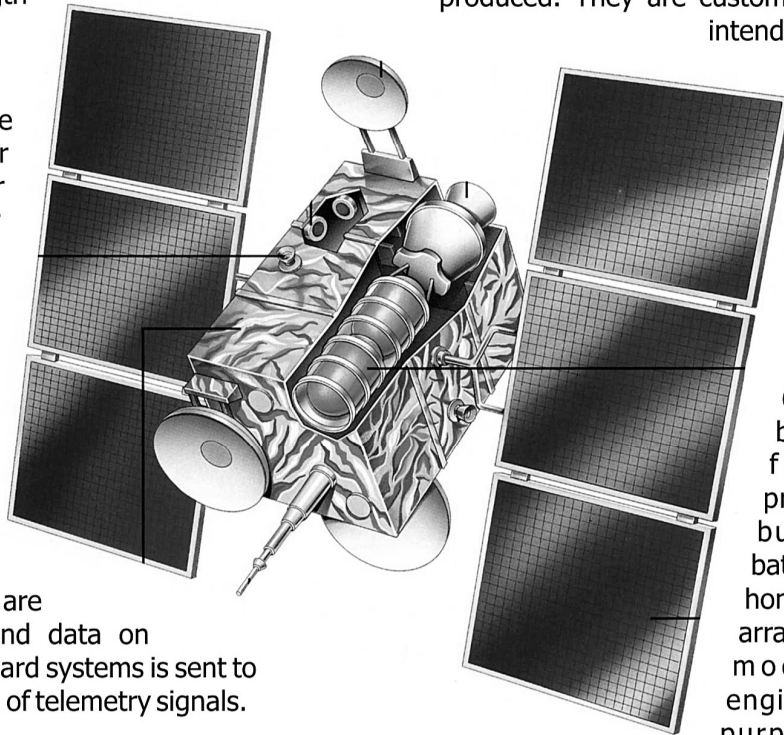
specify the instruments needed and how they will be arranged. Once these specifications (and their budget) are approved, satellite construction can begin. This typically takes place in a clean room, a sterile environment that makes it possible to maintain a constant temperature and humidity and protect the satellite during its development, construction and testing. Artificial satellites generally aren't mass-produced. They are custom built to perform their

intended functions with that

said, some companies have designed their satellites to be modular, making it possible to start with a primary structure that can be customized as needed.

For example, Boeing's 601 satellites have two basic modules a chassis for carrying the propulsion subsystem, bus electronics and battery packs and a set of honeycomb shelves to hold arrays of equipment. This modularity enables engineers to assemble purpose built satellite

without starting from scratch and of course, some satellites such as those in GPS and the Iridium system, work together in a coordinated network. Using a repeatable design makes it easier to set up and integrate the various components of the system.



SCIENCE PROJECT

Surat Municipal Corporation had organized 'Science Fair' at Art Gallery, Science Centre, Surat on 30st and 31st August 2019. M.T. Jariwala Madyamik Sala had presented their project on 'GSM and GPS based vehicle Tracking and Locking System'.

Principle:- Vehicle Tracking System (VTS) is the technology used to determine the location of a vehicle using GPS.

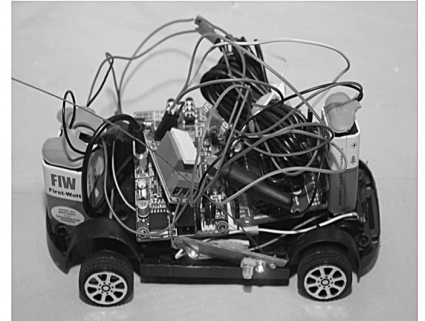
By following longitude and latitude methods the tracking system enables to calculates easy and accurate location of the vehicle. It gives vehicles information like location details, speed ,distance, travelled etc. can be viewed on a digital mapping with the help of software via internet. It is becoming increasingly popular for people having expensive cars and hence as a theft prevention and metrical device.

Advantages:-

- very compact and light weight.
- low power consumption.
- can be made in almost size and all shapes.

Disadvantages:-

- Due to network issue the location can be changed.
- If the battery is finished the full device will stop working.



SCIENCE QUIZ

1. Which of the following defence of the human body against bacteria?

- A . Haemoglobin B. Phagocytes C. Red blood cells D. Blood platelets

2. Which of the following nerves connected from the eyes to ears?

- A . Cerebrum B. Cerebellum C. Medulla D. Spinal cord

3. What is the composition of soap?

- A . Sodium salt with fatty acids
B. Potassium salt with fatty acids
C. Both A and B
D. Sodium and Potassium salt mixed with the chemical

4. Which of the following missile works on the theory of "Fire and Forget"?

- A . Brahmos B. Akash C. Nag D. Sourya

5. Which of the following wires is necessary in the house?

- A . Live wire B. Earth wire C. Neutral wire D. All