

## Prelim Bits 12-11-2018

### Supercomputer

\n\n

\n

- The world's largest supercomputer designed to work in the same way as the human brain has been switched on for the first time.

\n

- **SpiNNaker machine** - Spiking Neural Network Architecture is capable of completing more than 200 million million actions per second, with each of its chips having 100 million transistors.

\n

- It is designed and built in The University of Manchester in the UK.

\n

- In real time, it can model more biological neurons (basic brain cells in the nervous system that communicate by pure electro-chemical energy) than any other machine on the planet.

\n

- **SpiNNaker Vs Traditional computers** - Traditional computers communicate by sending large amounts of information from point A to B via a standard network.

\n

- Whereas SpiNNaker mimics the massively parallel communication architecture of the brain, sending billions of small amounts of information simultaneously to thousands of different destinations.

\n

- **Uses** - It will help neuroscientists better understand how our own brain works.

\n

- It also has simulated a region of the brain called the Basal Ganglia - an area affected in Parkinson's disease.

\n

- Thus it has massive potential for neurological breakthroughs in science such as pharmaceutical testing.

\n

- Its power has recently been used to control a robot the spOmnibot, which uses the SpiNNaker system to interpret real-time visual information and navigate towards certain objects while ignoring others.

\n

\n\n

## **GSAT - 29**

\n\n

- \n
  - ISRO is planning to put communication satellite GSAT - 29 from Sriharikota.
  - \n
    - GSAT - 29 is a 3,500 kg communication satellite for providing high quality internet services.
    - \n
      - It is one of the planned Indian HTS (High Throughput Satellites) quartet. HTS are sent out to provide improved and faster internet connectivity.
      - \n
        - It will be launched by GSLV -MKIII - D2, which is a three stage (Solid- Liquid - Cryogenic) heavy lift launch vehicle.
        - \n
          - It is designed to carry 4 ton class of satellites into Geosynchronous Transfer Orbit (GTO) or about 10 tons to Low Earth Orbit (LEO), which is about twice the capability of GSLV Mk II.
          - \n
            - It will inject the GSAT - 29 satellite into GTO with required inclination to the equator.
            - \n
              - The satellite will be placed in its final Geostationary Orbit (GEO) using the onboard propulsion system.
              - \n
                - The lifespan of the satellite is 10 years.
                - \n
                  - It is the second test flight of GSLV -MkIII-D2 carrying the satellite.

\n\n

## **Tissue Chips in Space**

\n\n

- \n
  - It is an initiative by NASA to better understand the role of microgravity on human health.
  - \n
    - Under this, NASA is planning to send small devices containing human cells in a 3D matrix known as “tissue chips or organs-on-chips” to the International Space Station (ISS).

- It is to test how they respond to stress, drugs and genetic changes.  
\n
- Tissue chips is made of flexible plastic with ports and channels to provide nutrients and oxygen to the cells inside them.  
\n
- It is expected to behave much like an astronaut's body, experiencing the same kind of rapid change.  
\n

\n\n

## **Mission Venus**

\n\n

- ISRO has opened up for its "Mission Venus" seeking experiment ideas from space agencies, universities and researchers.  
\n
- It is planned to be launched in Mid-2023.  
\n
- It plans to study the planet from an elliptical orbit that is closest to Venus at 500 km and 60,000 km at the farthest end.  
\n
- It is currently being handled by the Space Science Programme Office.  
\n
- If the project is approved would be ISRO's third interplanetary mission after Chandrayaan - 1 and Mars Orbiter Mission.  
\n

\n\n

## **National Monogenic Diabetes Study Group**

\n\n

- It is a national body which has been recently setup to identify cases of monogenic diabetes across the country.  
\n
- Monogenic diabetes is a group of disorders where mutation of a single gene causes diabetes.  
\n
- The three commonest forms of it - Maturity Onset Diabetes of the Young (MODY), Neonatal Diabetes Mellitus (NDM) and Congenital Hypoglycaemia.  
\n
- The study group has been formed with Madras Diabetes Research Foundation (MDRF) as a nodal center.

\n

- Under this initiative, MDRF would provide guidelines to the collaborators for identifying monogenic diabetes.

\n

- **Critical groups to be assessed** - Children below six months of age and those diagnosed as Type 1 diabetes but have atypical features such as milder forms of diabetes, and strong family history of diabetes going through several generations.

\n

\n\n

\n\n

**Source : The Hindu**

\n\n

\n\n

\n

