NATIONAL

Cabinet approved the National Mission on Interdisciplinary Cyber-Physical Systems

The Union Cabinet has approved the launching of National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) to be implemented by Department of Science &Technology at a total outlay of Rs. 3660 crore for a period of five years.

- The Mission addresses the ever-increasing technological requirements of the society and takes into account the international trends and roadmaps of leading countries for the next generation of technologies.
- The Mission aims at the establishment of 15 numbers of Technology Innovation Hubs (TIH), six numbers of Application Innovation Hubs (AIH) and four numbers of Technology Translation Research Parks (TTRP).

These Hubs & TTRPs will connect to Academics, Industry, Central Ministries and State Government in developing solutions at reputed academic, R&D and other organizations across the country in a hub and spoke model.

The Hubs & TTRPs have four focused areas along which the Mission implementation would proceed, namely

(i) Technology Development

(ii) HRD & Skill Development

(iii) Innovation, Entrepreneurship & Start-ups Ecosystem Development

(iv) International Collaborations

The proposed Mission would act as an engine of growth that would benefit national initiatives in health, education, energy, environment, agriculture, strategic cum security, and industrial sectors, Industry 4.0, SMART Cities, Sustainable Development Goals (SDGs) etc.

NM-ICPS is a Pan India Mission and covers the entire gamut of India that includes Central Ministries, State Governments, Industry and Academia.CPS and its associated technologies, like Artificial Intelligence (Al), Internet of Things (loT), Machine Learning (ML), Deep Learning (DP), Big Data Analytics, Robotics,Quantum Computing, Quantum Communication, Quantum encryption (Quantum Key Distribution), Data Science & Predictive Analytics, Cyber Security for physical infrastructure and other infrastructure, have pervaded and is playing a transformative role in almost every field of human endeavor all most in all sectors.

INTERNATIONAL AND BILATERAL

FAO Council approves India's proposal to observe an International Year of Millets in 2023.

Union Minister of Agriculture and Farmers' Welfare has said that the 160th session of the Food and Agriculture Organization (FAO) Council, currently underway in Rome, approved India's proposal to observe an International Year of Millets in 2023.

Why Millets?

- Millets are highly nutritious and useful in various lifestyle diseases, enhancing resilience and risk management in face of climate change especially for small and marginal farmers.
- The government recently increased the MSP of millets by more than 50 per cent of cost of production which is an important component of efforts to achieve the national commitment of doubling farmers' income by 2022.

Importance of Millets:

- Millet is a common term to categorize small-seeded grasses that are often termed nutri-cereals or dryland-cereals, and includes sorghum, pearl millet, ragi, small millet, foxtail millet, proso millet, barnyard millet, kodo millet and other millets.
- An important staple cereal crop for millions of small holder dryland farmers across sub-saharan Africa and Asia, millets offer nutrition, resilience, income and livelihood for farmers even in difficult times.
- They have multiple untapped uses such as food, feed, fodder, biofuels and brewing.
- Photo-insensitive & resilient to climate change, millets are hardy, resilient crops that have a low carbon and water footprint, can withstand high temperatures and grow on poor soils with little or no external inputs.
- In times of climate change they are often the last crop standing and, thus, are a good risk management strategy for resource-poor marginal farmers.

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FAO: The Food and Agriculture Organization (FAO) headquartered at Rome, estd in 1945, is a specialized agency of the United Nations that leads international efforts to defeat hunger. Their goal is to achieve food security for all and make sure that people have regular access to enough high-quality food to lead active, healthy lives.

UN framework to combat international terrorism

The United Nations has launched a new framework titled 'UN Global Counter-Terrorism Coordination Compact' to combat international terrorism and coordinate efforts across the peace and security, humanitarian, human rights and sustainable development sectors.

UN Global Counter-Terrorism Coordination Compact: The framework is an agreement between the UN chief, 36 organisational entities, the International Criminal Police Organisation (INTERPOL) and the World Customs Organisation to better serve the needs of member states when it comes to tackling the scourge of international terrorism. The Coordination Committee of the United Nations will oversee the implementation of the framework and monitor its implementation. The committee will be chaired by UN Under-Secretary-General for counter-terrorism.

Need for international cooperation:

- Despite recent successes against the ISIS and its affiliates, the threat posed by returning and relocating fighters, as well as from individuals inspired by them, remains high and has a global reach.
- The 2018 Global Terrorism Index released by the Institute for Economic and Peace, indicates that despite a 27% fall in the number of deaths from acts of terrorism worldwide, the impact of terrorism remains widespread, with 67 countries experiencing deadly attacks, which is the second highest recorded number of countries in the past twenty years.
- Emerging technologies such as artificial intelligence, drones and 3D (three-dimensional) printing are also being misused.

China's Chang'e-4 mission to the Moon:

China has launched Chang'e-4, a first probe ever to explore the dark side of the Moon, marking another milestone in its ambitious space programme. Chang'e 4 is the fourth mission in the country's lunar mission series which is being named after the Chinese moon goddess.

The tasks of the Chang'e-4 probe include low-frequency radio astronomical observation, surveying the terrain and landforms, detecting the mineral composition, and measuring the neutron radiation and neutral atoms to study the environment on the far side of the moon. According to experts, landing on the far side of the moon is undoubtedly one of the most challenging missions ever launched by any of the world's superpowers.

ECONOMY

M.S. Swaminathan calls GM crops a failure

A research paper co-authored by leading agriculture scientist M.S. Swaminathan, which describes Bt cotton as a 'failure,' was criticised by India's Principal Scientific Adviser as 'deeply flawed'.

Key observations made:

- The paper notes that GE (genetically engineered) Bt cotton has failed in India. It has failed as a sustainable agriculture technology and has, therefore, also failed to provide livelihood security for cotton farmers who are mainly resource-poor, small and marginal farmers.
- Besides, the precautionary principle (PP) has been done away with and no science-based and rigorous biosafety protocols and evaluation of GM crops are in place.
- The paper also raises questions on the genetic engineering technology itself on the grounds that it raises the cost of sowing. Also, the insertion of foreign genes (in the plant) could lead to "molecular and cellular events not precisely understood."

GM crop: A GM or transgenic crop is a plant that has a novel combination of genetic material obtained through the use of modern biotechnology. For example, a GM crop can contain a gene(s) that has been artificially inserted instead of the plant acquiring it through pollination. The resulting plant is said to be "genetically modified" although in reality all crops have been "genetically modified" from their original wild state by domestication, selection, and controlled breeding over long periods of time.

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SCIENCE AND TECHNOLOGY

Method to simulate, predict solar activity over ten years developed

A team of researchers from IISER Kolkata have developed a way of predicting the intensity of activity in the next solar cycle (approximately from 2020 to 2031) using data spread over the last 100 years.

Sunspots: Sunspots are temporary phenomena on the Sun's photosphere that appear as spots darker than the surrounding areas. They are regions of reduced surface temperature caused by concentrations of magnetic field flux that inhibit convection. Sunspots usually appear in pairs of opposite magnetic polarity.

Findings: The researchers found that the sun's activity would not dip during the next cycle, but it would be similar to the current cycle, perhaps even stronger. They expect the cycle to peak around 2024.

Importance of the study

- For the understanding of the long-term variations of the sun and its impact on our climate which is one of the science objectives of Aditya mission. The forecast will be also useful for scientific operational planning of the Aditya mission.
- To know the effects on space weather. This refers to the effect of radiation, particle flux and magnetic flux in the region around the sun. During extreme events, space weather can affect electronics-driven satellite controls, communications systems, air traffic over polar routes and even power grids.
- Sunspots are correlated with climate on earth. A lot of the research in this area focuses on predicting the way the next sunspot cycle will shape up – whether the sun will be extremely active and produce many sunspots or not.

NITI Aayog Launches Global Hackathon On Artificial Intelligence

- With the vision to further expand the idea of' Artificial Intelligence, AI for All' articulated in the National AI Strategy, NITI Aayog has organized hackathons.
- The Hackathon was announced at the AI conference organized by NITI Aayog, in partnership with the ORF, held in Mumbai in November 2018.
- It aims to source sustainable, innovative and technologically-enabled solutions to address various challenges in the development space.
- NITI Aayog has partnered with Perlin – a Singapore-based AI start up – to launch the Hackathon.
- It is inviting developers, students, start-ups and companies to develop AI applications to make significant positive social and economic impact for India.

Objective of the Hackathon:

- The challenge question seeks to develop solutions in Distributed Computing and Privacy Preserving techniques, such as multi-party computation, in AI.
- The objective of this hackathon is to promote awareness and subsequently develop solutions that deliver the twin benefit of efficient computing to address the infrastructure challenges, while also not compromising on privacy of data for training AI algorithms.

Phases of Hackathon:

- The hackathon will be run two stages with Stage One ending 15 January 2019 and Stage Two, which will only include shortlisted participants from the previous stage, will conclude on 15 March 2019
- The first stage will invite ideas for use cases of multi-party computation in areas such as Healthcare, Education, Agriculture, Urbanization, Financial Inclusion.
- The second stage will call for these ideas to be matured and developed, with a focus on privacy preserving AI and distributed computing.
- Winners will share in a prize pool worth USD $50,000 in both cash and non-cash rewards.
- Participants will also get mentorship and support from the hackathon co-sponsors, including the opportunity to scale and implement their AI applications.

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