

Department of Data Science

Weekly Data Science Bytes

**India emerges as a global leader in science, technology,
and innovation: Dr.Jitendra Singh**



- India is no longer just a follower on the global stage; it is now leading in multiple fields, including space exploration, biotechnology, nuclear energy, and scientific research. Dr. Jitendra Singh, Union Minister of State for Science and Technology, Earth Sciences, and Minister of State for PMO, made this bold assertion during a recent address, highlighting India's remarkable advancements and rising prominence in the world of science and technology.
- India's space sector has undergone a remarkable transformation in recent years. With ambitious missions and successful international collaborations, India has positioned itself as a key player in space exploration. The Space Docking Experiment (SpaDeX), part of India's growing technological capabilities, is paving the way for future missions such as Gaganyaan, Chandrayaan-4, and the Bharatiya Antariksh Station—India's forthcoming international space station

Source: <https://ddnews.gov.in/en/india-emerges-as-a-global-leader-in-science-technology-and-innovation-dr-jitendra-singh/>

RRM-TD, India's First Space Robotic Arm, In Action Onboard POEM4



- The Indian Space Research Organisation (ISRO) has showcased its first-ever space robotic arm, RRM-TD, in action aboard the POEM4 platform. A short clip shared by the space agency shows the robotic arm's precise movements and various operational stages as it works in space.
- The video begins with a text overlay that reads, "Unlocking and lifting from base position," marking the arm's initial movement. As the robotic arm continues its motion, the next message highlights, "Arm manipulation with 7 actuators," demonstrating its capability for complex tasks.
- The footage progresses to show the arm in action with "POEM deck imaging operation" and "positioning using visual serving," a technique that uses visual information to control a robot's motion. In the final moments, the arm returns to its base position, with the text reading "Locking to base position."
- Throughout the sequence, the arm's precise and controlled movements showcase its functionality in space. ISRO captioned the post, "#RRM_TD, India's first space robotic arm, is in action onboard #POEM4! A proud #MakeInIndia milestone in space robotics."

India and Nepal Strengthen Scientific Ties with New Agreement



- *India and Nepal have strengthened their scientific collaboration with a new MoU signed between CSIR (India) and NAST (Nepal) on February 18, 2025. This agreement aims to expand joint research, technology exchange, and capacity-building in fields like biotechnology, and material sciences.*
- India and Nepal have taken a major step toward advancing their scientific collaboration with the signing of a new **Memorandum of Understanding (MoU)** between the **Council of Scientific and Industrial Research (CSIR)**, India, and the **Nepal Academy of Science and Technology (NAST)**. The agreement, signed on February 18, 2025, at **CSIR-National Physical Laboratory in New Delhi**, aims to deepen research and technological cooperation between the two nations. This MoU builds on a long-standing partnership and focuses on various domains, including biotechnology, environmental sciences, alternative energy, and material sciences.

"QuanTour" illuminates Europe with single photons: celebrating the International Year of Quantum Science and Technology 2025



- With the United Nations' proclamation of 2025 as the "International Year of Quantum Science and Technology" (IYQ) (<https://quantum2025.org/en/>), public attention is turning to the transformative potential of quantum technologies. At the heart of these advancements lies the controlled generation of quantum light states—key to quantum communication, computing, sensing, and metrology.
- One remarkable initiative leading up to the IYQ is **QuanTour**, an ambitious project that has been shining a spotlight on semiconductor photonic nanostructures and single-photon generation since April 2024 (<https://www.quantum2025.de/quantour>). At its core is cutting-edge science: a single semiconductor quantum dot embedded in a micro-sized, dartboard-shaped nanophotonic cavity.

Google's Latest Breakthrough A Major Leap In Quantum Computing



- Google has unveiled a new quantum computer way ahead of traditional supercomputers. The tech behemoth revealed its latest machine, powered by a chip known as Willow, completed a mathematical calculation in under five minutes — a task that would take one of the world's most powerful supercomputers 10 septillion years, a length of time that surpasses the age of the universe.
- Quantum computing leverages the principles of quantum mechanics, a branch of physics that describes the peculiar behaviour of particles at subatomic levels. While still an experimental field, the latest progress highlights steady advancements towards making these machines practical.