

जुलाई
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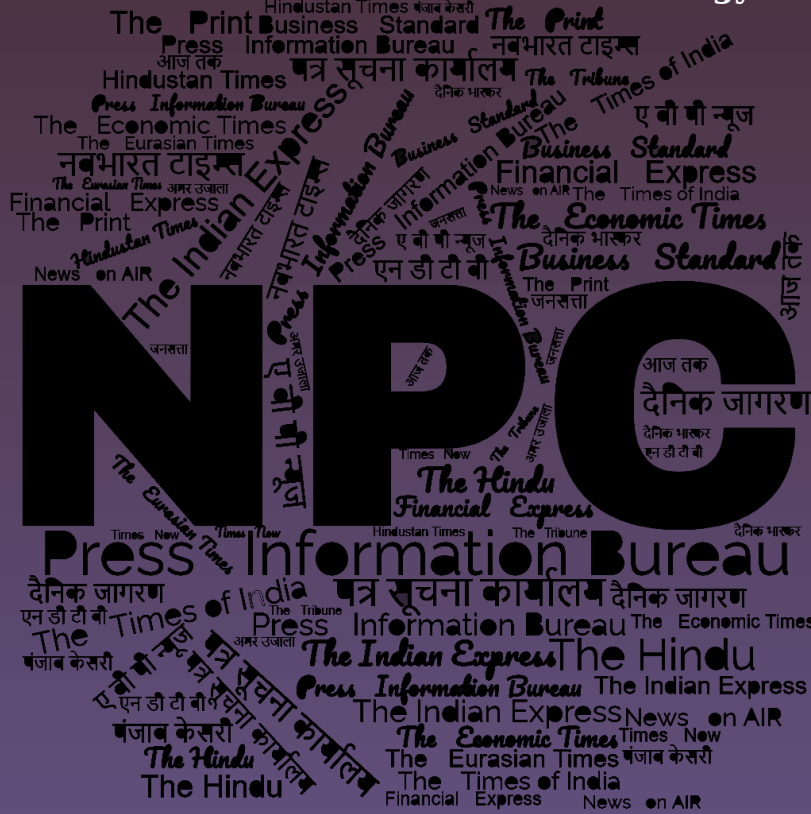
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डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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Defence Strategic: National/International



Press Information Bureau
Government of India

Ministry of Defence

Mon, 10 Jul 2023

Raksha Mantri Shri Rajnath Singh Meets his Malaysian Counterpart in Kuala Lumpur; Also calls on Prime Minister of the Southeast Asian Nation

To further boost India's 'Act East Policy' and strengthen bilateral ties with Malaysia, Raksha Mantri Shri Rajnath Singh held extensive discussions with his Malaysian counterpart Mr Dato' Seri Mohamad Hasan in Kuala Lumpur on July 10, 2023. He also called on Prime Minister Mr YB Dato' Seri Anwar bin Ibrahim, besides meeting with Minister of Foreign Affairs of Malaysia Dato' Seri Diraja Dr Zambry Abd Kadir.

After touching down in Kuala Lumpur late on July 09, 2023, Shri Rajnath Singh began his official engagements with a ceremonial Guard of Honour at Ministry of Defence, Malaysia. It was followed by bilateral talks between the Raksha Mantri & his Malaysian counterpart Mr Dato' Seri Mohamad Hasan.

Both sides discussed initiatives to further expand bilateral defence ties, with particular focus on identifying ways to strengthen industrial cooperation. They reaffirmed their commitment to fully implement the Enhanced Strategic Partnership based on mutual trust and understanding, common interests and shared values of democracy and rule of law.

The two Ministers agreed to the next Malaysia-India Defence Cooperation Committee (MIDCOM) meeting which is being planned in India later this year. Shri Rajnath Singh highlighted the potential of the Indian defence industry with capacity and capability to cooperate with Malaysian Armed Forces in its inventory modernisation and maintenance plans.

Later, the Raksha Mantri called on the Prime Minister of Malaysia Mr YB Dato' Seri Anwar bin Ibrahim and conveyed warm greetings of Prime Minister Shri Narendra Modi. Recalling his successful visit to India in 2019, the Malaysian Prime Minister reciprocated the greetings by highlighting that he has great love for people of India and that Prime Minister Shri Narendra Modi is his personal friend.

The Malaysian Prime Minister expressed appreciation of the strong cultural bonds between both nations. Shri Rajnath Singh briefed the Malaysian Prime Minister about the fruitful and productive defence dialogue held earlier in the day. The meeting focused on measures to realise the full potential of Enhanced Strategic Partnership.

Both Ministers approved amendment in the Memorandum of Understanding on Defence Cooperation between India and Malaysia signed in 1993, through 'Exchange of Letters' (EoL). This amendment will act as an enabler to expand bilateral defence cooperation in the areas of mutual interest.

Shri Rajnath Singh also met with the Minister of Foreign Affairs of Malaysia Dato' Seri Diraja Dr Zambry Abd Kadir, during which they exchanged views on matters of bilateral importance and cooperation in international fora. India's recognition of ASEAN centrality and importance of peace, stability and prosperity in the Indo Pacific region were discussed. The meeting concluded with India's assurance to partner Malaysia in its efforts to accelerate self-reliance of the Malaysian Defence Industry.

Later, the Raksha Mantri felicitated Second Lieutenant Sundaram, a 99-year old INA veteran, who fought alongside Netaji Subhas Chandra Bose at Burma border. This is the first bilateral visit after the establishment of Enhanced Strategic Partnership, which was announced during the visit of Hon'ble Prime Minister Shri Narendra Modi to Malaysia in 2015.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1938452>



Tue, 11 Jul 2023

L&T Signs Pact with Spain Firm Navantia to Build Navy Submarines

LARSEN & TOUBRO (L&T) on Monday said it has signed a Teaming Agreement with Spain-based Navantia to participate in the Navy's P75 (India) submarine project and will submit a techno-commercial bid for it. For its dwindling submarine fleet, the Navy is looking to procure six advanced diesel-electric submarines under Project 75 (I).

The Navy's Project 75 (I) requires the Indian bidder to tie up with a foreign collaborator and execute the programme for delivery of six conventional submarines equipped with Air-Independent Propulsion, while achieving targeted Indigenous Content. This would also be followed by a 30-year life-cycle sustenance contract of similar value.

Last month, public sector shipyard Mazagon Dock Shipbuilders Limited (MDL) and Germany's Thyssenkrupp Marine Systems (TKMS) signed an agreement to be able to bid for producing the advanced submarines under Project 75 (I).

Talking about the event, Spanish Ambassador Jose Maria Ridao said Spain supports the idea of Make in India. "And this is the proof that the Spanish Government is engaged with this idea of transferring technology to our partner, that is India," he said. He said Spain is also a good partner which possesses convenient technology and as a country does not influence the balance of power "in this part of the world". "We don't influence the idea of strategic autonomy of India. We respect it completely because the idea of Spain in this part of the world contributes to stability. This is once again proof," he said.

He said the programme is a good opportunity to be here and to have long-term cooperation with India. "This is our main objective, to support this agreement as it is not just for commercial reasons

but diplomatic reasons,” he said, adding that it is also to show that the Spanish Government is engaged in supporting the programme.

On April 11, L&T and Navantia signed a pact in Madrid for the programme, which led to this Teaming Agreement. The submarine programme is expected to be valued at over Euro 4.8 billion, as per the statement. P75 (I) would be the first programme to be processed under the ambitious Strategic Partnership model of acquisition of the Defence Ministry.

As per the agreement, Navantia would carry out the design of P75 (I) submarines based on its S80 class of submarines, the first of which was launched in 2021 and is undergoing sea trials prior to its delivery to the Spanish Navy at the end of 2023. Apart from the S80 class, Navantia has been involved in the design and construction of the Scorpène class of submarines together with DCNS (Now Naval Group) of France, which have been exported to Chile and Malaysia. Navantia has also been involved in the Scorpene submarines (Kalvari class) built in India, including hand-holding of the Indian yard.

L&T and Navantia are also seeking cooperation in other military programmes as well as in green energy opportunities, including offshore wind through Navantia Seanergies division. According to a statement by L&T, the agreement was signed in the presence of S N Subrahmanyam, L&T CEO & MD and Augustin Alvarez Blanco, Naval Construction Vice President, and Member of the Board – Navantia, along with Ambassador Ridao, Captain (Navy) Fernando Alvarez, Spanish Defence Attaché, along with senior officials from both the firms.

<https://indianexpress.com/article/india/lt-signs-pact-with-spain-firm-navantia-to-build-navy-submarines-8825068/>

ThePrint

Mon, 10 Jul 2023

First US Navy Ship Arrives at Kattupalli Port for Repairs after Indo-US Agreement Signed Last Month

US Navy Ship Salvor, a Safeguard-class rescue and salvage ship, arrived at Larsen and Toubro’s Kattupalli shipbuilding yard near here for repairs under the Master Ship Repair Agreement (MSRA) signed last month between India and the US, a senior official of L&T said on Monday.

The USNS Salvor was welcomed with a ceremony at the shipyard on Monday, and it is the first ship to arrive after the signing of the MSRA. The five-year agreement will see India’s leading private defence company repair the US vessels, said Executive Vice President and Head L&T Defense Arun Ramchandani.

The Military Sealift Command’s rescue and salvage ship USNS Salvor (T-ARS 52) arrived at L&T Kattupalli shipyard for voyage repairs on July 9. It is the third US Navy ship visiting the L&T shipyard for voyage repairs, after USNS Charles Drew and USNS Matthew Perry. After the repair and maintenance is carried out, the vessel will resume its journey after a fortnight.

US Consul General in Chennai Judith Ravin, US Embassy New Delhi’s Office of Defence Cooperation chief Captain Michael L Farmer, and senior US Embassy officials participated in the welcoming ceremony along with Ramchandani and others from L&T leadership.

“This Master Ship Repair Agreement is yet another milestone in our ever-expanding US-India partnership. This historic agreement is a direct outcome of the 2022 US-India 2+2 Ministerial Dialogue and demonstrates US’s commitment to utilise repair facilities on a regular basis at the L&T shipyard in Kattupalli,” Ravin said on the occasion.

This agreement will serve to strengthen the two nations’ strategic partnership and contribute to a free and open Indo-Pacific, she said. “During Prime Minister Modi’s visit to the United States, he eloquently said that ‘the scope of our cooperation is endless, and the chemistry of our relations is effortless,’” she recalled and added that the announcements made during Modi’s official state visit set a marker and highlighted incredible potential.

The MSRA with L&T is the first such agreement in India, and it “is a symbol of our strengthened US-India partnership...,” Ravin said, adding that the MSRA is a legally non-binding arrangement between the US Navy and private shipbuilding contractors to pre-approve shipyards to repair US Naval vessels. The MSRA will fast-track US government contracting processes for repair work and advance the Indian government’s indigenous production and logistics goals. With MSRA certification, the L&T Kattupalli shipyard may bid on US Navy and Military Sealift Command (MSC) ship repair contracts throughout the 7th Fleet area of responsibility, she added.

The Agreement is a demonstration of how the US Navy and Indian companies are better together for the advancement of collective maritime security. By partnering to deliver economical and effective repair of US Naval vessels, the shipping industries positively contributed to a free and open Indo-Pacific, the Consul General said.

“We are soon expecting President Biden’s visit to India. That will make two highest-level summits between our countries in a time span of less than six months. We are committed to operationalising the US-India Major Defense Partnership through enhanced information sharing, regional security cooperation, defense trade, and cooperation in new domains. I look forward to seeing the outcomes of this MSRA and where our partnership may go in the future,” Ravin added.

In an interaction with mediapersons, when Captain Farmer was asked if the Kattupalli yard will also take up the repair and servicing of US warships as well (and not just auxiliary vessels as per the agreement now), as it is strategically located, he replied, “The MSRA does not permit the repair of US Naval warships at present but would only take up upkeep. (It will also take up) crucial maintenance of other vessels. Both the governments could work in that direction in the future.” On speculation that the US was looking towards establishing a naval base in the Indian territory, he denied any such move but said, “It could be a possibility in the future if both governments came together.” Speaking on the occasion, Ramchandani said L&T has been able to deliver high-quality products and services to its customers. A large number of ships of the Indian Navy and Coast Guard have been repaired at Kattupalli yard. Besides, over 70 ships were constructed in a decade’s time.

“Apart from the US Navy ships, considering the location, facilities, capabilities and destination other friendly countries have approached us for providing repair services for their ships,” he said. The US Navy had accorded the MSRA to L&T after having rigorously assessed various Indian shipyards. “This agreement will enable L&T to undertake bigger repairs and fits of US ships and auxiliary vessels,” Ramchandani said.

Later, interacting with mediapersons, he said L&T Kattupalli was well equipped for future growth as the 1,000 acres of land available with it gives it the potential to grow within the facility.

<https://theprint.in/india/first-us-navy-ship-arrives-at-kattupalli-port-for-repairs-after-indo-us-agreement-signed-last-month/1663040/>

Ahead of PM Modi's Paris Visit, Several Deals on Agenda, DAC Expected to Meet in Next Few Days

As Prime Minister Narendra Modi visits Paris later this week as Chief Guest at the Bastille Day parade, deals for Rafale-M fighters and three more Scorpene-class submarines for the Navy and a co-development of fighter jet engine are on the agenda.

Ahead of this, the Defence Acquisition Council (DAC) is expected to hold a crucial meet in the next couple of days where it is likely to take a call on the procurement of 26 Rafale-M fighters for the Navy's aircraft carriers and the proposal for additional Scorpene submarines that is in the pipeline. Prior to this, the Rafale-M proposal has been cleared by the Defence Procurement Board (DPB) for the Navy's carrier jet race in which Boeing F/A-18 Super Hornet has also competed.

The DPB decision clears the process for the case to be put for a decision by the DAC, the highest decision-making body in the Defence Ministry. There is still a long process which includes price negotiations and in the final step goes to the Cabinet Committee on Security (CCS) for approval before the deal can be signed.

In March, Navy Chief Adm R. Hari Kumar has said that both Boeing's F/A-18 E/F Super Hornet and Dassault Aviation's Rafale-M fighters meet the requirements of the Navy and a selection between them will be the government's decision, while adding that the Rafale-M has commonality with the Air Force in terms of spares and support. The Air Force operates 36 Rafale jets customised for Indian requirements under a €7.87 billion deal signed in April 2016.

An indigenous Twin Engine Deck-Based Fighter (TEDBF) is under development by Aeronautical Development Agency (ADA) under DRDO to operate off the Navy's aircraft carriers. The 26 jets planned to be procured from abroad will fill the gap in the interim as existing MiG-29Ks may not last till then.

The Navy currently operates two aircraft carriers — INS Vikramaditya procured from Russia and the indigenously built INS Vikrant which was commissioned in September last year. In 2017, the Navy had floated Request For Information (RFI) to procure 57 twin engine carrier fighter which is now set to be downsized to 26 with the TEDBF under development. Both the Rafale-M and F/A-18 had demonstrated their compatibility to operate from Indian carriers by operating from the Navy's Shore Based Test Facility in Goa.

In another deal, Safran of France is in the race to co-develop a fighter engine for India's fifth generation fighter and is competing with General Electric of the U.S. and Rolls Royce of the U.K.

Additional Scorpene submarines

Six Scorpene class submarines are being built under Project-75 by MDL under technology transfer from Naval Group under a \$3.75 bn deal signed in October 2005. Five of them have been commissioned and the sixth one is expected to be commissioned early next year.

The ageing submarine fleet and delay in the procurement of new submarines under P-75I meant the Navy has to procure three follow-on submarines to arrest the depleting fleet.

The Navy has 16 conventional submarines in service, seven Kilo-class, four HDW submarines and five French Scorpene class submarines. Of these, the Kilo and HDW are ageing and the Navy has

been forced to extend their life as an interim measure, as procurement of new submarines planned under Project-75I has been relatedly delayed.

<https://www.thehindu.com/news/national/ahead-of-pm-modis-paris-visit-several-deals-on-agenda-dac-expected-to-meet-in-next-few-days/article67065315.ece>



Mon, 10 Jul 2023

U.S. Military Deals not enough to Wean India off Russian Arms Yet

By Krishn Kaushik and David Brunnstrom

India's multi-billion-dollar purchases of U.S. arms are less about shifting its reliance on Russian defence equipment and moving towards the West - it's more about developing its own domestic weapons industry, security officials and analysts say.

India is the world's biggest arms importer but almost all of its major weapons purchases now include provisions for joint manufacture or technology transfer, irrespective of which country it is dealing with. Also, Russia's war in Ukraine has disrupted some military supplies to India, reinforcing New Delhi's long-term desire to diversify imports or replace them with home-built hardware, Indian defence officials said.

India bought weapons worth over \$60 billion in the last 20 years, of which 65% or nearly \$39 billion were from Russia, according to Stockholm International Peace Research Institute data. Defence Minister Rajnath Singh has said that India intends to order weapons from the domestic arms industry worth over \$100 billion over the next decade. "It is a reality, that we have to reduce dependence on Russia," said a senior Indian defence officer working on future capabilities of the Indian military, who declined to be identified. "But that is part two. The part one is the effort to get out of the import business."

India announced significant purchases of U.S. defence equipment during Prime Minister Narendra Modi's state visit to Washington last month, including an over one billion dollar order for GE (GE.N) engines for fighter jets. A possible \$3 billion deal for MQ-9B SeaGuardian drones is also being discussed. In line with New Delhi's desire for self-reliance in defence and Modi's flagship "Make in India" policy, the jet engine deal includes joint manufacturing in the future, while the assembly and maintenance of the SeaGuardians will likely be in India.

Eric Garcetti, the U.S. ambassador to India, said Washington had earlier paid "lip service" but was now easing India's access to military technologies. He said the U.S. was "leaning in with technology" sharing more with India than it had with some its closest allies. However, the moves so far will not be sufficient to end New Delhi's reliance on Russia while stringent U.S. rules governing the sharing of military technology limit future possibilities for now.

Nobody gives you everything. They keep you at least a screwdriver away from having it fully," said a second senior official from India's defence ministry, who also spoke on condition of anonymity. Arzan Tarapore, an Indian security expert at Stanford University, said the deals announced during Modi's visit "do not in themselves represent an Indian shift away from Russia." "A big shift away from Russia will take multiple decades," he said.

GAP WITH CHINA

India still uses mostly Russian technology for traditional arms. Tarapore said that the biggest potential for U.S.-India collaboration should be on new systems that India doesn't already have.

India's main aim is to narrow the technological gap with better-armed arch-rival China, with which it has a tense relationship, and which is also closely allied with traditional foe Pakistan. One problem for India is that Russia's war in Ukraine has severely dented Moscow's ability to deliver weapons and equipment.

India's air force recently informed a parliamentary panel that Russia would delay deliveries of spares for Sukhoi Su-30 MKI and MiG-29 jet fighter planes. A big-ticket item, believed to be the remaining two of the five Russian S-400 air defence systems India bought for nearly \$5.5 billion in 2018, has also been delayed, it said.

India has also been expecting to receive two nuclear-powered attack submarines from Russia over the next few years, but these might also be delayed, defence officials said. Such problems have reinforced India's resolve to become less dependent on Russia, but it does not want to rely on any one nation for its weapons purchases, they said. It is buying French fighter jets, Israeli drones, American jet engines and potentially German submarines. Over time these purchases will reduce the share of Russian military technology used by India, but this would take at least two decades, Indian officials said.

LEAST LIMITATIONS

Bill Greenwalt, a former senior Pentagon official for industrial policy, said the days of U.S. and Russian domination of the global defence market and being able to control defence technology was coming to end, but what would replace it was "still a work in progress." He said India could become frustrated by the strict U.S. export control system for armaments and the restrictions it places both on technology sharing and its ability to develop systems it acquires.

"I expect India will pursue cooperation with the West with those countries that can transfer technology ... with the least amount of limitations on their use," he said. Exports to India must satisfy stringent U.S. International Trafficking in Arms (ITAR) regulations and the two countries are not treaty allies - which for instance means the level of technology sharing provided under the AUKUS deal to supply Australia with nuclear-powered submarines is not on the cards.

Even so, Modi's U.S. visit has been hailed by both sides as bringing the relationship to a new level. Besides the defence deals, the two countries also signed agreements on chips, space, artificial intelligence and critical minerals. India is also a member of the QUAD alliance with the U.S., Japan and Australia, which deepens its ties with the West, but does not replace its decades-old relationship with Russia.

Derek Grossman, a Rand Corporation defence analyst, said the U.S. would always be cautious in what military hardware and technology it shares with India because of this. Even if India can transition away from Moscow over the next few decades, Grossman said, "the U.S. will still have suspicions about how their systems are being used and how that might help the Russians in some sort of way, because of that close India-Russia partnership."

"India is going to be opportunistic in this situation and accept whatever the U.S. is willing to offer. But I don't think they are willing to give up what they have with Russia."

<https://www.reuters.com/world/us-military-deals-not-enough-wean-india-off-russian-arms-yet-2023-07-10/>

Turkey has Agreed to Back Sweden's NATO Bid: 'Historic Step at a Critical Time'

Turkey agreed to allow Sweden to join NATO as the countries ironed out their differences in talks in Vilnius. "Completing Sweden's accession to NATO is an historic step that benefits the security of all NATO allies at this critical time. It makes us all stronger and safer," NATO secretary general Jens Stoltenberg said.

Swedish prime minister Ulf Kristersson said he was "very happy" and hailed "a good day for Sweden". The decision taken by Turkish president Recep Tayyip Erdogan must still be approved by the country's parliament. This comes as Hungary is yet to greenlight Sweden's bid, but the country's premier Viktor Orban has signalled he will follow Recep Erdogan's lead. US president Joe Biden said, "I look forward to welcoming Prime Minister Kristersson and Sweden as our 32nd NATO ally" while German foreign minister Annalena Baerbock welcomed the "good news" on Twitter.

Turkey has been holding up Sweden's bid to join NATO as it accused the country of harbouring Kurdish activists which Ankara regards as terrorists. After the talks, Sweden said that it will "actively support efforts to reinvigorate Turkiye's EU accession process, including modernisation of the EU-Turkiye Customs Union and visa liberalisation."

How does this decision help Turkey?

EU chief Charles Michel, president of the European Council hailed a "good meeting" saying that they had "explored opportunities ahead to bring EU-Turkey cooperation back to the forefront and re-energise our relations". Turkey has been a formal candidate to join the European Union since 2005.

What about Ukraine's bid to join NATO?

Ukraine's foreign minister Dmytro Kuleba said, "It is also the best moment to offer clarity on the invitation to Ukraine to become member." "Ukraine deserves to be in the alliance. Not now, because now there's war, but we need a clear signal and this signal is needed right now," Ukrainian president Volodymyr Zelensky said.

<https://www.hindustantimes.com/world-news/turkey-has-agreed-to-back-sweden-s-nato-bid-historic-step-at-a-critical-time-101689033726622.html>



Indo-Pacific on agenda for Biden-Sunak talks in UK

The Indo-Pacific region and the broader geopolitical context were among the topics on the agenda for talks when British Prime Minister Rishi Sunak hosted US President Joe Biden at 10 Downing Street in London on Monday.

The US leader arrived in the UK ahead of a North Atlantic Treaty Organisation (NATO) summit in Lithuania, with the Russia-Ukraine conflict and the West's support for the latter central to the talks. Biden, who was received by King Charles III at Windsor Castle later, hailed the UK-US relationship as "rock solid" ahead of his discussions with Sunak.

"Looking ahead to this week's NATO Summit, the Prime Minister and President Biden agreed on the need to strengthen our alliance and maintain our support for Ukraine," a Downing Street spokesperson said in a readout of their discussions. "They discussed the progress of the counter-offensive and emphasised the importance of the country's international partners committing to its long-term defence, providing the support Ukraine needs to win this war and secure a just and lasting peace. On broader NATO issues, they agreed on the need to ensure that Sweden has a swift path to full NATO accession," the spokesperson said. "The Prime Minister and President Biden also discussed the broader geopolitical context, including in the Indo-Pacific and with regard to Iran," the spokesperson noted.

It marked the first time Biden has visited Downing Street as the US President and his sixth meeting with Sunak since he became Prime Minister in October last year. The US President was driven in his official vehicle, known as "The Beast", with an accompanying security convoy and posed for the customary photograph at the famous door of 10 Downing Street during a warm greeting by Sunak before the British Indian leader led the visiting dignitary to the garden. "We stand as two of the firmest allies in that alliance and I know we'll want to do everything we can to strengthen Euro-Atlantic security," said Sunak. He said it was great to "carry on our conversation" following a series of meetings between the leaders this year, including during his visit to Washington last month. Sunak, who will be joining Biden at the NATO summit this week, said they would consider how to strengthen cooperation and joint economic security to the benefit of citizens of both countries.

"The leaders discussed progress made since they announced the Atlantic Declaration, a first-of-its kind framework for the economic partnership between the UK and the US, last month. Since the Prime Minister and President Biden's last meeting in the White House, we have begun work on a UK-US Critical Minerals Agreement and the Joint Action Group on Energy Security has met to begin work on strengthening our clean energy supply chains," Downing Street said. "The Prime Minister and President Biden agreed to hold the first high level meeting between Number 10 and White House representatives in October to drive progress under the Atlantic Declaration.

The Prime Minister also updated on the UK's AI Summit which will be held this autumn and welcomed the President's strong support for the initiative...The leaders agreed on the importance of their friendship and of continuing the close dialogue they have had in the few months," the statement added. The US President landed at Stansted Airport on Sunday night before being taken by helicopter to Winfield House, the residence of the US ambassador in central London. During his meeting with King Charles on Monday, Biden received a royal salute and heard the US national anthem performed by the Welsh Guards before sitting down for a cup of tea with the 74-year-old monarch. Climate and environmental issues were centrestage during this meeting, with the King and President Biden briefed on the outcomes of a Climate Finance Mobilisation Forum meet around the support on offer for poorer countries. It is the first time the duo have met since the King's Coronation in May, which was attended only by US First Lady Jill Biden as the US representative.

<https://www.ptinews.com/news/international/indo-pacific-on-agenda-for-biden-sunak-talks-in-uk/3/605269.html>



Mon, 10 Jul 2023

अब मेडिकल साइंस में भी AI की एंट्री, IIT गुवाहाटी का ये मॉडल लगाएगा गठिया का सटीक अनुमान

भारतीय प्रौद्योगिकी संस्थान (IIT) गुवाहाटी के शोधकर्ताओं ने एक डीप लर्निंग (डीएल)-आधारित ढांचा विकसित किया है, जो एक्स-रे छवियों से गठिया (घुटने के आस्टियोआर्थराइटिस) की गंभीरता का स्वचालित रूप से आकलन करता है।

ओस्टियोएचआरनेट है एआई-आधारित मॉडल का नाम

एआई-आधारित मॉडल, जिसका नाम ओस्टियोएचआरनेट है, का उपयोग बीमारी की गंभीरता के स्तर का पता लगाने और अधिक सटीक निदान के लिए चिकित्सा चिकित्सकों की सहायता करने के लिए किया जा सकता है।

आईआईटी गुवाहाटी ने क्या कहा?

आईआईटी गुवाहाटी ने एक बयान में कहा कि "दूसरों की तुलना में हमारा मॉडल घुटने के आस्टियोआर्थराइटिस की गंभीरता के स्तर को तय करने के लिए उस क्षेत्र को इंगित कर सकता है जो चिकित्सकीय रूप से सबसे महत्वपूर्ण है। इस मॉडल से चिकित्सकों को शुरुआती चरण में बीमारी का सटीक पता लगाने में मदद मिलती है।"

भारत में 28 प्रतिशत है गठिया का प्रसार

बता दें कि गठिया दुनिया में सबसे आम बीमारी है और भारत में इसका प्रसार 28 प्रतिशत है। घुटने के पुराने आस्टियोआर्थराइटिस का उन्नत चरण में संपूर्ण जोड़ प्रतिस्थापन के अलावा कोई संभावित इलाज नहीं है। नियमित निदान के लिए एक्स-रे इमेजिंग बहुत प्रभावी और आर्थिक रूप से अधिक व्यवहारिक है।

एक अच्छी शुरुआत साबित हो सकता है यह मॉडल

जानकारी के अनुसार, संस्थान के अनुसंधानकर्ता क्लिनिकल मूल्यांकन में मदद के लिए एक्स-रे चित्रों या रेडियोग्राफ से घुटने के आस्टियोआर्थराइटिस के स्वतः निदान को और सुदृढ़ करने की दिशा में काम कर रहे हैं। आईआईटी गुवाहाटी में कम्प्यूटर विज्ञान और इंजीनियरिंग विभाग के प्रोफेसर अरिजीत सुर ने कहा, 'यह प्रस्तावित मॉडल एक्स-रे जैसे किफायती रेडियोग्राफिक तौर-तरीकों का विश्लेषण करने के लिए एक अच्छी शुरुआत साबित हो सकता है।'

<https://www.jagran.com/news/national-iit-guwahati-researchers-develop-ai-based-model-to-predict-knee-osteoarthritis-from-xray-images-23467334.html>

With More Fuel, Fail-Safe Measures, Chandrayaan-3 to Leap towards Moon on Friday

Loaded with more fuel, a slew of fail-safe measures and a bigger landing site, the Indian Space Research Organisation (ISRO) is set to make yet another attempt to land on the moon with the launch of Chandrayaan-3 on Friday. Chandrayaan-3, set for lift-off at 2:35 pm on Friday, will be a follow-up mission after the crash-landing of Chandrayaan-2 in September 2019 due to a software glitch.

ISRO Chairman S Somanath on Monday shared minute details about what went wrong with the Vikram lander of Chandrayaan-2 as it went hurtling down towards the identified 500m x 500 m landing spot on the lunar surface with the engines designed to reduce its velocity developing higher thrust than expected.

"The primary issues were, one we had five engines which were used to give the reduction of the velocity, which is called the retardation. These engines developed higher thrust than what was expected," he told reporters here on the sidelines of India Space Congress organised by SIA India.

Somanath said that when such a higher thrust was happening, the errors on account of this differential were accumulated over some period.

"All the errors got accumulated, which was on the higher side than what we had expected. The craft had to make very fast turns. When it started to turn very fast, its ability to turn was limited by the software, because we never expected such high rates to come. This was the second issue," the ISRO chief said.

He said the third reason for failure was the small 500m x 500m site identified for landing the spacecraft.

"The craft was trying to reach there by increasing the velocity. It was almost close to the ground and kept on increasing the velocity," Somanath said. He said instead of success-based design in Chandrayaan-2, the space agency opted for a failure-based design in Chandrayaan-3. "We expanded the area of landing from 500m x 500m to four km by 2.5 km. It can land anywhere, so it doesn't limit you to target a specific point. It will target a specific point only in nominal conditions. So, if the performance is poor, it can land anywhere within that area," Somanath said.

He said the Chandrayaan-3 also has more fuel so that it has more capability to travel or handle dispersion or move to an alternate landing site. "We looked at very many failures - sensor failure, engine failure, algorithm failure, calculation failure. So, whatever be the failure we want it to land at the required speed and rate. So, there are different failure scenarios calculated and programmed inside," Somanath said.

The ISRO chief said the Vikram lander now has additional solar panels on other surfaces to ensure that it generates power no matter how it lands. "We asked if it lands with higher velocity, what will happen? Can it not land? Then we increased the vertical velocity component from 2 m/s to 3 m/s and tested it totally," he said.

The spacecraft was also tested for ability to withstand vibrations by flying it over different terrains using a helicopter, while cranes were used to test the landing processes, he said.

"We did new test beds for simulation, which was not there last time. This was to look at failure scenarios," Somanath said.

<https://economictimes.indiatimes.com/news/science/with-more-fuel-fail-safe-measures-chandrayaan-3-to-leap-towards-moon-on-friday/articleshow/101641269.cms>

THE ECONOMIC TIMES

Mon, 10 Jul 2023

Welcome to the Anthropocene, Earth's New Chapter

Since 2009, a cloistered band of hard-rock geologists and other scientists have toiled on a mission of great consequence. On Tuesday they will deliver the last of their findings -- the location of ground-zero for the Anthropocene, the proposed geological epoch borne of humanity's outsized impact on the planet.

In essence, the Anthropocene Working Group was mandated by the high priests of Earth's geological timeline to answer three questions.

The first, roughly, is this: would aliens sifting through Earth's layered rocks and sediment a million years from now discern a human signature distinctive enough to mark a clear geological boundary?

If they did, when would it start?

Yes, the Working Group concluded, human appetites and activity have evicted the planet -- and its inhabitants -- from the stability of the Holocene epoch, which began 11,700 years ago as the last ice age ended.

The world is getting uncomfortably hot and its life-support systems are failing. The threshold for the "epoch of humans" first proposed in 2002 by chemistry Nobel Paul Crutzen, they said, should be the mid-20th century. This is when a sharp surge in greenhouse gas concentration, microplastic pollution, invasive species, radioactive traces from atom bomb testing, and a dozen other markers of our species' growing influence added up to what scientists now call the Great Acceleration. That leaves the question of the "golden spike" -- the single lake deposit, coral reef, ice core or other geological repository of evidence that best embodies the Anthropocene.

The "winner" will be announced Tuesday in joint press conferences at the Max Planck Society in Berlin and a meeting of working group scientists in Lille, France.

A paradigm shift

Presented as recommendations, the fruit of the Working Group's long labours must now be validated by a gauntlet of sceptical, hard-nosed scientists at the International Commission on Stratigraphy (ICS) and, higher up the food chain, the International Union of Geological Sciences (IUGS). The chances of that happening are slim, according to almost everyone involved. At one level, the issues under debate are narrow to the point of pedantry -- rock experts quibbling over whether the Anthropocene merits inclusion in the International Chronostratigraphic Chart, the planet's official 4.6-billion-year timeline. Some geologists say it doesn't meet the technical criteria, even as they acknowledge a rupture with the past.

At the same time, marking the end of the Holocene and the start of a new epoch would force us to ponder humanity's devastating impact. For the first time in Earth's history, a single species has not

only radically changed the planet's morphology, chemistry and biology, but is aware of having done so.

Crutzen, who earned a Nobel for identifying the manmade chemicals destroying the protective ozone layer, hoped the concept and reality of the Anthropocene would focus minds on the challenges ahead. "It could well be a paradigm shift in scientific thinking," he said at a symposium in 2011.

A dozen years later, many of the scientists who look at how the strands of the Earth system intersect agree.

"It's the recognition that, 'Oh my God, we have tipping points. Oh my God, the Holocene is the only state that can support us,'" Johan Rockstrom, head of the Potsdam Institute for Climate Impact Research, told AFP. "The paradigm shift is the realisation that we're leaving the Holocene and entering the Anthropocene."

Minefield of resistance

Other scientists, however, remain unconvinced, including powerful gatekeepers lobbying against the Anthropocene being adopted as a formal epoch. "The conditions which brought about glaciation" -- a dozen mini-ice ages over the last million years -- "haven't changed, so we might expect that the Holocene is simply another interglacial," Phil Gibbard, Secretary of the ICS, told the "Geology Bites" podcast last year. He suggested the planet could continue in that pattern for another 50 million years.

As for the Anthropocene, Gibbard has suggested calling it an "event" covering millennia of human alterations of the environment. In geology, he noted, an event can be anything from a single raindrop pitting a lump of clay to the Great Oxidation Event that transformed Earth's atmosphere some 2.2 billion years ago.

For Jan Zalasiewicz, a journeyman geologist who rose to the challenge of leading the Anthropocene Working Group through a forest of evidence and minefield of resistance for more than a decade, that's not good enough. Failure to formally ratify the concept, he said, would leave the impression that the Holocene conditions that allowed human civilisation to flourish are still there.

"Clearly they are not," he told AFP. "I am concerned that if the word 'Anthropocene' continues to mean different things to different people, then it will lose its significance and simply fade away." In the end, Zalasiewicz said, we can only follow the evidence. "Science is basically trying to establish what's real as opposed to what's not," he said. "And the Anthropocene is real."

<https://economictimes.indiatimes.com/news/science/welcome-to-the-anthropocene-earths-new-chapter/articleshow/101628705.cms>

