CONTENTS

FINANCIAL EXPRESS
Read to Lead

DRDO Develops Advanced Facial Recognition Technology (Frt) to Boost Surveillance

Facial Recognition System under Disguise (FRSD) was recently mentioned in a Ministry of Defence (MoD) report on "AI in Defence". FRSD has been developed by the Defence Research and Development Organisation (DRDO) to address the issue of facial recognition in the wild, where there are wide-ranging issues like low-resolution cameras.

At an interaction with the media persons in New Delhi, top Ministry of Defence (MoD) officials had released a report 'AI in Defence'. This report talked about FRSD and other facial recognition systems which have been developed for the Indian Army by various agencies under the ministry. Some of these technologies are meant for civilian use too.

FRSD this technology will rely totally on algorithms which will be used to identify the person from low-resolution surveillance camera feeds which are patchy too. According to the report, this technology can be used by the local security agencies for searching across large repositories and can be deployed in restricted zones and security areas. DRDO has developed such a technology that can penetrate under wigs, sunglasses, masks, disguises hats and the like.

Project Seeker

Developed and deployed by the Indian Army is meant for surveillance, garrison security and population monitoring. It can be set up remotely with a field ready system, doesn't require internet connectivity and is capable of gathering intelligence from multiple sources.

This state of the art system can be deployed in disturbed areas and will help in nonstop monitoring and surveillance.

How FRT works and should one trust it?

Facial recognition has been one of the original problem statements in computer vision and image processing. With the advancements in camera technology and computers, the solution has jumped leaps and bounds. Currently, FRT uses various nifty algorithms to adjudge the similarity of two objects in two different pictures. "These algorithms usually quantify a face using fundamental algorithms like edge detection, contouring and feature mapping to recognise where

a face is in an image. It is how many phones put a box on their faces when you use the camera to capture a group photo.

FRT, however, looks further at the specifics of the face that generate multiple data points. In conjunction, these various data points are unique to a degree for each individual. This is how multiple phones use face unlocks that often can differentiate between twins," explained an Artificial Intelligence (AI) expert who wished to remain anonymous.

Financial Express Online has reported earlier that the facial data gathered from specific demographics can be used in training FR algorithms of Artificial Neural Network. This is meant for ethnicity-based FR accuracy. Also, different social media platforms which gather user's details based on the searches as well as photos or comments posted, end up transferring huge amounts of personal information about Indians to servers in the US. This includes not only the location details but other personal data too.

However, the accuracy of FRT has constantly been challenged by experts

Why? Because FRT never actually produces a right or wrong statement. Instead, like any other recognition algorithm, it creates a confidence number, usually in percentage, indicating the match's likelihood. This means that instead of being a dictatorial system, it is a tool and up to the operator to decide how much to rely on it.

How does India compare with other countries?

China, being uber rich and technology keen along with a totalitarian mandate, leads the world in developing FRT for surveillance of its citizens. On average, there are about four cameras for every ten individuals in China. China has created a massive integrated system, the depths exposed during the hack of Shanghai's police records. Not only is the system able to recognise where each person is, but the police can also maintain notes on each individual pretty easily. Outside the four walls of a house, there seems to be no privacy for an individual. Some banks have allowed their customers to use facial recognition instead of ATM cards to withdraw money.

India has been making quick progress towards a similar system. Based on the information available in the public domain, Indore, Hyderabad, Delhi and Chennai are amongst the top ten cities in the world in terms of cameras per 1000 people. Indore has about 60 cameras per 1000 citizens, while Chennai has about 25 and the rest in between. The true extent of adoption is realised when we see Delhi has the most cameras per square mile worldwide (excluding China). In this top ten list, Mumbai has cropped up too.

However, Russia and UAE have more grave implementations than India. UAE uses facial recognition in over 15 domains. Dubai tracks all individuals at all times, including tourists, and while flying out of the country, present a collation of fines, if any, not paying, which they detain you and bar from returning.

Currently, India is at par with Chile and Japan. Japan has a separate National Public Safety Commission (NPC), which stores the facial images of around 10 million Japanese citizens. It provided the police access to this database to use it with the FRT.

India is expanding & Indigenisation

India is expanding its FRT implementation with more states floating tenders for implementation. Although there is no integration yet, there are reports of an integrated nationwide system like

China's in the pipeline. There are also projects like Seeker, which are standalone systems for disturbed areas that can identify individuals and aid surveillance.

There are some Indian startups at the forefront of FRT. A Gurugram based startup, Staqu, offers a full fledged public sector suite that has various features such as violence detection, automatic number plate detection, and crowd and protect detection, FRT, SOS detection when someone waves into a CCTV and intrusion detection. Another startup is FaceX that has demonstrated 94 percent accuracy in its FRT which it offers as APIs that other software developers can integrate into their applications.

https://www.financialexpress.com/defence/drdo-develops-advanced-facial-recognition-technology-frt-to-boost-surveillance/2639708/

पिनाका मिसाइल सिस्टम के नए वर्जन से कांप उठेंगे दुश्मन, जानिए इसकी खासियत

भारत के दुश्मन सीमा पर अक्सर अपनी सैन्य गतिविधियों से तनाव बढ़ाते रहे हैं. भारतीय सेना (Indian Army) के जवान भी दुश्मन देश के सैनिकों को मुंहतोड़ जवाब देते रहे हैं. भारतीय सेना की ताकत बढ़ाने की दिशा में लगातार काम किए जा रहे हैं. सेना में उन्नत हथियार, उपकरण और मिसाइल सिस्टम से लैस किया जा रहा है. इस कड़ी में रॉकेट लांचर पिनाक का एडवांस्ड वर्जन भी भारत की सैन्य शक्ति को बढ़ाएगा. पिनाका एमके-1 (एनहैंस्ड) रॉकेट सिस्टम और पिनाका एरिया डिनायल म्यूनिशन ये दोनों पिनाका मिसाइल सिस्टम (Pinaka Missile System) का नया वर्जन है.

अडवांस्ड तकनीक से लैस रॉकेट लॉन्चर का नया वर्जन अपने दुश्मनों को संभलने का तनिक भी मौका नहीं देता है. उड़ान क्षमता, नेविगेशन, सटीकता और स्पीड के मामले में ये काफी आगे है. इस मिसाइल सिस्टम का नाम भगवान शिव के धनुष 'पिनाक' के नाम पर रखा गया है.

दुश्मनों को संभलने का भी नहीं देगा मौका

पिनाका एनहैंस्ड रॉकेट सिस्टम और पिनाका एरिया डिनायल म्यूनिशन रॉकेट सिस्टम का इसी साल अप्रैल में ही सफल परीक्षण किया गया था. पिनाका रॉकेट प्रणाली के एक नए वेरिएंट का डीआरडीओ (DRDO) और भारतीय सेना द्वारा पोखरण फायरिंग रेंज में सफलतापूर्वक परीक्षण किया गया था. उभरती जरूरतो को पूरा करने के लिए रॉकेट सिस्टम को आधुनिक तकनीक के साथ विकसीत किया गया है. यह रॉकेट लॉन्चर 7 किमी से लेकर 90 किमी की दूरी तक बैठे दुश्मनों का खात्मा कर सकता है.

क्या है पिनाका मिसाइल सिस्टम की ताकत?

• 44 सेकंड में 12 मिसाइल लॉन्च करने की क्षमता

• 7 किलोमीटर से लेकर 90 किमी तक मारक क्षमता

• करीब 5757 किमी से अधिक प्रतिघंटा की रफ्तार से दुश्मनों पर हमला करने की ताकत

• किसी भी मौसम में फायर करने में सक्षम

• 214 कैलिबर के लॉन्चर से एक के बाद एक 12 पिनाका रॉकेट दागे जा सकते हैं

• अचूक निशाने से दुश्मन का विनाश तय

भगवान शिव के धनुष के नाम पर 'पिनाक'

पिनाका मिसाइल सिस्टम (Pinaka Missile System) का नया वर्जन दुश्मन को संभलने का भी मौका नहीं देता है. इस मिसाइल सिस्टम का नाम भगवान शिव के धनुष 'पिनाक' के नाम पर रखा गया है. इसकी खास बात यह है कि हर मौसम और परिस्थिति में काम करने में सक्षम है. भारतीय सेना (Indian Army) चीन (China) और पाकिस्तान (Pakistan) की किसी भी हरकत से निपटने के लिए अब हर मोर्चे पर खुद को मजबूती से तैयार करता दिख रहा है. इस अडवांस्ड हथियार से चीन को करारा जवाब मिलेगा.

https://www.abplive.com/news/india/defence-news-indian-army-pinaka-missile-advanced-version-rocket-launcher-deadly-for-china-enemies-2197631

DRDO on Twitter

DRDO ✓
@DRDO_India

Parliamentary Committee on Welfare of SC and ST has taken on spot study tour at Hyderabad today. The committee reviewed the implementation status of various directives in DRDO for the welfare of SC and ST employees.
@drkiritpsolanki
@kataria4ambala

👤 Dr. Kirit Solanki MP and 4 others

7:02 PM · Aug 22, 2022 · Twitter for iPhone

DRDO ✓
@DRDO_India

#DRDOUpdates | DRDO organised two days Information Security Officers Meet 2022 to strengthen the #cybersecurity mechanisms and timely mitigate potential cyber attacks, as well as boost protection of DRDO's digital assets.
#ISOMEET2022

ISO MEET 2022
22nd - 23rd August 2022
Dr. DS Kothari Auditorium, DRDO Bhawan

Securing DRDO Cyber Space

DIT & CS, DRDO (HQ)

12:52 PM · Aug 22, 2022 · Twitter for iPhone

Defence Strategic : National/International

NDTV

Mon, 22 Aug 2022

India's 1st Indigenous Aircraft Carrier 'Vikrant' to be Commissioned on September 2: Report

Prime Minister Narendra Modi will commission the country's first indigenously-built aircraft carrier (IAC) Vikrant on September 2, official sources said.

The Prime Minister will officially induct the vessel to the Indian Navy at a specially arranged venue inside the Cochin Shipyard Limited (CSL) here, which manufactured the over Rs 20,000 crore warship.

The Indian Navy had on July 28 taken delivery of the carrier from CSL after it had successfully completed the fourth and the final phase of the sea trials last month.

"The event is currently scheduled to be held on September 2 at CSL jetty. The retired staff of INS Vikrant, India's first aircraft carrier, officials of defence, shipping ministries and the state government among others are set to participate," sources told PTI.

They said an attendance of 1500-2000 people is likely.

The IAC would serve to bolster India's position in the Indian Ocean Region (IOR) and its quest for a blue water Navy.

Fighter jets have been brought to the aircraft which is set to operate MiG-29K fighter jets, Kamov-31 helicopters and MH-60R multi-role helicopters.

With the delivery of 'Vikrant', India has joined a select group of nations having the niche capability to indigenously design and build an aircraft carrier.

Designed by Indian Navy's in-house Directorate of Naval Design (DND) and built by the CSL, a Public Sector Shipyard under the Ministry of Ports, Shipping and Waterways, the carrier is christened after her illustrious predecessor, India's first Aircraft Carrier which played a vital role in the 1971 Indo-Pak war.

It has over 2,300 compartments, designed for a crew of around 1700 people, including specialised cabins to accommodate women officers.

Vikrant has a top speed of around 28 knots and a cruising speed of 18 knots with an endurance of about 7,500 nautical miles.

The IAC is 262 metres long, 62 metres wide and has a height of 59 metres. Its construction began in 2009.

The flight deck of the IAC is comparable to two football grounds and by walking through the corridors of the massive vessel, one will cover eight kilometres.

The eight power generators onboard IAC are enough to light up Kochi city and the warship contains a dedicated hospital complex with all facilities.

https://www.ndtv.com/india-news/indias-1st-indigenous-aircraft-carrier-vikrant-to-be-commissioned-on-september-2-report-3275643

TIMESNOW

Mon, 22 Aug 2022

Govt Grants Permission to Defence Forces to Buy Emergency Weapons Through Make in India Route

The GoI on Monday allowed the defence forces to buy critical weapon systems through the emergency procurement route. The approval was given in a meeting of the Defence Ministry chaired by Rajnath Singh on Monday. As per the approval, the weapon systems can be procured only through Make in India route.

These emergency powers give the defence forces the freedom to acquire any new or in-service equipment on a fast-track basis as per requirement. The equipment in these deals will be delivered within a time frame of 3 months to one year. Notably, with these powers, the armed forces have to spend funds on deals from their own budget and don't necessarily have to take the Defence Ministry's approval for the same.

The Defence forces have benefitted from these powers as the IAF and the Army received 'Heron' unmanned aerial vehicles which proved very useful for surveillance in Ladakh as well as in the Northeast. Other acquisitions include missiles which can hit ground targets like bunkers from a long distance.

The armed forces are set to buy a long list of equipment under this deal including both, ingenious and foreign manufactured products.

These emergency powers are being granted to the country's defence forces in the backdrop of China's apparent aggression on the Taiwan front and multiple displays of strength by firing missiles in the region.

https://www.timesnownews.com/india/govt-grants-permission-to-defence-forces-to-buy-emergency-weapons-through-make-in-india-route-article-93716242

ThePrint

Government Allows Defence Forces to Buy Emergency Weapons Through Make in India Route

In a major boost to defence forces, the government has allowed them to buy critical weapon systems for their operational requirements through emergency procurement route.

The approval was given in a meeting of Defence Ministry held on Monday morning as per which the weapon systems can be procured only through Make in India route, top government sources told ANI.

The meeting was headed by Defence Minister Rajnath Singh.

The defence forces are now going to use these powers to buy critical weapons systems under the fast-track route meaning the deliveries would be done within three months to one year.

The armed forces have to spend funds on the new acquisitions from their own budgetary allocation and they don't have to take the defence ministry's approval for these deals, the sources said.

The defence forces have strengthened their preparedness through these acquisitions in the past when emergency powers were granted to them.

The Indian Air Force and the Army received 'Heron' unmanned aerial vehicles which have now been deployed for surveillance in Ladakh as well as in the northeast for keeping an eye on Chinese activities.

The forces have also got missiles which can hit ground targets from long ranges. The Rafale fighter jets have also received a boost with the induction of the HAMMER missiles which can hit hardened ground targets like bunkers from a long distance.

The Army and the IAF also used these powers to strengthen their small arms as the Sig Sauer assault rifles have been inducted into all three forces now.

Indian armed forces extensively utilised the emergency procurement powers granted to them in different phases by the government to equip themselves with the necessary weaponry to handle any conflict or aggression by enemies on both sides.

The armed forces have a long list of equipment to buy and will use the powers to buy both indigenous as well as foreign manufactured products.

https://theprint.in/india/government-allows-defence-forces-to-buy-emergency-weapons-through-make-in-india-route/1094922/

Ministry of Defence

Raksha Mantri Shri Rajnath Singh to Attend Shanghai Cooperation Organisation (SCO) Defence Ministers' Meeting in Tashkent, Uzbekistan

Raksha Mantri Shri Rajnath Singh is visiting Tashkent, Uzbekistan from 23rd to 25th August, 2022 to attend the Annual Meeting of the Defence Ministers' of Shanghai Cooperation Organisation (SCO) Member States. During the Annual Meeting, Defence Cooperation issues among the SCO Member States will be discussed and it is expected that a joint communiqué will be issued after the deliberations. Shri Rajnath Singh's address at the meeting is slated to be held on August 24, 2022.

During the visit to Tashkent, Raksha Mantri will meet his Uzbekistan counterpart Lieutenant General Bakhodir Kurbanov, Minister of Defence of the Republic of Uzbekistan, which is also the host country. In addition, meetings are also scheduled with Defence Ministers' of some other Member countries of SCO on the sidelines of this meeting, where bilateral issues and issues of mutual interest will be discussed.

During the stay in Tashkent, Raksha Mantri shall pay homage at the monument of Late Prime Minister Lal Bahadur Shastri and meet Indian Diaspora in Uzbekistan.

https://pib.gov.in/PressReleasePage.aspx?PRID=1853686

Defence Minister Rajnath Singh to Leave for Tashkent to Attend SCO Meet

Defence Minister Rajnath Singh will travel to the Uzbek capital, Tashkent, on Tuesday on a three-day visit to attend a defence ministerial conclave of the Shanghai Cooperation Organisation (SCO). Chinese Defence Minister General Wei Fenghe and Russian Defence Minister Sergei Shoigu are also expected to attend the SCO meet, besides their counterparts from other member countries of the grouping.

The SCO defence ministerial meeting is taking place around three weeks ahead of the annual summit of the influential grouping.The summit is scheduled for September 15-16 in Samarkand."Tomorrow, August 23, I will be in Uzbekistan to take part in the SCO Defence

Ministers Meet being held at Tashkent. I will be holding a bilateral meeting with Uzbekistan's Defence Minister, Lt. General Nizamovich, and also interact with the Indian community. Look forward to it," Singh said in a tweet on Monday.

The defence ministry said Singh, during his August 23-25 visit to Tashkent, will meet the defence ministers of some of the SCO member countries. However, there is no clarity on whether there will be a meeting between Singh and Shoigu. Indian and Chinese troops are engaged in a bitter standoff at several friction points in eastern Ladakh for over two years. Singh is scheduled to deliver his address at the SCO meeting on August 24.

"During the visit to Tashkent, Raksha Mantri will meet his Uzbekistan counterpart Lieutenant General Bakhodir Kurbanov, Minister of Defence of the Republic of Uzbekistan, which is also the host country," the defence ministry said in a statement."In addition, meetings are also scheduled with Defence Ministers of some other member countries of SCO on the sidelines of this meeting, where bilateral issues and issues of mutual interest will be discussed," it added.

The SCO meeting is expected to deliberate on regional security challenges, including the situation in Ukraine and Afghanistan.The SCO is an influential economic and security bloc and has emerged as one of the largest transregional international organisations.India and Pakistan became its permanent members in 2017.

The SCO was founded at a summit in Shanghai in 2001 by the presidents of Russia, China, the Kyrgyz Republic, Kazakhstan, Tajikistan and Uzbekistan. India has shown a keen interest in deepening its security-related cooperation with the SCO and its Regional Anti-Terrorism Structure (RATS), which specifically deals with issues relating to security and defence.

India was made an observer at the SCO in 2005 and has generally participated in the ministerial-level meetings of the grouping, which focus mainly on security and economic cooperation in the Eurasian region.

https://www.financialexpress.com/defence/defence-minister-rajnath-singh-to-leave-for-tashkent-to-attend-sco-meet/2640588/

Business Standard

Mon, 22 Aug 2022

Defence Corridor Nets Rs 11,250-Crore Projects in Uttar Pradesh

The Uttar Pradesh government has bagged 93 investment proposals worth more than Rs 11,250 crore for the flagship defence corridor project. The nodal agency, the UP Expressway Industrial Development Authority (UPEIDA), has signed memorandums of understanding (MoUs) with these private companies. The process of attracting more defence industry firms is underway.

While the government has so far acquired 1,600 hectares, about 30 companies have been allocated land for setting up their plants as part of the corridor. The UP Defence Corridor, which constitutes a vital cog in the country's defence and strategic matrix, spans six nodes in the state — Lucknow, Kanpur, Jhansi, Aligarh, Chitrakoot, and Agra.

"Apart from the previously announced UP Defence and Aerospace Employment Promotion Policy, the state has made a few amendments to encourage private investment," UPEIDA spokesperson Durgesh Upadhayay said.

The state government has tied up with leading commercial banks and financial institutions to promote the easy flow of funds to prospective investors.

Among the most prominent UP Defence Corridor projects is the Indo-Russian joint venture of BrahMos missile project in Lucknow. This is to develop next-generation supersonic missiles for the Indian forces. According to the state government, the Brahmos unit will be commissioned by 2025. The Rs 300-crore BrahMos project will generate 5,500 fresh jobs. The ancillaries will create an additional 10,000 jobs.

The Yogi Adityanath government has allocated 200 acres for the BrahMos project on a lease of merely Rs 1, considering its importance for national security and for showcasing the state as a preferred destination for the defence manufacturing sector.

Meanwhile, the Adani group firm — Adani Defence & Aerospace — has signed an MoU with UPEIDA to develop South Asia's largest integrated ammunition manufacturing facility in 250 acres at a cost of Rs 1,500 crore.

"Aligning with the vision to achieve defence hardware self-reliance, the project is going to prove as a landmark in the history of indigenous defence manufacturing," UPEIDA CEO and UP Additional Chief Secretary Awanish Kumar Awasthi had earlier said.

The project is expected to be a key facilitator in India's goal of achieving $5 billion exports in defence manufacturing. The ammunition complex will comprise state-of-art technology across small and medium caliber ammunition, and short-range air defence missiles.

https://www.business-standard.com/article/economy-policy/defence-corridor-nets-rs-11-250-crore-projects-in-uttar-pradesh-122082201305_1.html

Mon, 22 Aug 2022

AI Plays a Significant Role in a Country's National Security: Dr Sanur Sharma, MP-IDSA

Dr Sanur Sharma is an Associate Fellow at Strategic Technologies Centre, Manohar Parrikar Institute for Defence Studies and Analyses (MP-IDSA). Her research interests include AI, Social Media Analytics, Machine Learning, and Information Security. INDIAai interviewed Sanur Sharma to get her perspective on AI.

From assistant professor to MP-IDSA associate fellow. What was your driving force behind this?

I have been into teaching for about ten years, and during that time, I always felt a keen inclination toward pursuing research. As an assistant professor in my previous organisations, I

had a lot of responsibilities apart from conducting lectures, which gave me limited time to work on my research. Hence when I got an opportunity to work in India's one of the premier thinktank, I took it in my stride. My interests and passion have been to do something meaningful for myself and my community that comprehends my expertise, education and field of study at a global level. MP-IDSA gave me a platform to connect with individuals and organisations on a larger scale nationally and internationally to share my views and research on important and pertinent topics of emerging technologies related to security and defence.

What is your role at MP-IDSA as an associate fellow?

At MP-IDSA, I work as Associate Fellow in the Strategic Technologies Centre. My area of research revolves around emerging and disruptive technologies and their role in defence. My expertise is in Artificial Intelligence and Data Analytics. Currently, at MP-IDSA, I research AI and its role in defence and security. I cover applications of AI and its effects on Global geopolitics vis-à-vis National Security. In addition, I write for the MP-IDSA website and peer review journals and participate in conferences and events about these topics.

Were there any interesting challenges you faced during the early stages of social media analytics research to military studies research?

When I started my research on social media in 2010, it was an upcoming area, and minimal people were working on social media security and anonymisation of Social Networks. There was a lot of hype around it with minimal awareness and understanding, which gave me a heightened interest in this field as my master's was in information security. It was the beginning of the exploration of social media for adversaries and service providers, selling this information and data to third parties.

Today with the extensive use of social media and advancement in technologies like AI, IoT and Cyber-Physical systems, when I see it in the context of military studies research, it has (evolved considerably) and comes a long way. However, this area poses a new set of challenges from cyber mass adoption and cyber security issues like bots, malware, use of social media for disinformation and misinformation campaigns, vulnerabilities of the AI systems (data bias, governance and regulation), the role of non-state actors and big tech companies to its broad applicability and large user base. Moreover, the part of data was significant then also and now as well. Therefore, there is a need for the establishment of a holistic data infrastructure, where data is collected, structured, and summarised at an integrated level and made available to all stakeholders in a timely fashion.

In terms of adopting AI technologies, where does the Indian defence stand? How can AI/ML play an essential role in our defence?

India documented its AI journey in 2018 when Nitti Ayog came out with the National Strategy on AI. However, it did not cover the Defence sector and was majorly for the commercial and private sectors (Agriculture, Healthcare, Education, Smart Cities and Infrastructure, Smart Mobility and Transportation). In the Defence sector, India can be seen as a late entrant but has been making decisive steps for matching up the significant powers in terms of investment, indigenous development and bilateral and multilateral partnerships on the adoption of AI. For instance, India and Japan have finalised a cybersecurity agreement to promote cooperation in critical areas such as the 5G network and Artificial Intelligence. Moreover, at the QUAD summit in 2022, AI was the priority topic for discussion.

In defence, AI has applications in Intelligence, Surveillance and Reconnaissance (ISR), military logistics, Integrated Command and Control, Semi-autonomous and autonomous vehicles, cyber warfare, information warfare (Deep fakes) and Lethal Autonomous Weapon Systems. Countries like the US, China, Europe and Russia invest billions of dollars in AI-enabled Systems.

India is also captivating initiatives in the development and deployment of such systems. DAIC and DAID have Rs 100 crore annual budgets specifically for AI-enabled projects. CAIR (a laboratory of the Defense Research and Development Organization (DRDO)), a primary laboratory for R&D in different areas of Defense Information and Communication Technology (ICT), is developing an Al-based Signal intelligence solution to enhance intelligence collation and analysis capabilities of the armed forces. In July 2022, MoD came out with 75 AI-enabled systems in the Def(Symp) specifically for the defence sector. In addition, 140 AI-enabled sensor systems have across Pakistan and China borders. The Indian Army will soon conduct trials of indigenously developed artificial intelligence (AI)-enabled, uncrewed all-terrain vehicles in Ladakh for surveillance and logistics operations. The military potential of AI can be transformative to national security technology. It is to automate weapon systems and enable predictive maintenance of autonomous military systems (aircraft, combat vehicles and robotic vehicles), estimating failure likelihood and tailor-made maintenance schedules.

How does AI assist Indian defence in adding value and managing risks?

AI has a significant role to play in any country's national security. Due to its dual use, multiple AI-enabled systems are available with state and non-state actors, making it a concerning factor for maintaining strategic stability and deterrence. However, AI governance, ethics, data bias issues and regulations are significant challenges in developing a thriving AI ecosystem in India. For the Indian defence, it is essential to identify these challenges and risks associated with this technology and build trust in AI through awareness, infrastructure development, policy & regulations, research & development, and human resource development. Indigenous development will be a key in adding value to our defence systems, and so will the multilateral and bilateral partnerships towards adopting AI like joint developments, technology sharing and global policy and standardisation.

Everyone acknowledges that machine learning and deep learning are innovative technologies. However, we frequently miss the new issues they present. One of them is the environmental impact of these rapid technologies. What do you think about that?

Well, I agree that these rapid technologies have severe environmental issues like depletion of natural resources and pollution. This issue has also led to the development of environmental technology (green/clean technology), where AI and IoT play a significant role in monitoring, reducing and conserving resources. E.g., Various organisations like Google and Alphabet realised a 15% reduction in data centre energy using deep learning algorithms. Another example of AI is for climate change research to study methane fluxes and the earth's increasing temperature. It is also being used in geosciences for the mining industry (forsee presence of gold mineralisation) and in medical research (drug discovery, early detection of cancer etc.)

Which AI subdomains/subjects do you believe are the most popular among your peers?

AI is an enabler of various technologies. Therefore is used in almost every sector, from the service sector, where we use voice assistants like Alexa, Siri, social media platforms, e-

commerce websites, and OTT platforms, to other industries like healthcare, agriculture, climate change and Financial Sector. Some domains of AI which are very popular right now are:

· Autonomous Vehicles, Self-driving cars and robotic systems

· Role of AI in Cyber Security

· Human Behaviour monitoring

· Intelligent Monitoring Systems

· Block-Chain Automation

· ISR and military logistics

Apart from these, the subjects of study in AI that are very popular now are Explainable AI, Deep Learning and Neural Networks, Natural Language Processing and Language Models.

What advice do you have for individuals who aspire to pursue careers in AI research? What are the best paths to advancement?

My advice to young individuals interested in AI would be to develop technical, conceptual and practical skills in AI and machine learning, including analytical ability and interest in programming. Furthermore, I would suggest reading the latest articles and research papers from reputed journals to be updated on the relevant topics and understand the open issues and challenges with AI-enabled systems. The best path to advancements is through gaining experience by undertaking courses/ a degree in AI and ML and attending international workshops and conferences on AI. AI has applications all over. Hence with such vast applicability, there is a broad set of job opportunities for Data Scientists, Big data Engineers/Architects, Research Scientists, Business Intelligence Developers, Robotics Engineers and NLP Engineers.

Could you please share a list of essential research journals and books?

· IEEE Transactions on Pattern Analysis and Machine Intelligence

· Journal of Memory and Language

· International Journal of Robotics Research

· IEEE Transactions on Neural Networks and Learning Systems

· Pattern Recognition

· International Journal of Computer Vision

· IEEE Transactions on Knowledge and Data Engineering

Some books

· The Emotion Machine: Commonsense Thinking, Artificial Intelligence, and the Future of the Human Mind By Marvin Minsky

· Machine Learning (in Python and R) For Dummies

· Artificial Intelligence Engines: A Tutorial Introduction to the Mathematics of Deep Learning

· Artificial Intelligence: A Modern Approach By Stuart Russell & Peter Norvig

https://indiaai.gov.in/article/ai-plays-a-significant-role-in-a-country-s-national-security-dr-sanur-sharma-mp-idsa

Tue, 23 Aug 2022

भविष्य की जंग के लिए कितना तैयार है भारत

आर्टिफिशल इंटेलिजेंस से लैस हथियारों के मामले में भारत की तुलना में चीन कहीं आगे है। भारत को भविष्य में होने वाले युद्ध के लिए इस लिहाज से भी तैयारी करनी होगी

अरुणेश पठानिया

भविष्य के युद्ध के लिए रक्षा मंत्रालय ने 75 तरह के आर्टिफिशल इंटेलिजेंस (एआई) के प्रॉडक्ट सेना को सौंपे हैं। इसके अलावा 100 और ऐसे उपकरण हैं, जिन पर तेजी से काम चल रहा है। वैसे, चीन और अमेरिका तेजी से इस टेक्नॉलजी पर काम कर रहे हैं और वे भारत से इस मामले में कहीं आगे हैं।

भारत की तैयारी : मार्च 2018 में राष्ट्रीय सुरक्षा के लिहाज से एआई को लागू करने पर सरकार ने एक हाई लेवल टास्क फोर्स बनाई। टाटा संस के अध्यक्ष एन. चंद्रशेखरन की अध्यक्षता में गठित टास्क फोर्स की रिपोर्ट पर उच्चस्तरीय रक्षा एआई परिषद (डीएआईसी) और एआई प्रॉजेक्ट एजेंसी (डीएआईपीए) बनाई गई। इसके बाद मार्च 2020 तक सार्वजनिक क्षेत्र के रक्षा उपक्रमों (डीपीएसयू) ने 16 एआई प्रॉडक्ट डिवेलप किए। मार्च 2021 तक यह संख्या बढ़कर 26 हो गई और मार्च 2022 के अंत तक अन्य 40 उत्पाद विकसित कर लिए गए।

इनमें सैन्य एआई प्रॉडक्ट्स मंदारिन (चीन की भाषा) का अनुवाद करते हैं, संदिग्ध वाहनों का पता लगाते हैं। वे पाकिस्तान स्थित आतंकी समूह के संदेशों की डिकोडिंग भी करते हैं। इनके साथ कुछ और एआई प्रॉडक्ट्स की जानकारी देते हैं:

● ऑटोमैटिक ड्रोन सिस्टम 'तूफान' शहरी क्षेत्रों में कारगर है। बिना जीपीएस के ही इससे घातक हथियार ढोए जा सकते हैं। इसे निगरानी, राहत और बचाव कार्य में यूज किया जा सकता है।

● चेहरे पहचानने के लिए सेना फेस ट्रैकर भी यूज करती है। एआई-पावर्ड एनालिटिक्स मॉड्यूल हर चेहरे को स्कैन करके सर्वर को देता है, जहां इनकी पहचान होती है।

● चीनी सीमा पर होने वाली द्विपक्षीय वार्ता में या किसी चीनी सैनिक की भाषा को डीकोड करने के लिए नैचरल लैंग्वेज प्रोसेसर का इस्तेमाल किया जाता है। इसका वजन 80–100 ग्राम है, बैटरी 12 घंटे चलती है और इसे नेटवर्क भी नहीं चाहिए।

● खराब से खराब विडियो में जब प्रॉजेक्ट प्रिज्म लगता है तो सब साफ दिखने लगता है। सरहद की दूर की फोटो में इसका यूज किया जाता है।

● इंटेलिजेंस सर्विलांस सिस्टम बना है, जो घुसपैठियों का पता लगाता है। एक इनबिल्ट उपग्रह मॉड्यूल के जरिए यह काम करता है।

● झुंड ड्रोन हवाई युद्ध में काम आने वाले ड्रोनों

कॉमन रूम

का एक ग्रुप है। यह एआई के जरिए ही झुंड बनाता है। इंसान और जानवर में फर्क कर सकता है और यह सुझाव भी दे सकता है कि टारगेट शत्रु है या मित्र।

● बारूदी सुरंगों का पता लगाने के लिए सैपर स्काउट वाहन है, जो अपनी रोबॉटिक बांह से सुरंगों को डीएक्टिवेट भी कर सकता है।

आने वाले दिनों में एआई का यूज और भी कई चीजों में होने वाला है:

● संदिग्ध वाहनों की पहचान के लिए प्रॉजेक्ट वी-लॉगर चल रहा है। इससे वाहनों की लाइव ट्रैकिंग होगी।

● साइलेंट संतरी नाम का रोबॉट एल्गो की मदद

से चेहरा पहचान कर अलार्म बजाएगा।

● त्रिशूल नाम का ऑटोमैटिक वेपन सिस्टम बनाया जा रहा है। एआई की मदद से यह सौ प्रतिशत तक सटीक निशाना लगाता है। सेना इस प्रणाली को जल्द शामिल करने जा रही है।

अमेरिका ने एआई के लिए टेक्सस में अगस्त 2018 में आर्मी फ्यूचर्स कमांड बनाया था। वहीं चीन ने जुलाई 2018 में अपनी एआई विकास योजना जारी की। पाकिस्तान का पहला उद्यम अगस्त 2020 में हुआ, जब उसने चकलाला रावलपिंडी में आर्टिफिशल इंटेलिजेंस और कंप्यूटिंग सेंटर खोला। हालांकि पाकिस्तान नई तकनीक विकसित करने के लिए पूरी तरह से तुर्की और चीन पर निर्भर है।

चीन सैन्य क्षेत्र में एआई पर भारी निवेश कर रहा है। पाकिस्तान और सऊदी अरब इसके सबसे बड़े खरीदार हैं। चीन मानव रहित यूएवी, एआई सक्षम उपग्रह विकसित कर रहा है। वह अपने टी-59 टैंक एआई से चला रहा है। उसके उपग्रह दूसरे उपग्रहों और मिसाइलों को नष्ट कर सकते हैं। चीन ने मिसाइलों में भी एआई फिट कर दी है, जो जरूरत पड़ने पर टारगेट बदल लेती हैं। एआई की मदद से चीनी सेना 1000 से अधिक ड्रोन सिंक्रनाइज तरीके से चला सकती है। जाहिर है भारत की अपनी उपलब्धियां जो भी हों, अगर उसकी चीन से मानी जाए तो उसे इस क्षेत्र में अभी लंबा सफर तय करना होगा।

Tue, 23 Aug 2022

Indian Navy Prepares for Women at Sea

INS Chilka, the navy's basic training establishment in Odisha, is undergoing a transformation ahead of the arrival of the first batch of Agniveer women trainees, with the sprawling lakeside campus getting a raft of facilities that will make life easier for the 600 women who are on the threshold of a naval career, a top admiral said.

From earmarking two new accommodation blocks exclusively for them to installing sanitary pad vending and disposal machines, creating a separate dining area, to hiring women staff, the training establishment is becoming women-friendly, said Vice Admiral MA Hampiholi, who heads the Southern Naval Command and is monitoring the changes underway at the training facility.

The Kochi-headquartered Southern Naval Command is responsible for the whole gamut of training for the navy.

"Specific changes have been made to cater to different needs of women trainees, including privacy. We took inputs from serving women officers to understand those needs before initiating the changes at INS Chilka," he said. The navy began inducting women as officers three decades ago, but this is the first time they are being recruited as sailors.

Almost a million applicants, including more than 82,000 women, have registered for recruitment into the navy under the Agnipath model for short-term induction of soldiers into the three services, and the selection process is underway. Those recruited under the new model will be called Agniveers.

These applicants are competing for 3,000 jobs in the navy, with women expected to account for 20% (600) of the first intake under the new recruitment model.

Other changes at INS Chilka include setting up of more toilets for women trainees, installation of security cameras and hiring women as matrons, swimming instructors and safai karamcharis, said a senior navy officer posted at INS Chilka.

"While women trainees will have separate residential and dining areas, they will carry out all academic and training activities alongside their male counterparts," he said. The navy's first Agniveeers are expected to begin their training at INS Chilka on November 21.

The training establishment has 50 officers in different roles, including 13 women officers.

"The women officers will mentor the women trainees, take care of their needs and ensure a smooth transition," said Hampiholi. The women sailors will be inducted in all 29 branches and trades of the navy, and will be given warship assignments too.

Inducting women as sailors is a welcome and progressive step, and the navy has shown remarkable foresight by planning the changes at INS Chilka, said Commander Gauri Mishra (retd). "It has worked everything out in minute detail to make the training facility women-friendly. Kudos to the navy," said Mishra, who is a skydiver and has served as a flag lieutenant to a navy chief.

INS Chilka sent teams to training establishments of the Corps of Military Police, the Border Security Force, and the Central Industrial Security Force (all of them train women), and the inputs gathered were distilled before finalising the training regimen and other changes, said Hampiholi.

"There will be no difference in the training curriculum for men and women. However, the mandatory physical standards to be achieved by them will be different in line with the practices followed by training establishments worldwide," he said.

The navy is the only service recruiting women in the personnel below officer rank (PBOR) cadre in the first phase of Agnipath. Some of these women, who will be inducted as Agniveers early next year, are likely to be deployed on India's first indigenous aircraft carrier Vikrant, the largest warship to be built in the country and likely to be commissioned on September 1 by Prime Minister Narendra Modi in Kochi.

The armed forces will recruit 46,000 Agniveers this year including 40,000 in the army and 3,000 in the Indian Air Force.

India on June 14 announced the Agnipath scheme replacing the legacy system of recruitment to lower the age profile of the armed forces, ensure a fitter military and create a technically skilled war fighting force capable of meeting future challenges. It sparked widespread protests and forced a concerted outreach by the government to scotch apprehensions about the scheme.

The scheme seeks to recruit soldiers for only four years, with a provision to retain 25% of them in the regular cadre for 15 years after another round of screening.

https://www.hindustantimes.com/india-news/indian-navy-prepares-for-women-at-sea-101661189222094.html

ThePrint

India-Russia Working on New Payment System for Defence Deals Amid More Sanctions

Hit by more Western sanctions on Russian banking channels, Moscow and New Delhi are now working out a new payment system for defence equipment already ordered, including leasing of the third nuclear submarine.

Sources in the Indian defence and security establishment also told ThePrint that another area of concern is appreciation of the Russian ruble vis-à-vis rupee. This means payment to Russia becomes more expensive for India.

In August last year, both rupee and the Russian ruble had the same value. But the Russian ruble is today valued at 0.75 against one rupee.

Asked about the impact of western sanctions on India-Russia defence deals, Russia's Federal Service for Military Technical Cooperation (FSMTC) head Dmitry Shugaev said payments are made in accordance with the terms stipulated in the contracts.

He was speaking on the sidelines of the Army 2022, an international defence exhibition that was held in Moscow.

"As a result of the anti-Russian campaign unleashed by unfriendly countries, domestic military-technical cooperation entities, leading enterprises of the military-industrial complex and financial institutions are subject to various types of sanctions.

In this regard, payments in the US dollar and Euro in arms export transactions have been reduced to a minimum," he said.

As reported by ThePrint in 2019, both India and Russia had decided to make payments in local currency for defence deals.

New sanctions leading to fresh challenges

Russia has been pushing for a rupee-rouble transfer as a payment system for defence deals for the last few years, but India had been reluctant, given the depreciation in the Russian currency. However, now, the Russian currency has appreciated.

While India and Russia had worked out a simpler system for payments, the secondary sanctions imposed on Russia and other nations, including France following its invasion of Ukraine, has created fresh challenges.

The US, along with the European Union, have cut off seven Russian banks from SWIFT — the Belgium-based cross-border payment system operator – including the one that was being used for payments earlier by India. The slapping of newer sanctions and cutting off Moscow from SWIFT has impacted the payment capacity.

Russian sources admitted that some payments have fallen behind and both Moscow and New Delhi are in touch with each other to arrive at a solution.

"Today, Russian exporters of military products, like the entire economy, are operating in a new reality. Large-scale work is underway. State corporations and military-technical cooperation entities are in constant cooperation with financial institutions of our country, our foreign partners," Shugaev said.

He added that Russian countermeasures against sanctions consist of a tailored approach to each of their customers, offering attractive conditions when concluding contracts, adjusting the payment forms and providing more flexible schemes, abandoning the dollar and switching to other currencies, including national ones.

"Many of the anti-sanction measures developed by the FSMTC of Russia are welcomed by our partners, as they are mostly in line with their national strategic interests," he added.

Sources, however, explained that larger payments are an issue but talks are underway to ensure no delivery gets affected.

Russia has proposed the use of a SWIFT-like system developed by the Russian central bank. It involves rupee-ruble-denominated payments using Russia's messaging system, SPFS, according to a report in the Business Standard.

Under the proposal, rupees will be deposited to a Russian bank and converted into rubles. However, some undecided elements include whether the exchange rate will be fixed or floating.

https://theprint.in/defence/india-russia-working-on-new-payment-system-for-defence-deals-amid-more-sanctions/1094178/

TIMESNOW

Mon, 22 Aug 2022

US-Made MQ-9b Drones in India 'Soon' : Why India Wants the Predator Drones

Since the 2020 Galwan Valley clashes with Chinese troops, India has considerably stepped up surveillance along the Line of Actual Control (LAC) using a fleet of unmanned drones. The addition of the MQ-9B drones from the US would be a big upgrade in India's monitoring programme. Reports say New Delhi is already in advanced stages of talks with the US administration for the procurement of the General Atomics-built drones with its advanced battle capabilities.

According to reports on Sunday, India will soon receive 30 MQ-9B Predator armed drones in a deal that is worth over USD 3 billion and which was earlier reported to be off the table. According to sources quoted by news agency PTI, the deal was progressing and each arm of the defence forces – Army, Air Force and Navy - will get 10 drones each.

Earlier this year, the deal was reported to be kept on the backburner since the negotiations had run into problems over cost. The Indian government's push for domestically produced drones and the fact that India already had capability in armed drones as it is upgrading the Israeli Heron drones with missiles for its forces reportedly stalled the deal.

Dr Vivek Lall, the Chief Executive for the General Atomics Global Corporation, told PTI: "We understand that the MQ-9B acquisition programme is at an advanced stage of discussion between the US and Indian governments. Any questions on those discussions should be addressed specifically to the respective governments. From a company perspective, General Atomics is ready to support India and values our longtime relationship."

Indian Navy's Sea Guardians

The MQ-9B has two variants - SkyGuardian and its sibling SeaGuardian. The Indian navy has been operating two MQ-9B Sea Guardian drones which were taken on lease from General Atomics in 2020 for a year, and the lease period was subsequently extended. The Navy's experience with the drones, according to Lall, has been "very well".

The drones have flown close to 3,000 hours to patrol India's maritime borders where the Indian Navy keeps a watch from the Gulf of Aden to the western Pacific. The waters of the Indian Ocean region have been frequented by People's Liberation Army (PLA) warships and the Indian Navy is bolstering its capabilities to monitor these movements. The MQ-9B predator drones have raised surveillance performance in this regard. The Indian Navy has in fact moved the procurement proposal.

Dr Vivek Lall told PTI: "Our Indian customer has been impressed by the MQ-9's over-the-horizon ISR (intelligence, surveillance and reconnaissance) support for surface units and Indian warships, as well as the exceptional endurance and operational availability of the platform."

What sets MQ-9B drones apart

The Predator drones and its variations are said to be the most capable of flying into battle and are designed for long-endurance and high-altitude surveillance. The very first MQ-1 Predator unmanned aerial vehicle (UAV) was made for surveillance in counter-insurgency operations by the US in places like Afghanistan and Iraq. These drones were later armed with hellfire missiles. The upgraded version – the Reaper – was developed to be a hunter-killer and could precisely zero down on its target.

The MQ-9 'Reaper' is believed to have eliminated Iranian General Qasem Soleimani outside Baghdad airport in January 2020. It was also more recently used to kill al-Qaeda leader Ayman al-Zawahiri in Kabul last month.

Acquiring these drones will enable India to keep a watch on its land borders with Pakistan and China as well as the extensive oceans and carry out a variety of roles including surveillance, anti-submarine warfare and over-the-horizon targeting.

These drones are capable of remaining airborne for over 35 hours and can carry four Hellfire missiles and around 450 kgs of bombs. They can also be upgraded with any number of custom

sensors as necessary. The MQ-9Bs are also designed to comply with civil airspace requirements in the US and around the world, according to General Atomics.

The deal is being thrashed out at a time when the US is trying to wean India off its defence dependence on Russia due to which New Delhi has abstained in UN votes condemning Moscow's invasion of Ukraine.

It is being reported that the deal also figured in the 2+2 foreign and defence ministerial dialogue in April this year.

In recent times, India and US defence partnership has been on the rise with India being elevated to a 'Major Defence Partner' in 2016 allowing the sharing of critical technologies between the two nations.

Meanwhile, China too has been developing its own armed drones and exporting them to the world – mainly the Middle East and Africa. Chinese-made drones are reportedly competitively priced but analysts say they do not match American drones in termsof endurance and payload because of gaps in engine technology.

Some of China's armed UAV models in service include the CH-3, CH-4 as well as the Wing Loong 1 and Wing Loong 2.

https://www.timesnownews.com/exclusive/us-made-mq-9b-drones-in-india-soon-why-india-wants-the-predator-drones-article-93702599

THE ECONOMIC TIMES

Mon, 22 Aug 2022

China Disregarding Border Pacts with India: Jaishankar

External Affairs Minister S Jaishankar on Sunday said that China is disregarding border pacts with India and the issue is clearly casting a shadow over bilateral relations. The minister is on an official visit to Brazil.

"Right now, we are going through a very difficult phase mainly because we have agreements with China going back to the 1990s, which prohibit enmassing of troops in the border areas. They have disregarded that," Jaishankar said during a community event in Sao Paulo, Brazil.

Jaishankar, who is on his first trip to the South American region as the external affairs minister, added, "That problem has not been resolved and it is clearly casting a shadow."

"They are our neighbours. Everybody wants to get along with their neighbour. In personal life and country-wise as well. But everybody wants to get along with on reasonable terms. I must respect you. You must respect me."

"So from our point of view, we have been very clear that we have to build the relationship and there has to be mutual respect. Each one will have their interests and we need to be sensitive to what the concerns are for others for a relationship to be built."

"Relationships are a two-way street. A lasting relationship cannot be a one-way street. We need that mutual respect and mutual sensitivity. Right now it is no secret we are going through a very difficult phase," Jaishankar added.

He also recalled India's successful evacuation of its citizens from the war zone during the Russia-Ukraine conflict under Operation Ganga and said that India is capable of big things.

The MEA said Jaishankar's visit to Brazil, Paraguay and Argentina will provide an opportunity to continue the ongoing high-level engagements with India's partners in the region and explore new areas of cooperation in the post-pandemic era, besides exchanging views on issues of bilateral and international significance.
https://economictimes.indiatimes.com/news/defence/china-disregarding-border-pacts-with-india-jaishankar/articleshow/93702956.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

R.भारत

Mon, 22 Aug 2022

चीनी सैटेलाइट ट्रैकिंग शिप विवादास्पद दौरे के बाद श्रीलंका से रवाना, भारत की राष्ट्रीय सुरक्षा का आकलन

श्रीलंका सरकार ने चीन को एक सप्ताह की अवधि के लिए हंबनटोटा बंदरगाह पर अपने जासूसी जहाज युआन वांग -5 को डॉक करने की अनुमति दी थी। जहाज को 16 अगस्त से स्थान पर डॉक किया गया और श्रीलंका सरकार की रिपोर्ट के अनुसार 22 अगस्त तक वहां रहने के बाद रवाना हो गया।

युआन वांग-क्लास का उपयोग पीपुल्स लिबरेशन आर्मी स्ट्रैटेजिक सपोर्ट फोर्स (पीएलए एसएसएफ) द्वारा उपग्रह और अंतरमहाद्वीपीय बैलिस्टिक मिसाइलों के ट्रैकिंग और समर्थन के लिए किया जाता है। पीएलए एसएसएफ पीपुल्स लिबरेशन आर्मी का अंतरिक्ष, साइबर और इलेक्ट्रॉनिक युद्ध तत्व है।

युआन वांग -5 युआन वांग श्रृंखला की तीसरी पीढ़ी का ट्रैकिंग जहाज है। यह पोत भारत की राष्ट्रीय सुरक्षा के लिए एक महत्वपूर्ण खतरा है क्योंकि कथित तौर पर इसकी हवाई पहुंच लगभग 750 km है। यह केरल, तमिलनाडु और आंध्र प्रदेश में कई भारतीय बंदरगाहों को चीन के रडार

पर रखने की क्षमता रखता है। भारत के साथ चल रहे सीमा मुद्दे के प्रति चीन के आक्रामक रुख को देखते हुए, जो मई 2020 में गलवान संघर्ष के बाद प्रज्वलित हो गया था, भारत को इस क्षेत्र में किसी भी चीनी दुस्साहस का मुकाबला करने के लिए अपने सुरक्षा प्रतिष्ठान को तत्काल बढ़ाने की आवश्यकता है।

राष्ट्र की निकटता में चीनी जासूसी जहाज की उपस्थिति का मुकाबला करने के लिए भारत के निपटान में उपलब्ध कुछ बचाव हैं- भारतीय सैन्य उपग्रह, जीसैट -7 (रुक्मिणी), जीसैट -7 ए (एंग्री बर्ड) और ईएमआईसैट।

EMISAT एक भारतीय टोही उपग्रह है जिसे DRDO (रक्षा अनुसंधान और विकास संगठन) द्वारा प्रोजेक्ट कौटिल्य के तहत विकसित किया गया है जिसमें विद्युत चुम्बकीय स्पेक्ट्रम को मापने और जमीन और नौसेना दोनों के रडार उत्सर्जक के स्थान को पढ़ने की क्षमता है। यह अंतरिक्ष आधारित इलेक्ट्रॉनिक सिग्नल इंटेलिजेंस (ELINT) प्रदान करता है। यह भारतीय सशस्त्र बलों की स्थितिजन्य जागरूकता में सुधार करने में मदद करता है और दुश्मन के राडार की जानकारी और स्थान प्रदान करता है।

जीसैट-7 (रुक्मिणी) भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) द्वारा विकसित एक बहु-बैंड सैन्य संचार उपग्रह है। उपग्रह वर्तमान में भारतीय नौसेना के उपयोग के अधीन है। इसी तरह, GSAT-7A भारतीय वायु सेना के संचार बुनियादी ढांचे को बढ़ाने के लिए है।

रूस-यूक्रेन संघर्ष के उदाहरण पर विचार करते हुए इन उपग्रहों के महत्व को महसूस किया जा सकता है जिसमें इलेक्ट्रॉनिक और सूचना युद्ध ने देश की सेनाओं की आक्रामक और रक्षात्मक रणनीतियों दोनों के संदर्भ में महत्वपूर्ण भूमिका निभाई है। भारत, यदि इसी तरह के परिदृश्य में रखा जाता है, तो साइबर संचालन को सुरक्षित करने, खुफिया जानकारी हासिल करने, अंतर-बल संचार हासिल करने और दुश्मन की जासूसी और जानकारी एकत्र करने के किसी भी प्रयास का मुकाबला करने के मामले में लाभ पाने के लिए ऐसे उपग्रहों पर निर्भर होगा। एक अन्य महत्वपूर्ण कारक जिस पर विचार करने की आवश्यकता है, वह है हंबनटोटा में मौजूद जासूसी जहाज जैसी किसी भी जासूसी संस्थाओं को झूठी जानकारी देने और दुश्मन के संचालन को बाधित करने के लिए भारतीय उपग्रहों की क्षमता।

https://bharat.republicworld.com/world-news/rest-of-the-world-news/chinese-satellite-tracking-ship-leaves-sri-lanka-after-controversial-tour

Business Standard

Chinese Tracking Ship Leaves Sri Lanka After Controversial 6-Day Visit

A high-tech Chinese research ship docked at the strategically important Hambantota port departed from Sri Lankan waters on Monday after a controversial six-day visit.

The ballistic missile and satellite tracking ship 'Yuan Wang 5' ship was originally scheduled to arrive at the Chinese-run port on August 11 but it was delayed in absence of permission by Sri Lankan authorities following security concerns raised by India.

Meanwhile, Lanka's National Consumer Price Index climbed 66.7 per cent year on year in July after a 58.9 per cent rise in June, the statistics department said on Monday.

https://www.business-standard.com/article/international/chinese-tracking-ship-leaves-sri-lanka-after-controversial-6-day-visit-122082300016_1.html

DefenseNews

Delayed Kamikaze Drone for Ukraine on Track for Next Month: Pentagon

The U.S. Army is poised to award a contract for longer-range, harder-hitting kamikaze drones for Ukraine more than five months after they were pledged to the fight against Russia, according to the Pentagon.

The research and development contract for 10 of the Switchblade 600 drones in question, made by AeroVironment, is expected in the next 30 days, Pentagon spokeswoman Jessica Maxwell said in an email to Defense News.

While Russia's five-month-old invasion of Ukraine has mostly been an artillery war, thousands of drones are being used by both sides, and both the United States and Russia have been signaling that more are on the way.

"I think loitering munitions are going to be a significant part of that larger amount because they don't require a lot of infrastructure, they don't require a runway," said Samuel Bendett, an expert on Russian drones with the Center for Naval Analyses and Center for New American Security. "They may play a significant role in the way that the Russian military wants to attack Ukrainian soldiers, materiel, logistics and everything else on Russia's list."

The Pentagon has already sent Ukraine loitering munitions, which means the system itself is the payload: a number of the smaller, shorter-ranged Switchblade 300 variant, and the Phoenix Ghost. But observers say the Switchblade 600′s anti-armor payload, weighing in at 30 pounds

and boasting longer loiter time, would offer an even better tool for finding and striking Russian troops and equipment during Ukraine's expected counteroffensive in southern region of Kherson.

"This Switchblade capability can be instrumental as the Ukrainians are preparing their attack on Kherson and Crimea, because they can be launched beyond the range of Russian systems and inflict damage on Russian infrastructure," Bendett said.

The appeal of loitering munitions is that they can provide reconnaissance and strike in a single package. And although less sophisticated drones can be used to spot Russian targets for their artillery, Russian forces have been using electronic warfare to trace them to their pilots and strike back.

"There have been a lot of losses among commercial drone operators on both sides, and the further away from combat you can launch your UAV, the better off you are," Bendett said.

The 300 variant weighs 5.5 pounds, can fly 10 kilometers and loiter 15 minutes, while the 120-pound 600 version can fly 40 kilometers and loiter in the air for 40 minutes, according to the manufacturer.

The greater longevity and heavier payload would help Ukrainian forces target Russia's armored, self-propelled artillery, in particular, said Bradley Bowman, senior director of the Center on Military and Political Power at the Foundation for Defense of Democracies.

"You can use a 300 maybe to damage a radar, but the more a Russian target is armored and the less Russian forces are in the open, the more you're going to want the Switchblade 600," Bowman said. "They have the same name, but they're very different systems with very different target sets — and they'd both be incredibly helpful to Ukrainian forces now and in the coming weeks."

It's unclear when the Switchblade 600 will arrive in Ukraine. The U.S. has quickly surged millions of dollars worth of military aid to Ukraine, but the Switchblade 600 is a "notable and unfortunate exception where we're not moving as fast as we should be," Bowman said.

Part of the lag in getting the 600 to Ukraine is that unlike the earlier 300 variant, it's not considered a fielded capability and, because it's still in the prototype phase, must complete testing and evaluation. According to Maxwell, the Pentagon spokesperson, the delivery date will be set once the contract is finalized.

Meanwhile, beyond loitering munitions, the Pentagon pledged last week it would send Ukraine the Insitu-made ScanEagle, a long-endurance, low-altitude reconnaissance drone intended to help guide targeting for Ukrainian artillery.

The most well-known drone in Ukraine's arsenal has been the Turkish-made Bayraktar TB2, a medium-altitude, long endurance drone, capable of reconnaissance but also striking and returning for re-use.

Russian has been publicizing its use of loitering munitions, namely the KUB along with the Lancet, both made by Kalashnikov subsidiary Zala. Russia has reportedly shown signs it plans to buy drones from Iran — which could flood the war zone with hundreds more drones, Bendett said.

"Ukraine does need these munitions because they provide an excellent standoff capability," Bendett said. "And they provide an excellent reminder to the Russians that they are not safe in

Ukraine. Their infrastructure, their soldiers and their equipment are not safe because at any given point they may be hit by a Ukrainian UAV."

https://www.defensenews.com/pentagon/2022/08/22/delayed-kamikaze-drone-for-ukraine-on-track-for-next-month-pentagon/

Science & Technology News

A Neural Network–Based Strategy to Enhance Near-Term Quantum Simulations

Near-term quantum computers, quantum computers developed today or in the near future, could help to tackle some problems more effectively than classical computers. One potential application for these computers could be in physics, chemistry and materials science, to perform quantum simulations and determine the ground states of quantum systems.

Some quantum computers developed over the past few years have proved to be fairly effective at running quantum simulations. However, near-term quantum computing approaches are still limited by existing hardware components and by the adverse effects of background noise.

Researchers at 1QB Information Technologies (1QBit), University of Waterloo and the Perimeter Institute for Theoretical Physics have recently developed neural error mitigation, a new strategy that could improve ground state estimates attained using quantum simulations. This strategy, introduced in a paper published in *Nature Machine Intelligence*, is based on machine-learning algorithms.

"We introduce neural error mitigation, which uses neural networks to improve estimates of ground states and ground-state observables obtained using near-term quantum simulations," Elizabeth R. Bennewitz and her colleagues wrote in their paper.

Neural error mitigation (NEM), the new strategy devised by the researchers, has two key components or steps. First, the team used a technique known as neural quantum state tomography (NQST) to train a so-called NQS ansalz to represent an approximate ground state prepared by a noisy quantum device.

NQST is a machine-learning approach that can reconstruct complex quantum state by analyzing a limited number of experimentally collected measurements. Subsequently, Bennewitz and her colleagues used a variational Monte Carlo (VMC) algorithm to improve the existing representation of the unknown ground state. The NQS ansalz used in their experiments was a transformer architecture, a generative machine-learning model that has often been used to generate natural language texts and process images.

Finally, the researchers tested the performance of their neural error mitigation method on a real research problem. Specifically, they tested its ability to identify the ground-state wavefunction and energy of many-body interacting fermioninc molecular Hamiltonians, which is an essential step for running simulations of a molecule's electron correlations.

"To demonstrate our method's broad applicability, we employ neural error mitigation to find the ground states of the H_2 and LiH molecular Hamiltonians, as well as the lattice Schwinger model, prepared via the variational quantum eigensolver," the researchers wrote in their paper. "Our results show that neural error mitigation improves numerical and experimental variational quantum eigensolver computations to yield low energy errors, high fidelities and accurate estimations of more complex observables such as order parameters and entanglement entropy without requiring additional quantum resources."

In the future, neural error simulation could be used to reduce noise-associated errors in quantum simulations performed using near-term devices. This could have important implications for many fields of research, including chemistry, physics and materials science, as it could lead to more precise estimates or new insightful discoveries.

"Neural error mitigation is also agnostic with respect to the quantum state preparation algorithm used, the quantum hardware it is implemented on and the particular noise channel affecting the experiment, contributing to its versatility as a tool for quantum simulation," the researchers wrote in their paper.

More information: Elizabeth R. Bennewitz et al, Neural Error Mitigation of Near-Term Quantum Simulations, *Nature Machine Intelligence* (2022). DOI: 10.1038/s42256-022-00509-0

https://techxplore.com/news/2022-08-neural-networkbased-strategy-near-term-quantum.html

A Breath of Fresh Air for Bikers

An anti-pollution helmet developed by a Delhi based startup can help 2-wheeler riders breathe clean air. The helmet developed by Shellios Technolabs has a Bluetooth-enabled app that lets the rider know when the helmet requires cleaning.

The startup received seed funding from the Department of Science and Technology (DST) and was incubated at Science and Technology Entrepreneur Park (JSSATE-STEP) Noida.

They had signed commercialization deals with leading Original Equipment Manufacturers (OEMs) for the helmet. The product, at Technology Readiness Level (TRL) level 9 has been granted utility patent and is now being sold in all parts of the country priced at Rs. 4500/-. The

end-users of the product include individual riders all over India and for the next version, Shellios has partnered with Royal Enfield Motorcycles to commercialize the product.

The founders of Shellios Technolabs hit upon the idea on realizing the challenges faced by bikers during the air quality crisis that Delhi faces in the winter months.

"We were disturbed by the health impacts of the air quality situation on the people on the roads, especially the millions of two wheeler riders who were having prolonged daily exposures and that too, to a double whammy of particulate matter and vehicular emissions in the air that they breathe," said Amit Pathak, one of the founders.

The helmet titled PUROS is integrated with air purifying accessories which include the patented innovations of the startup -- a Brushless DC (BLDC) blower fan, High-Efficiency Particulate Air (HEPA) filter membrane, electronic circuit, and microUSB charging port integrated into the helmet. The purifying system set at the back of the helmet picks up all particulate matter coming from outside and cleans the air before it reaches the biker.

Following all mandatory standards stipulated by the government, the 1.5 Kg helmet ensures exposure reduction by more than 80% as measured using a controlled environment.

https://pib.gov.in/PressReleasePage.aspx?PRID=1853604

पत्र सूचना कार्यालय
भारत सरकार

Ministry of Science & Technology

Mon, 22 Aug 2022 5:35PM

Union Minister Dr Jitendra Singh Announces 75 "Amrit" Grants for Biotech Initiatives Involving Startups, Industry, Academia and Research Bodies in Integrated Collaboration: DBT-BIRAC 75 Amrit Team Grant Initiative will Give a Big Boost to Prime Minister's Call for "Jai Anusandhan"

The Minister says, 75 inter-disciplinary, multi-institutional grants would be supported for high-risk, ambitious research ideas, milestones-driven collaborative research in all domain specific areas of biotech sector in a PPP mode

Thematic Areas chosen for Team Science Grant broadly includes health, agribiotech, climate change, synthetic biology and sustainable bioresource management: Dr Jitendra Singh

Union Minister of State (Independent Charge) Science & Technology; Minister of State (Independent Charge) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions,

Atomic Energy and Space, Dr Jitendra Singh today announced 75 "Amrit" Grants for Biotech initiatives involving StartUps,industry, academia and research bodies in integrated collaboration. The Minister said, DBT-BIRAC 75 Amrit Team Grant Initiative will give a big boost to Prime Minister Narendra Modi's call for *"Jai Anusandhan"*.

Dr Jitendra Singh said, 75 inter-disciplinary, multi-institutional grants would be supported for high-risk, ambitious research ideas, milestones-driven collaborative research in all domain specific areas of the biotech sector.

Dr Jitendra Singh said Startups, Industries, Academia and Research Bodies can form Team Science Grant in a Public-Private Partnership mode to avail grant of Rs 10-15 Crore over a period of two to three years for inter-disciplinary, high-quality research. The Minister said, in order to address national priorities to propel India as a global leader in biotechnology, the grants would be broadly provided in the areas of health, agribiotech, climate change, synthetic biology and sustainable bioresource management.

The Minister said, the overall goal would be achieved through this initiative: knowledge-based discovery solutions for societal needs; transformational advances of scientific value and impact and also contributing towards India's emergence as an equal global partner. He added that spin outs and venture creation will be a key component of this initiative.

Dr Jitendra Singh said, this initiative builds on the deep foundation of partnerships, to support new and innovative research programs, which aims to propel India to a position of global leadership. He said, under this initiative, ambitious research ideas, high-risk, milestone-driven collaborative research for knowledge-based discoveries with broad demonstrable application from both academia and industry will be considered for support.

Dr Jitendra Singh pointed out that Prime Minister Narendra Modi in this year's Independence Day Address from the ramparts of the Red Fort underlined the importance of Anusandhaan, when he said, "Till today we always remember our revered Lal Bahadur Shastri ji for his inspirational clarion call of *Jai Jawan Jai Kisan* meaning "Hail the Soldier, Hail the Farmer". Later Atal Bihari Vajpayee ji added a new link of *Jai Vigyan* which meant "hail science" and we gave it utmost importance. But in this new phase *Amrit Kaal* now it is imperative to add *jai anusandhaan* that is "hail innovation".

Jai Jawan Jai Kisan Jai Vigyan Jai Anusandhaan.".

Dr Jitendra Singh said, India's Bioeconomy will grow from $70 Billion to $150 Billion by 2025 and this can only be achieved with active participation of all the stakeholders in biotechnology Sector. He said, Biotechnology sector has been recognized as one of the key drivers growing exponentially and it will be the main torch bearer of India's developed economic status in the Amrit Kaal period of next 25 years.

Dr Jitendra Singh said, Department of Biotechnology (DBT) along with its PSU, BIRAC has a huge footprint in Biotech sector, having supported research endeavors across scale and in diverse

areas in Institutes, Universities and Industries across the country. He, however added that the thrust in the Amrit kaal should be more on technological development to address the problems and needs of our country and also to facilitate a path to make our country a developed nation.

The Minister said that there are a few co-creative programs on maternal health and pre-term birth, bioenergy and INSACOG and they are amongst the many cross-disciplinary, multi-institutional initiatives supported by DBT. He also added that Covid pandemic witnessed the critical impact of *Made-in-India* novel vaccines, diagnostics, healthcare delivery and management solutions endorsing India's growing strength towards *Atma Nirbhar Bharat.*

Dr Jitendra Singh congratulated the team from DBT and BIRAC for coming up with this unique initiative of 75 DBT-BIRAC Amrit Team Grants to commemorate Azadi Ka Amrit Mahotsav.

https://pib.gov.in/PressReleasePage.aspx?PRID=1853621