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Parrikar for action-taken report by Feb 15

By Vijay Mohan

Defence Minister Manohar Parrikar has directed all wings of the Ministry of Defence (MoD) to submit an Action Taken Report (ATR) by February 15 on the steps or initiatives taken by them on the recommendations of a committee of experts constituted to help improve service conditions of armed forces personnel. The directions were issued a few days ago, sources in the MoD said. The 5-member committee had presented its report to Parrikar on November 24 last. The 509-page report contains as many as 75 recommendations that touch upon various aspects of pension and service matters, discipline and vigilance, promotion issues, military justice reform, issues concerning civil employees and areas of potential disputes and litigation. The committee was constituted on the directions of the defence minister and was claimed to be the first ever exercise aimed at strengthening institutional mechanisms related to grievance redressal. It explores upon administrative, legal, psychological and even social aspects of military life. Prominent among the committee's recommendations is greater personal interaction and opportunity of hearing in the system of formal complaints and petitions so as to give a better role to human interaction rather than the one-way noting sheet method and to assist in providing outlet and catharsis to individuals related to their grievances. An innovative aspect propagated greater constructive usage of social media, including initiation of blogs by senior commanders, to promote an interactive process with the rank and file. A face-to-face 'collegiate' system of decision-making in various aspects rather than the file circulation method as been suggested along with more transparency in matters related to promotions and confidential reports. Recommendations on military justice reform include steps that can be taken without any legislative change such as introduction of permanent infrastructure for Courts Martial at specified stations to reduce ad hocism and reduction of command influence.

Business Standard

02 February 2016

Budgeting for a new security

The allocation of funds to defence in the forthcoming Budget, and its distribution between various services, arms and departments, will again be a depressingly incremental affair. Marginal increases or decreases in allocations to the same old heads will testify to the absence of any new thinking, or any new solutions to the familiar problems of defence. While secrecy obscures much of the thinking and policy making relating to defence, significant changes in direction invariably leave a money trail - which canny eyes can glean from the Budget documents. However, judging from the lack of any major change, India is perfectly secure. For the most part, our old-school generals, admirals, air marshals and intelligence officials define security as keeping our borders inviolate, and preventing China and Pakistan from crossing into India. It seems almost incidental to them that we continue losing lives to terrorism, as in Pathankot and Gurdaspur; that large parts of India remain mired in armed conflicts; that we continue to be criticised, both in India and abroad, for using draconian laws to impose order; and that asymmetric, hybrid threats like cyber attacks, narcotics trade and the spread of counterfeit currency assault our sense of well-being. It is convenient and comfortable to throw a few lakh crore rupees at nominally securing a distant borderline, instead of focusing on how those borders are being bypassed by new-generation threats. India's national security community - which is mostly confined to the serving diplomatic, military and intelligence establishment and those who have retired from it - likes to carp that our political leadership is focused only on vote-related issues, and has no interest in specifying a direction and agenda for national security. Even if this were true (which it is not), what prevents security practitioners from driving badly needed reform, and re-orienting our out-dated security priorities? It should not require a prime minister to see the folly of maintaining one-and-a-half million soldiers, sailors and airmen in uniform, spending almost Rs 1 lakh-crore on salaries, and half that amount more on pensions. This year, the Seventh Pay Commission could raise that by another 20 per cent, taking the salary bill higher than the equipment modernisation budget. The army maintains three enormously expensive armoured strike corps - mobile, tank-heavy formations that are equipped and trained to penetrate deep into Pakistan. This has led that country to develop "full

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Budgeting for a new security

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spectrum deterrence", building small (more "usable") tactical nuclear weapons (TNWs) to halt advancing Indian strike corps dead in their tracks. New Delhi had decided against launching its strike corps at Pakistan during the Kargil conflict in 1999, and then again after the December 2001 terrorist attack on Parliament. Now TNWs make strike corps offensives even more unlikely. Furthermore, even if an Indian prime minister were ready to risk a nuclear conflagration, the three strike corps are afflicted by such shortfalls in artillery, air defence and engineering equipment that they would find it hard to achieve operational success - remember, anything less than outright victory would constitute a defeat. Yet, when the army (unwisely) insisted that countering the China threat required an infantry-heavy "mountain strike corps", another 60,000 soldiers were added to an already unmanageable payroll. No thought was given to converting one of the armoured strike corps instead. Similarly, the air force continues pursuing its chimera of 45 fighter squadrons, which were once gauged essential for an Indian "two-front war" with Pakistan and China simultaneously - an eventuality that would suggest Indian diplomacy had died and gone to heaven. Yet, having pegged our baseline figure at 45 squadrons, accepting anything less sounds like an irresponsible devaluation of national security. This allows the Indian Air Force (IAF) to credibly portray our current holding of 33-34 fighter squadrons as a mortal danger, and to agitate for buying 36 French Rafale fighters for a mind-numbing \$7-11 billion. Amidst this self-serving mismanagement, Prime Minister Narendra Modi has called for a new approach in unusually vigorous language. On December 15, 2015, addressing top army, navy and air force commanders on board the aircraft carrier INS Vikramaditya, he observed, "At a time when major powers are reducing their forces and rely more on technology, we are still constantly seeking to expand the size of our forces. Modernisation and expansion of forces at the same time is a difficult and unnecessary goal. We need forces that are agile, mobile and driven by technology, not just human valour." Dwelling on the need to focus on battle-winning firepower, rather than getting bogged down in slogging matches, Mr Modi went on: "We need capabilities to win swift wars, for we will not have the luxury of long-drawn battles. We must re-examine our assumptions that keep massive funds locked up in inventories." Yet the three service chiefs do not appear to be implementing his directions, although he interacts more closely with them than any recent prime minister. In these monthly face-to-face meetings, Mr Modi has been less than impressed, telling a close confidante that the three chiefs were "unimaginative". Meeting them on the Vikramaditya, the prime minister demanded bolder thinking. He said: "(W)e look to our armed forces to prepare for the future. And, it cannot be achieved by doing more of the same, or preparing perspective plans based on out-dated doctrines and disconnected from financial realities... (O)ur forces and our government need to do more to reform their beliefs, doctrines, objectives and strategies." Hammering home the point, he said: "We need military commanders who not only lead brilliantly in the field, but are also thought leaders who guide our forces and security systems into the future." It is important that the prime minister's important directions be taken through to their logical conclusion, rather than being filed away and dusted out for his speech next year. Reform within the defence ministry has so far focused almost entirely on reforming and expediting equipment procurement. In addition to this, the military's planning and operational structures must be rejuvenated, weaving together their multiple strands to deliver not just battle-winning performance, but also counters to asymmetric, new-age threats. The navy, which is the only service that thinks strategically, has recently enunciated a new naval doctrine that incorporates some of these aspects. It is time for the other two services to update their out-dated doctrines and prepare for the conflicts of tomorrow. Whatever new thinking is put into these issues would only become aware when the Budget for 2017-18 is presented. For this year, there is only more of the old.

Effective security audit key

By Rajvir P Sharma

The performance appraisal system lacks absolute objectivity and ascendancy in ranks is not always linked to professional skills. We have dealt widely the multi dimensional issue of Pathan-kot incident but the core issue remains the security at the Air Force base. Pathankot Air Base has the distinction of producing many heroes in the wars of 1965 and 1971. The terror attack stirs our emotions. The incident calls for horizontal thinking in the present day security context where force multiplication has become a popular theme and in the process, the acquisition of modern tools of security is the core thrust area. Be it CCTV cameras, human sensors or laser walls - in the process of acquiring these high-tech instruments, we are losing sight of conventional wisdom and horizontal thinking. Insufficiency of our efforts manifests in inadequacy and any thought must revolve around this. Security measures have to keep pace with time and can not be relegated in priority but there is no substitute to the basics. They must be rigidly and professionally adhered to. There had been many postmortems and a lot has been written on the attack. The pendulum has been shifting from the mode of entry in crossing the border to the lax security by the Punjab police and of course, the breach of security at the Air Base. It is true that the security environment of the area has to be taken into consideration while drafting security mechanism of any vital installation. But the paramount role is played by the security set up to cater to the needs of high security nodes. The state police forces have virtually no role in guarding army establishments or being part of the security drill. It is an exclusive domain of the armed forces to guard and protect such bases. The attack on parliament in 2001 and the attack on the Air Base have many similarities as both are the products of handiwork of Jaish-e-Mohammad using suicide squads. The attack on parliament could take place through defined access and in Pathankot, it is breach of perimeter security. There is no dispute that these security mechanisms failed on both the occasions due to lack of effective security audit. There are whispers about lax, general security environment in the area. These are few bizarre and ludicrous thoughts which may drift priority and have to be neglected. Any argument that this intrusion could be attributed to anything except the weak perimeter security or ineffective access control will be misplaced and shelter the inadequacies of thought. There had been news reports indicating inadequacy in the perimeter wall or potential access through sewage pipes etc which is astonishing in the contemporary security scenario, where culture of security audit is deeply ingrained and it is unimaginable how such basic flaws could persist. In fact, the security audit is a drill performed at regular intervals, reports prepared and presented to the commandant of the unit and shared with higher formations. It is imperative to take measures based on threat perception. Gradations in threat perception and security measures have been used for many years and have virtually developed universal applicabilities. Returning to Pathankot, I'm sure that an airbase located in such a strategically sensitive advanced location must have undergone repeated security audits and it was incumbent on the part of the authorities concerned to ensure that any flaw in the perimeter security or access control are corrected appropriately. The concept of multi-layered perimeter security, used by Russians and American forces, in Afghanistan and even by the Indian armed forces in the insurgency prone areas is a concept in vogue for a long time. Threat perception has to be really appreciated, and the efforts to create fool-proof security have to be translated into action. The mechanical component in the perimeter security is extremely important as much as the human element.

Perimeter security - However, wherever perimeter security needs additional human element or temporary corrections same have to be addressed consequent to the emergency security audit. I recollect an instance where steel sheets were fitted to support a broken wall in paucity of time, to enable strong perimeter security. Lauding our martyrs as heroes is essential as the human lives lost in the pursuit of national security, but it is equally essential to address the causes to prevent future recurrences. My experience will indicate that we have carried a strong legacy of British Raj and we are attuned to hear 'Sahab sab durust hai' (All is well) - from junior officers and satisfying ourselves despite chink in the armour. Aimed professional growth of security organisations demands that all the drills and security audits must be done in professional manner with right and objective methodology. I am afraid that the performance appraisal system lacks absolute objectivity and ascendancy in ranks is not always linked to professional skills. I recollect an instance where a top officer of a very important border guarding force, belonging to a cadre but rarely served in it, demonstrated his ignorance about nuances of security audit by vague talks and later reduced his position by misappropriating certain government properties. These are sordid examples of carrier growth at the expense of professional growth. The security system primarily depends on establishing strong security layers, deployment of the trained security personnel and keeping the horizontal vision. The scope of adding vertical strength and force multiplication by equipping with modern tools is essential but is not the substitute to the basic. I am sure we need to go back to the basics with zeal and commitment. With purposeful effective security auditing system, we will be able to secure protected areas far better than only looking to deploy force multipliers. After all, we have to achieve the goals and not to present our model of excellence when the core issue of security is so paramount to us.

India likely to sign defence pact with Brunei

By Kallol Bhattacharjee

Vice-President Hamid Ansari, currently on a trip to the Southeast Asian region, is expected to reach a landmark defence agreement with Brunei on Tuesday. Sources tell The Hindu that the agreement will be aimed at starting a new generation of Indian defence cooperation with Brunei, which disputes Chinese claims on the South China Sea. The defence agreement is being interpreted as a major diplomatic breakthrough since both sides established relations in 1984. Brunei's current defence responsibilities are handled by the U.K. which supplies soldiers to serve its defence needs. Speaking to media, mid-flight to Brunei, Vice President Hamid Ansari noted that Brunei has been a steady partner of India. The Southeast Asian country has been a key supplier of energy to India.

SSB first to get woman head; DGs named for BSF, CRPF

Senior IPS officer Archana Ramasundram was today appointed the Director General of Sashastra Seema Bal (SSB). With this, she has become the first woman to head a paramilitary force. Ramasundram is currently the Director, National Crime Records Bureau. She has been appointed to the post till the date of her superannuation (September 30 next year), an order issued by the Department of Personnel and Training (DoPT) said. Ramasundram (58) is the first woman police officer to have been appointed the chief of a paramilitary force. The SSB is entrusted with guarding the country's frontiers with Nepal and Bhutan. There are five paramilitary forces-the SSB, Central Reserve Police Force (CRPF), Border Security Force (BSF), Central Industrial Security Force and the Indo-Tibetan Border Police-and none has ever had a woman chief. The Tamil Nadu cadre officer was in news in 2014 over her appointment as the Additional Director in the CBI. Her appointment was also challenged in the Supreme Court after which she was moved to the NCRB as its chief. Besides her, IPS officers K Durga Prasad and KK Sharma have been appointed Director Generals of the CRPF and the BSF. They will take over after the incumbent chiefs of these forces retire at the end of this month. Prasad, a 1981-batch IPS officer of Andhra Pradesh cadre, was in 2014 unceremoniously removed as the chief of the Special Protection Group. - PTI

BSF lacks equipment for proper patrol: Rijiju

Union minister of state for home Kiren Rijiju on Monday admitted that there were "certain gaps" in the security framework on the international border with Pakistan in Punjab, pointing to the BSF's "inadequate equipment" as one of the other reasons for lapses in border patrolling. "There are some issues on the border, especially in the Pathankot sector, adjoining Jammu and Kashmir. Punjab's border fence is the oldest in the country and has outlived its utility and life span. We are serious about these issues, and are taking steps to fulfil all the gaps with technological applications," he added. Rijiju said the issues he had been briefed on include CCTVs, weapons and more equipment for better protections of the border. "I will hold a review meeting this month to ensure that there is improvement in border management," he added. Rijiju also rued the fact that farmers in Punjab had cultivable land up to the border, which Rijiju said also causes some problems.

IAF to shoot intruders at sight in Agra

By Arvind Chauhan

Suspected intruders at the strategically important Indian Air Force (IAF) base in Kheria will now be shot at sight. Orders to shoot anyone seen trying to scale the boundary wall of the compound have been issued as part of a countrywide crackdown on security loopholes at IAF bases in the wake of last month's Pathankot attack. According to a communication from the IAF to district officials, the Pathankot attackers scaled the perimeter walls of the IAF base to gain entry. "Due to the current security scenario in the country and to prevent unauthorised entry into the station, instructions have been given to all guards securing the airbase to open fire or shoot without challenging any individual trying to scale or jump across the boundary wall," the letter says. "After the Punjab attack, over 950 IAF establishments (which include 54 airbases) have drastically reviewed security based on individual levels of threat and sensitivity. The decision for such stringent measures near Kheria has been taken by security analysts of the base," a group captain-ranked officer of the central air command told TOI on Monday. "Since the base is strategically important for reconnaissance, refuelling and heavy transport missions, during war and peace, and has a fleet of AWACS aircraft, security has to be increased," the officer added. "We have received the notice, and informed all local authorities, including the police and civic agencies, to ensure no one is found around the boundary wall of the base. Signboards will be installed along the wall," additional district magistrate (city) R K Shrivastav said.

'Chhattisgarh balloon' to bring down maternal mortality

In a significant innovation, a team of doctors in Pt. Jawaharlal Nehru Medical College here has developed a device christened the Chhattisgarh Balloon, which promises to bring down maternal mortality drastically, particularly in third world countries, by effectively controlling postpartum uterine bleeding in just delivered mothers. The Chhattisgarh Balloon, a result of year-long research by a team of four doctors led by professor of gynaecology and obstetrician Nalini Mishra at the JNMC, is tipped to usher in remarkable improvement in the prevailing gloomy maternal mortality scenario in developing countries where postpartum haemorrhage contributes to as high as 33 per cent of the total maternal mortality, by saving lives of new mothers. "The newly developed device, which can be made in the labour room itself in just two minutes at a cost of barely `100, may prove to be a revolutionary innovation primarily for three reasons - it is cost effective, it is easily available even in primary health centres located in remote areas, and, importantly, technically and performance wise, it is nearly as perfect as branded uterine specific devices (USDs) such as Bakri Balloon available in the market," Dr Mishra, who was accorded standing ovation at the Indian Medical Association conference here recently for the invention, told this newspaper. According to Dr Mishra, the commercially available UDS with provision the of a drainage channel is considered ideal for managing postpartum haemorrhage, but its prohibitive prices have forced doctors in developing countries to find a substitute in condom balloon tamponade (CBT), prepared in the labour room. CBT is made in the labour room by fastening a fresh condom with a catheter with the help of cotton thread. This is then inserted in the uterus cavity and then inflated with administration of saline fluid. This helps reduce uterine bleeding. But the conventional CBT has many drawbacks including non-provision of a drainage channel, thus denying the doctors the opportunity to assess ongoing uterine bleeding. Secondly, the thread used to tie the catheter with condom sometimes snap causing leakage of fluid from balloon and in the process defeating the whole purpose. "The Chhattisgarh Balloon has successfully overcome both these drawbacks," Dr Mishra said. Cases of postpartum haemorrhage, caused usually by failure of contraction of uterus in the mother after childbirth, often could not be managed particularly in PHCs or village hospitals which lack surgery facilities as well as specialist doctors, leading to maternal mortalities. In response to a call by the World Health Organisation to identify the area as priority for research, Programme for Appropriate Technology in Health (PATH), a widely acclaimed international non-profit organisation, said in 2013 that the conventional CBT can be significantly improved to effectively manage uterine bleeding during childbirth. "The Chhattisgarh Balloon is an improvisation of CBT with provision of a drainage lumen. It proved effective in almost 95 per cent postpartum haemorrhage cases during trial," Dr Mishra said. The components used in the device such as foley's catheter, fresh condom, scissors, normal saline and two syringes of 10 ml and 20 ml capacity, are available in any labour room. The International Federation of Gynaecologists and Obstetricians (FIGO) has endorsed the innovation. FIGO has selected the invention to publish it in its International Journal of Gynaecology and Obstetrics, in the next issue. Journal of Obstetrics and Gynaecology of India, a publication of Federation of Obstetrics and Gynaecology Society of India, carried an article on the innovation in its online edition dated December 22, 2015. "A government-backed initiative to create awareness on the innovation across the country can save lives of many women particularly from the disadvantaged sections," she said. Other members of the team comprise assistant professor Sumi Agrawal, associate professor Chandrasekhar Srivastav and resident medical officer Kanchan Gulbani.

IAF, DRDO wrangle leads to 'top gun' exit

By B.R. Srikanth

Every time he kissed the skies in the made-in-India Tejas at Aero India or elsewhere, Group Captain Suneet Krishna (Retd) had air warriors and aviation enthusiasts alike rooting for more of his heart-stopping manoeuvres. That was till January 31. On February 1, this top gun walked away to the corporate world at the end of a wrangle between the country's defence scientists and the Indian Air Force (IAF). At one point, it reached the office of defence minister Manohar Parrikar, and the minister reportedly advised the top brass of the DRDO and IAF to put an end to their disagreement. The row was over denying this ace test pilot the captain's seat (pilot-in-command) in the "Eye-in-the-sky" Airborne Early Warning & Control (AEW&C) aircraft developed by Centre for Airborne Systems (CABS), Bengaluru, and undergoing evaluation now ahead of its induction by the IAF later this year. Reason: Group Captain Krishna (Retd) was considered a "civilian test pilot" by the air strike wing because he opted for voluntary retirement from IAF in 2012, and therefore could not occupy the captain's seat. "He has been torpedoed by the Air Force though he holds the record of flying all types of fighters, and even some transport jets, for close to 5,000 hours. If Brazilian pilots could occupy the captain's seat when the Embraer-145 aircraft was bought for AEW&C project, how can the IAF prevent its former pilot from doing so? His exit will be a great loss for both Tejas and AEW&C projects because none can match his expertise," remarked his former commandant who also played a key role in these projects. The fact that he had served the IAF for more than two decades did not count. Nor did the top brass of IAF factor in his contribution to making 'Tejas' a completely pilot-friendly and world-class fighter jet because he logged the highest number of hours onboard the indigenous aircraft and his inputs helped modify the cockpit over the years. In fact, he has flown the prototypes, the production and operational versions of 'Tejas', even test-fired missiles and laser-guided bombs. He demonstrated the military jet's agility to Mr Parrikar in Bengaluru on January 17, 2015, the day when 'Tejas' was inducted into the IAF's fleet. This ace test pilot encountered turbulence the moment he joined CABS in May 2015 with those at the helm at IAF's Aircraft & Systems Testing Establishment (ASTE), Bengaluru, insisting that only their officers occupy the captain's seat even if they were junior to Group Captain Suneet Krishna. He flew 100 sorties even as the tussle escalated, but decided to move on to a corporate entity and relocate to Mumbai with no solution in sight. Sources in IAF attributed the wrangle to lack of a system, complete with a hierarchy, to fly aircraft designed and developed by DRDO. "An idea has been mooted create a new system because an advanced version of 'Tejas' and Advanced Medium Combat Aircraft (AMCA) are being designed by DRDO, but we need some time to put this system in place," sources added.

The Times of India

02 February 2016

Nepal army chief to be conferred honorary rank of 'General of the Indian Army'

Nepalese Army chief General Rajendra Chhetri, who is on a sixday visit to India ahead of Nepalese Prime Minister K P Oli's proposed visit later this month, will be conferred with the honorary rank of 'General of the Indian Army' at a ceremony in Rashtrapati Bhavan on Wednesday . This is the first foreign visit for General Chhetri, who is slated to meet defence minister Manohar Parrikar and Army chief General Dalbir Singh Suhag among others on Tuesday , since he took over the reins of the Nepalese army last September.

In Military reform push, Xi sets up new 'battle zones'

China on Monday inaugurated the military's five new "battle zones", the Defense Ministry said, the latest step in President Xi Jinping's efforts to reform the country's armed forces. Xi's push to reform the military coincides with China becoming more assertive in its territorial disputes in the East and South China Seas, and as its navy invests in submarines and aircraft carriers and its air force develops stealth fighters. The reforms include establishing a joint operational command structure by 2020 and rejigging existing military regions, as well as cutting troop numbers by 300,000, a surprise announcement he made in September. Late last year, Xi, the ruling Communist Party chief and also chairman of the Central Military Commission which runs the military, inaugurated a general command unit for the People's Liberation Army (PLA), a missile force and a strategic support force. Weeks later, he split the PLA's four military headquarters into 15 new units - covering everything from logistics to equipment development, political work and fighting corruption. Monday's move, which had been flagged in advance by state media, reclassified seven military regions into five - the East, West, South, North and Middle battle zones. They will constitute what the Defense Ministry said in an online statement.

The Tribune

02 February 2016

China sets up new military regions

Beijing, February 1- Chinese President Xi Jinping presided today over the creation of five new military regions, part of the streamlining of the 2.3 million-member People's Liberation Army while also signaling his firm control over the armed forces. The north, south, east, west and central regions replace the seven previous regions. The new districts are being touted as better suited to command joint operations. Xi presided at a ceremony at the Defence Ministry in his capacity as head of the Communist Party and government commissions overseeing the military. Wearing a high-collared olive green jacket, he presented PLA flags to each of the new region's commanders and political commissars. Reinforcing that the military is ultimately loyal to the party, rather than the Chinese state, Xi called on commanders to "unshakably listen to the party's command and hold fast to the party's absolute leadership over the armed forces." Xi's overhaul aims to make the PLA more effective as a modern fighting force by transforming it from one structured around the ground forces to one of joint command in which the army, navy, air and missile forces all have equal representation. - AP

Deccan Herald

02 February 2016

Publishers may face jail if libraries fail to get free copy

NEW DELHI, dhns: Failure in providing public libraries with a free copy of newspapers and periodicals, including the electronic format, published in India within a specified period may attract imposition of a heavy penalty on the publisher and even a two-year jail term. With the Centre proposing to amend the Delivery of Books and Newspapers (Public Libraries) Act, 1954, publishers of books, including e-books, would also attract imposition of heavy penalty which may extend to 500 times the cost of the book and two-year jail term in extreme serious cases if they fail to submit a copy of the books with the National Library, Kolkata, and the State Public Library, each within a the period specified. The Culture Ministry has formulated a draft bill proposing amendments to the original law with an aim to make the legislation "effective" and also bring electronic publications under its ambit "to keep pace with the changes in technology." The draft amendment bill, proposing to rechristen the title of the original law as the Deposit of Books, Newspapers and Electronic Publications in Libraries Bill, 2016, has already been sent to Law Ministry.

नासा के VIDEO से आप देख सकेंगे सूरज का चुंबकीय क्षेत्र

अमेरिकी अंतरिक्ष एजेंसी नासा ने सूरज के अदृश्य चुंबकीय क्षेत्र को देखने और समझने के लिए एक वीडियो तैयार किया है जो गहरे अंतरिक्ष के सफर के लिए अहम साबित हो सकता है। नासा के इस वीडियो में रियल टाइम अवलोकन को कंप्यूटर के सिमुलेशन से जोड़ा गया है और इसके आधार पर विश्लेषण किया गया है कि कैसे प्लाज्मा सूरज के कोरोना से गुजरता है। उल्लेखनीय है कि हमारा सूरज एक विकराल चुंबकीय तारा है। यह ऐसे पदार्थ से बना है जो विद्युत-चुंबकत्व के नियमों के अनुरूप गमन करता है। सूरज का चुंबकीय क्षेत्र सौर विस्फोटों से होने वाले औरोरा से लेकर अंतर-ग्रहीय चुंबकीय क्षेत्र और विकिरण तक सारी सौर परिघटनाओं के लिए जिम्मेदार है। नासा के गोर्डॉ फ्लाइट सेंटर के अंतरिक्ष वैज्ञानिक डीन पेसनेल ने कहा, हम यकीनी तौर पर नहीं कह सकते कि सूरज में ठीक कहां चुंबकीय क्षेत्र का निर्माण होता है। पेसनेल ने कहा, यह सौर सतह के नजदीक हो सकता है या सूरज के गहरे अंदर या फिर विभिन्न गहराइयों पर। इन अदृश्य क्षेत्रों को देखने के लिए वैज्ञानिकों ने सूरज पर पदार्थ का अवलोकन किया। सूरज प्लाज्मा से बना है जो पदार्थ की गैस की तरह की अवस्था है जिसमें इलेक्ट्रॉन और आयन अलग हो जाते हैं और इस तरह आवेशित कणों का बेहद गरम मिश्रण तैयार होता है।

■ CYBORG TO TRAIN GEN NEXT HACKERS

JS SODHI, executive director, Cyborg Cyber Forensics and Information Security, a research organisation supported by the ministry of science and technology, said that the organisation would train next generation coders and ethical hackers to make the world a safe and secure place. He was speaking at the "International Cyber Security Summit and Research Confer-

ence: Hacker Cup India 2016", organised by the Noida-based Amity University on its campus recently. "Security breaches and crucial data thefts are reported almost every day," said Sodhi. Ashok K. Chauhan, founder-president, Amity Group, said the university would soon start a course in cyber forensics to nurture a brigade of information warriors.

Jet start wire less streaming

JET Airways will introduce a new in-flight service for streaming of entertainment content directly to Wi-Fi-enabled personal devices of passengers. The airline would offer in-flight entertainment (IFE) streaming service in phases and enable passengers to stream their selection from the wide range of multilingual content available on board.

The streaming service will be introduced on the Boeing 737 Next Generation aircraft in the Jet Airways fleet starting from the second quarter of 2016, it said in a statement on Monday. Streaming of content can be done through wireless mode to Wi-Fi-enabled personal devices such as smartphones, tablets and laptops. The new system has been developed in collaboration with Global Eagle Entertainment Inc. Jet said that it also plans to upgrade from a streaming service to a full broadband satellite connectivity in the future subject to regulatory approvals. *PTI*

The Tribune

02 February 2016

Online interactive channel launched in Kalpana's memory

The memories of great astronaut Kalpana Chawla came alive on Monday when two representatives of the Embassy of the USA visited Karnal, Kalpana's native town, on her 13th death anniversary. She died with six other astronauts in the space shuttle Columbia crash on February 1, 2003. Representatives, including Jay Gullish, senior economic advisor, ICT and Trade, Embassy of the USA, and Doug Fowler, economic officer, Science and Technology Affairs, today reached Nirmal Dham, an old age home run by Kalpana's family. There, they launched an online interactive channel 'Kalpana Chawla Kidowel' for aspiring astronauts. The representatives interacted with Kalpana's father Banarsi Lal Chawla. He said Kalpana was a nature lover. Recalling her childhood, Banarsi Lal said she was very ambitious and focused to be an astronaut. The representatives and Kalpana's father planted a sapling on the premises of Kalpana Chawla Government Medical College, which is under construction, and Karnal Aviation Club. The USA government had dedicated two roads in the US to Kalpana, besides naming a hall after her. Meanwhile, she was remembered by the students of RS Public School at Kalpana Chawla Excellence Academy, Model Town.

The Tribune

02 February 2016

Zika scare: WHO declares global health emergency

The World Health Organisation declared an international emergency today over the explosive spread of the mosquito-borne Zika virus, which is linked to birth defects in the Americas, saying it is an "extraordinary event." The UN health agency convened an emergency meeting of independent experts in Geneva to assess the outbreak after noting a suspicious link between Zika's arrival in Brazil last year and a surge in the number of babies born with abnormally small heads. "After a review of the evidence, the committee advised that the clusters of microcephaly and other neurological complications constitute an extraordinary event and public health threat to other parts of the world," WHO Director-General Margaret Chan said. WHO estimates there could be up to 4 million cases of Zika in the Americas in the next year, but no recommendations were made to restrict travel or trade. "It is important to understand, there are several measures pregnant women can take," Chan said. "If you can delay travel and it does not affect your other family commitments, it is something they can consider. "If they need to travel, they can get advice from their physician and take personal protective measures, like wearing long sleeves and shirts and pants and use mosquito repellent." The last such public health emergency was declared for the devastating 2014 Ebola outbreak in West Africa, which killed more than 11,000 people. - AP

This software helps find illicit N-weapon tests

WASHINGTON: Scientists have developed a computer software that can help detect illicit nuclear weapon tests undertaken by terrorist organisations or other non-state actors across the globe. When North Korea conducted its recent nuclear weapon test, the blast had been detected by a global seismic sensing network operated by the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO). The network, called the International Monitoring System, aims to "make sure that no nuclear explosion goes undetected." However, clandestine tests of smaller devices, perhaps by terrorist organisations or other non-state actors, are a different story. A machine learning system called Vertically Integrated Seismic Analysis (VISA), developed by Erik Sudderth, assistant professor at Brown University in US, helps find those difficult-to-detect events. The International Monitoring System includes 149 certified seismic monitoring stations around the globe. Those stations send data to the CTBTO's Vienna headquarters, where analysts compile all seismic events into a daily bulletin supplied to nations around the world. Analysts can easily pick out unnatural events from the characteristics of the seismic waveforms they create, but before they can determine whether an event is unnatural, they need to know that an event has occurred. "You have hundreds of stations all over the world producing high-dimensional data that's streaming in 24-by-seven," said Sudderth. . Automated tools keep a constant eye on every station and create a log of potential local detections. They also combine data from multiple stations to hypothesise the time, location, and magnitude of plausible seismic events. Analysts then look at those data to determine if indeed each detection was from a seismic event or just represents random noise. Once an event is confirmed to be real, analysts review it to determine whether it was natural or human-made. The older software was making lots of mistakes, Sudderth said. It was wasting analysts' time with false positives. It was also missing lots of smaller events and making errors in triangulating the exact position of events.

The Times of India

02 February 2016

Lab-grown liver tissue to help transplants:

Scientists have successfully developed a liver tissue in a laboratory which closely mimics the complicated structure of the organ. It could have a range of uses from liver transplants to drug testing. Researchers from Northwest A and F University in China built a microfluidics-based tissue that copies the liver's complex lobules, the organ's tiny structures that resemble wheels with spokes.

Deccan Chronicle

02 February 2016

Stem cells to repair skull, face bones identified: study

Craniosynostosis often leads to developmental delays and life-threatening elevated pressure in the brain. Washington: Scientists have for the first time identified stem cells capable of repairing skull and face bones in mice, an advance that may lead to new stem-cell therapies for craniofacial bone repair in future. According to Wei Hsu, professor at the University of Rochester Medical Centre in US, the goal is to better understand and find stem-cell therapy for a condition known as craniosynostosis, a skull deformity in infants. Craniosynostosis often leads to developmental delays and life-threatening elevated pressure in the brain. The findings contribute to an emerging field involving tissue engineering that uses stem cells and other materials to invent superior ways to replace damaged craniofacial bones in humans due to congenital disease, trauma, or cancer surgery, researchers said. For years researchers, including the study's lead author Takamitsu Maruyama, focused on the function of the Axin2 gene and a mutation that causes craniosynostosis in mice. Because of a unique expression pattern of the Axin2 gene in the skull, the lab then began investigating the activity of Axin2-expressing cells and their role in bone formation, repair and regeneration. Their latest evidence shows that stem cells central to skull formation are contained within Axin2 cell populations, comprising about 1 per cent - and that the lab tests used to uncover the skeletal stem cells might also be useful to find bone diseases caused by stem cell abnormalities. The team also confirmed that this population of stem cells is unique to bones of the head, and that separate and distinct stem cells are responsible for formation of long bones in the legs and other parts of the body, for example.

World's first 'robot-run' farm set to open in Japan

TOKYO: A Japanese firm said on Monday it would open the world's first fully automated farm with robots handling almost every step of the process, from watering seedlings to harvesting crops. Kyoto-based Spread said the indoor grow house will start operating by the middle of 2017 and produce 30,000 heads of lettuce a day. It hopes to boost that figure to half a million lettuce heads daily within five years. The farm, measuring about 4,400 square metres, will have floor-to-ceiling shelves where the produce is grown. "Seed planting will still be done by people, but the rest of the process, including harvesting, will be done (by industrial robots)," company official Koji Morisada said. The move to robot labour would chop personnel costs by about half and knock energy expenses down by nearly one third, Morisada added. The pesticide-free lettuce will also have more beta carotene than other farm-grown lettuce, the Japanese company said. Robot-obsessed Japan has repeatedly turned to automated workers to fill labour shortages that are projected to get worse as the country rapidly ages.

UK OKs gene editing of human embryos

Tech To Be Used Only For Research, Scientists Can't Implant Them Into Women

Scientists in Britain have been given the go-ahead to edit the genes of human embryos for research purposes, using a technique that some say could eventually be used to create "designer babies". Less than a year after Chinese scientists caused an international furore by saying they had genetically modified human embryos, Kathy Niakan, a stem cell scientist from London's Francis Crick Institute, was granted a licence to carry out similar experiments. "The Human Fertilisation and Embryology Authority (HFEA) has approved a research application from the Francis Crick Institute to use new 'gene editing' techniques on human embryos," Niakan's lab said on Monday. It said the work carried out "will be for research purposes and will look at the first seven days of a fertilised egg's development, from a single cell to around 250 cells". The scientists will not be allowed to develop the modified embryos for clinical purposes or implant them into any women. Niakan plans to carry out her experiments using what is known as CRISPR Cas9, a technology that is already the subject of fierce international debate because of fears that it could be used to create babies to order. CRISPR can enable scientists to find and modify or replace genetic defects. Many experts have called it "game-changing". David King, director of the UK campaign group Human Genetics Alert, said Niakan's plans would eventually lead to "a future of consumer eugenics". "This research will allow the scientists to refine the techniques for creating GM babies," he said. But Sarah Norcross, director of Progress Educational Trust, which campaigns for ethically sound research in genetics, said the HFEA's decision was "a victory for level-headed regulation over moral panic". Niakan says she has no intention of genetically altering embryos for use in human reproduction, but wants to deepen scientific understanding of how a healthy human embryo develops, something that could, in the long term, help to improve infertility treatments such as in-vitro fertilisation (IVF). The work will be carried out on embryos that have become surplus. At a briefing for reporters in London last month, she said the first gene she planned to target was one called Oct4, which she believes may have a crucial role in the earliest stages of human foetal development. Bruce Whitelaw, a professor of animal biotechnology at Edinburgh University's Roslin Institute in Scotland, said the HFEA's decision had been reached "after robust assessment". "This project, by increasing our understanding of how the early human embryo develops and grows, will add to the basic scientific knowledge needed for devising strategies to assist infertile couples and reduce the anguish of miscarriage," he said in an emailed comment.

Painkiller with fewer side effects developed

Scientists have developed a new peptide-based powerful painkiller that is as strong as morphine, but has fewer side effects and is not addictive. Using rats, scientists compared several engineered variants of the neurochemical endomorphin - found naturally in the body - to morphine to measure their effectiveness and side effects. The peptide-based drugs target the same pain-relieving opioid receptor as morphine, according to scientists at Tulane University and Southeast Louisiana Veterans Health Care System in US. Opium-based drugs are the leading treatments for severe and chronic pain, but they can be highly addictive. Their abuse results in thousands of overdose deaths in the US annually, researchers said. They can cause motor impairment and potentially fatal respiratory depression. Patients also build up tolerance over time, increasing the risk for abuse and overdose. "These side effects were absent or reduced with the new drug," said lead investigator James Zadina, professor at the Tulane University School of Medicine. "It's unprecedented for a peptide to deliver such powerful pain relief with so few side effects," said Zadina. In the study, the new endomorphin drug produced longer pain relief without substantially slowing breathing in rats; a similarly potent dosage of morphine produced significant respiratory depression. Impairment of motor coordination, which can be of particular importance to older adults, was significant after morphine but not with the endomorphin drug. The new drug produced far less tolerance than morphine and did not produce spinal glial cell activation, an inflammatory effect of morphine known to contribute to tolerance. Scientists conducted several experiments to test whether the drug would be addictive. One showed that although rats would spend more time in a compartment where they had received morphine, the new drug did not affect this behaviour.

The Asian Age

02 February 2016

Polymer may lead to artificial muscles

Scientists have developed a new hybrid polymer that may be used in artificial muscles, for delivery of drugs, biomolecules or other chemicals and in self-repairing materials. The polymer has both rigid and soft nano-sized compartments with extremely different properties that are organised in specific ways, and can be removed and chemically regenerated multiple times. It combines two types of known polymers - those formed with strong covalent bonds and those formed with weak non-covalent bonds, well known as "supramolecular polymers". The integrated polymer offers two distinct "compartments" with which chemists and materials scientists can work to provide useful features, according to researchers from North-western University in the United States. Polymers get their power and features from their structure at the nanoscale. The covalent rigid skeleton of this hybrid polymer has a cross-section shaped like a ninja star - a hard core with arms spiralling out. In between the arms is the softer "life force" material. This is the area that can be animated, refreshed and recharged, features that could be useful in a range of valuable applications. Researchers also discovered that the covalent polymerisation that forms the rigid compartment is "catalysed" by supramolecular polymerisation, thus yielding much higher molecular weight polymers. The strongly bonded covalent compartment provides the skeleton, and the weakly bonded supramolecular compartment can wear away or be used up, depending on its function, and then be regenerated by adding small molecules. After the simultaneous polymerisations of covalent and non-covalent bonds, the two compartments end up bonded to each other, yielding a very long, perfectly shaped cylindrical filament. "Some of the nanoscale compartments contain rigid conventional polymers, but others contain the so-called supramolecular polymers, which can respond rapidly to stimuli, be delivered to the environment and then be easily regenerated again in the same locations," said Samuel I Stupp from Northwestern University.

Microsoft unit dives deep for a Data Centre solution

Taking a page from Jules Verne, researchers at Microsoft believe the future of data centers may be under the sea. Microsoft has tested a prototype of a self-contained data center that can operate hundreds of feet below the surface of the ocean, eliminating one of the technology industry's most expensive problems: the air-conditioning bill. Today's data centers, which power everything from streaming video to social networking and email, contain thousands of computer servers generating lots of heat. When there is too much heat, the servers crash. Putting the gear under cold ocean water could fix the problem. It may also answer the exponentially growing energy demands of the computing world because Microsoft is considering pairing the system either with a turbine or a tidal energy system to generate electricity. The effort, code-named Project Natick, might lead to strands of giant steel tubes linked by fiber optic cables placed on the seafloor. Another possibility would suspend containers shaped like jelly beans beneath the surface to capture the ocean current with turbines that generate electricity. "When I first heard about this I thought, 'Water ... electricity, why would you do that?'" said Ben Cutler, a Microsoft computer designer who is one of the engineers who worked on the Project Natick system. "But as you think more about it, it actually makes a lot of sense." Such a radical idea could run into stumbling blocks, including environmental concerns and unforeseen technical issues. But the Microsoft researchers believe that by mass producing the capsules, they could shorten the deployment time of new data centers from the two years it now takes on land to just 90 days, offering a huge cost advantage. The underwater server containers could also help make web services work faster. Much of the world's population now lives in urban centers close to oceans but far away from data centers usually built in out-of-the-way places with lots of room. The ability to place computing power near users lowers the delay, or latency, people experience, which is a big issue for web users. "For years, the main cloud providers have been seeking sites around the world not only for green energy but which also take advantage of the environment," said Larry Smarr, a physicist and scientific computing specialist who is director of the California Institute for Telecommunications and Information Technology at the University of California, San Diego. Driven by technologies as varied as digital entertainment and the rapid arrival of the so-called Internet of Things, the demand for centralized computing has been growing exponentially. Microsoft manages more than 100 data centers around the globe and is adding more at a rapid clip. The company has spent more than \$15 billion on a global data center system that now provides more than 200 online services. In 2014, engineers in a branch of Microsoft Research known as New Experiences and Technologies, or NExT, began thinking about a novel approach to sharply speed up the process of adding new power to so-called cloud computing systems. "When you pull out your smartphone you think you're using this miraculous little computer, but actually you're using more than 100 computers out in this thing called the cloud," said Peter Lee, corporate vice president for Microsoft Research and the NExT organization. "And then you multiply that by billions of people, and that's just a huge amount of computing work." The company recently completed a 105-day trial of a steel capsule - eight feet in diameter - that was placed 30 feet underwater in the Pacific Ocean off the Central California coast near San Luis Obispo. Controlled from offices here on the Microsoft campus, the trial proved more successful than expected. The researchers had worried about hardware failures and leaks. The underwater system was outfitted with 100 different sensors to measure pressure, humidity, motion and other conditions to better understand what it is like to operate in an environment where it is impossible to send a repairman in the middle of the night. The system held up. That led the engineers to extend the time of the experiment and to even run commercial data-processing projects from Microsoft's Azure cloud computing service. The research group has started designing an underwater system that will be three times as large. It will be built in collaboration with a yet-to-be-chosen developer of an ocean-based alternative-energy system. The Microsoft engineers said they expected a new trial to begin next year, possibly near Florida or in Northern Europe, where there are extensive ocean energy projects underway. The first prototype, affectionately named Leona Philpot - a character in Microsoft's Halo video game series - has been returned, partly covered with barnacles, to the company's corporate campus here. It is a large white steel tube, covered with heat exchangers, with its ends sealed by metal plates and large bolts. Inside is a single data center computing rack that was bathed in pressurized nitrogen to efficiently remove heat from computing chips while the system was tested on the ocean floor. The idea for the underwater system came from a research paper written in 2014 by several Microsoft data center employees, including one with experience on a Navy submarine. Norman A. Whitaker, the managing director for special projects at Microsoft Research and a former deputy director of the Information Innovation Office at the Pentagon's

Continue **Microsoft unit dives deep for a Data Centre solution**

Defense Advanced Research Projects Agency, or Darpa, said the underwater server concept was an example of what scientists at Darpa called "refactoring," or completely rethinking the way something has traditionally been accomplished. Even if putting a big computing tube underwater seems far-fetched, the project could lead to other innovations, he said. For example, the new undersea capsules are designed to be left in place without maintenance for as long as five years. That means the servers inside it have to be hardy enough to last that long without needing repairs. That would be a stretch for most servers, but they will have to improve in order to operate in the underwater capsule - something the Microsoft engineers say they are working on. They're also rethinking the physical alignment of data centers. Right now, servers are put in racks so they can be maintained by humans. But when they do not need maintenance, many parts that are just there to aid human interaction can be removed, Mr. Whitaker said. "The idea with refactoring is that it tickles a whole bunch of things at the same time," he said. In the first experiment, the Microsoft researchers said they studied the impact their computing containers might have on fragile underwater environments. They used acoustic sensors to determine if the spinning drives and fans inside the steel container could be heard in the surrounding water. What they found is that the clicking of the shrimp that swam next to the system drowned out any noise created by the container. One aspect of the project that has the most obvious potential is the harvest of electricity from the movement of seawater. This could mean that no new energy is added to the ocean and, as a result, there is no overall heating, the researchers asserted. In their early experiment the Microsoft engineers said they had measured an "extremely" small amount of local heating of the capsule. "We measured no heating of the marine environment beyond a few inches from the vessel," Dr. Lee said.

The Asian Age



Apple building secret team to work on VR

New Delhi: California-based Tech giant Apple is secretly hiring a highly qualified team of researchers to develop a Virtual Reality device. The move is an attempt to compete with Facebook's Oculus Rift and Microsoft's HoloLens. The company has reportedly employed hundreds of staff from a series of carefully targeted acquisitions to develop the technology, the Verge and the Financial Times reported. Apple CEO Tim Cook has said: "VR is really cool and has some interesting applications. Virtual reality (VR), which can be referred to as immersive multimedia or computer-simulated reality, replicates an environment that simulates a physical presence in places in the real world or an imagined world, allowing the user to interact in that world.

02 February 2016

Google's SkyBender to deliver 5G Net

New Delhi: Internet giant Google is working at a spaceport in New Mexico to build and test solar-powered internet drones. According to the Guardian, project is codenamed as SkyBender. Project SkyBender is using drones to experiment with millimetre-wave radio transmissions, and this technologies could underpin next generation 5G wireless internet access. Sincere Request ... We are a group of students who have come up with few android apps and games, We... Read More idroidhu. The SkyBender is technically part of Google's air balloon Wi-Fi project aimed at a similar goal of bringing remote parts of the world online. The move is an attempt by the Google to compete with other social networking giants like Facebook to bring internet access to developing countries

Paper and pencil to generate electricity

A small device made from household materials such as paper, pencil and a teflon tape can generate enough electricity to operate a remote control. A team from EPFL (Ecole Polytechnique Federale de Lausanne) in Switzerland, working with researchers from the University of Tokyo, used these everyday materials to make a tiny device that can generate more than 3 volts of power. The simple, eco-friendly and inexpensive system can produce the same current as two AA batteries - enough to operate a remote control, researchers said. The principle underlying this system is well known: static electricity. When two insulators like paper and teflon come into contact, they gain or lose electrons. The system is made up of two small cards, where one side of each card is covered in pencil. The carbon serves as the electrode. Teflon is then applied to the opposite side of one of the cards. When brought together, they make a sandwich: two layers of carbon on the outside, then two layers of paper, and one layer of teflon in the middle. They are then taped together in such a way that cannot touch, giving the system a configuration that makes it electrically neutral. By pressing down with your finger on the system, the two insulators come into contact. This creates a charge differential: positive for the paper, negative for the teflon. When you release your finger and the cards separate, the charge passes to the carbon layers, which act as electrodes. A capacitor placed on the circuit absorbs the weak current that is generated. To boost the device's output, Xiao-Sheng Zhang, a postdoc at EPFL's Microsystems Laboratory, used sandpaper. Pressing the sandpaper firmly against the cards gives them a rough surface. This increases the contact area, which in turn improves the system's output six times. If you press your finger on the cards at a rate of 1.5 times per second, for a short period of time the capacitor will release the same amount of voltage as that supplied by two AA batteries. This is enough to power micro- or nano-sensors, which need only a little electricity to run. "The one that we developed in the framework of this European project is the first one to use natural, everyday and environmentally friendly materials," said Jurgen Brugger, a professor at the Microsystems Laboratory. This could have applications in the medical field, for example. Ultra low-cost sensors made of paper for various diagnostic purposes, which would be especially practical for developing countries, are already being tested. This paper system could represent the next step, since it would remove the need for conventional batteries. Another advantage is that it does not generate waste, as it can simply be incinerated or left to decompose naturally.

Hidden physics behind brain's folds solved

The deep folds that give the adult human brain its wrinkled walnut appearance were Nature's solution to fitting a large, powerful processor into a small skull. Like a piece of flat, square paper crumpled together to fit into a small, round hole, folding allows more neurons to be packed closer together, with shorter, faster connections between them. While scientists have long understood why there are folds in the brain's outer layer, called the cerebral cortex or grey matter, the how has remained a mystery. Do the creases develop as a result of genetic, biological or chemical signals? Or are they caused by physical forces? On Monday, a team of researchers from the United States and Europe said the folds can be explained by physics - a discovery that may have important implications for understanding certain brain disorders. Folds in the cortex develop through buckling in weak spots which develop as the foetal brain grows, they said. The brains of human foetuses are smooth for about the first 20 weeks, when folding begins and continues until the child is about 18 months old. The surface area covered by the folded cortex is almost three times that of a smooth brain the size of our head, study co-author Lakshminarayanan Mahadevan from Harvard University in Massachusetts told AFP. "The number, size, shape and position of neuronal cells during brain growth all lead to the expansion of the grey matter, known as the cortex, relative to the underlying white matter," he said by email. "This puts the cortex under compression, leading to a mechanical instability that causes it to crease locally. "This simple evolutionary innovation... Allows for the thin but expansive cortex to be packed into a small volume, and is the dominant cause behind brain folding." Mahadevan and a team used MRI scans of smooth foetus brains to build a three-dimensional gel model. They coated the surface with a thin layer of elastomer gel to represent the cortex. To mimic brain growth, they immersed the gel brain in a solvent that was absorbed by the outer layer, causing it to swell relative to the deeper region. Within minutes, folds started to appear that were remarkably similar in size and shape to the real thing, showing that the same process happened even though the model did not contain any living tissue. "It looks like a real brain," said Mahadevan's colleague and fellow author Jun Young Chung.

The unending debate on brain training

By Paula Span

Even scientists who see promise in cognitive training have applauded FTC's crackdown on Lumosity

A few years ago, Jennifer Perrine saw a television ad for Lumosity, an online brain training programme, and decided she would give it a try. Her mother had been diagnosed with Alzheimer's disease, and Perrine, a freelance writer in New York, began worrying about her own mental abilities. "Every time you lose your keys, you think you're losing your mind," she said. "This seemed to offer a ray of hope." Lumosity's ads, seemingly ubiquitous, appeared on television, radio and podcasts. The company purchased hundreds of search engine keywords so that computer users seeking information on dementia, Alzheimer's and memory would encounter its online ads. In one TV commercial, a man declared that with Lumosity "decisions come quicker. I'm more productive." The company website stated that brain training could help "patients with brain trauma, chemofog, mild cognitive impairment and more," adding that "healthy people have also used brain training to sharpen their daily lives and ward off cognitive decline." Earlier this month, the Federal Trade Commission said: No more. Its complaint charged that the company could not substantiate such marketing claims. "The research it has done falls short because it doesn't show any real-world benefits," said Michelle Rusk, an FTC staff lawyer. She called the commission's yearlong investigation "part of an effort to crack down on cognitive products, especially when they're targeted to an ageing population." Lumosity agreed to give its one million current subscribers, who pay \$14.95 a month or \$79.95 annually, a quick way to opt out. It also accepted a \$50 million judgment, all but \$2 million suspended after the commission reviewed the company's financial records. The company had already stopped making health and cognition claims, its new chief executive, Steve Berkowitz, said in an interview. But the firm settled because "we came to the realisation that the most important thing we could do is focus on the future," Berkowitz said. Even scientists who see promise in cognitive training applauded the agency's action. "The criticisms were right," said Joel Sneed, a psychologist at Queens College and senior author of a meta-analysis on cognitive training and depression. "The field is far, far, far from demonstrating any reduction or delay in cognitive decline," Sneed said. Broader questions of whether cognitive training works, and for whom, still generate considerable debate, given that human brains change and grow throughout life, a quality called "neuroplasticity." There is no evidence that spending 10 or 15 minutes several times a week at your keyboard, dispatching animated trains to appropriately coloured stations or recalling the locations of squares on a grid, will spare you dementia. Claims that it will improve your work or your child's school performance remain unproven. Last fall, more than 70 psychologists and neuroscientists signed a statement circulated by the Stanford Centre on Longevity. "We object to the claim that brain games offer consumers a scientifically grounded avenue to reduce or reverse cognitive decline when there is no compelling scientific evidence to date that they do," the statement said, though it encouraged further research. A group of about 100 scientists and experts countered with their own open letter. Agreeing that many companies had made exaggerated claims, these researchers nevertheless argued that "a substantial and growing body of evidence shows that certain cognitive training regimens can significantly improve cognitive function." George Rebok, a developmental psychologist at Johns Hopkins, signed the second letter, concerned that the Stanford statement dismissed years of research. "It would almost chill the whole field if people concluded it was all bogus." Hundreds of published studies have examined cognitive training, but many involved very small groups of subjects and designs that might have encouraged a placebo effect by comparing inactive control groups, who do nothing, with participants who become invested in and motivated by their training efforts. Critics have pointed out, too, that the cognitive tests used to assess participants' progress are often so similar to the training games that investigators may be "teaching to the test." They also question self-reported assessments of results. "When they train on these games for 15 or 20 sessions, people get better - on these games," said Thomas Redick, a psychologist at Purdue University. Improvement often shows up between pre- and post-

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part-2

The unending debate on brain training

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tests of cognition, too - an example of "near transfer," the ability to do better, with practice, on similar tasks. But what about "far transfer," affecting participants' ability to function in their daily lives? Does cognitive training help people handle their finances or remember where they parked? Test of 'far transfer' Active, probably the largest study in the field with the longest follow-up, does suggest that enduring effects are possible. Its 2,832 cognitively normal volunteers (average age, nearly 74) met in small groups with facilitators for 10 sessions of training on one of three skills: memory, processing speed or reasoning. Ten years later, tests showed that the subjects trained in processing speed and reasoning still outperformed the control group though the people given memory training no longer did. And 60 per cent of the trained participants, compared with 50 per cent of the control group, said they had maintained or improved their ability to manage daily activities like shopping. So that's far transfer - or is it? When the investigators administered tests that mimicked real-life activities, like managing medications, the differences between the trainees and the control group participants no longer reached statistical significance. Still, cognitive training may have potential, some investigators say. Maybe the programmes need to more closely simulate real-life challenges; perhaps the dosage - how much people train - matters. Dr P Murali Doraiswamy, who directs the neurocognitive disorders programme at Duke University, believes Lumosity and similar companies should seek guidance from the US Food and Drug Administration, which could examine and regulate cognitive training programmes as medical devices. "Then an independent government agency that knows how to evaluate clinical trials can say thumbs up or thumbs down," Doraiswamy said. "And the public will know what it's buying."

The Times of India
02 February 2016

Interest-only EMI gets you 20% more loan

SBI's New Home Loan Ups Eligibility For Borrowers

SBI has introduced a new home loan scheme where the borrower needs to pay only the interest component in the early years, thereby increasing the loan eligibility or the customer by up to 20%. For instance, an interest-only EMI on a 15-year Rs 30-lakh loan should work out to around Rs 24,000. On a normal home loan, it would be Rs 31,326, including the principal component. This difference of Rs 6,000 could fetch an additional loan of around Rs 6 lakh. The new scheme, 'SBI Flexi Pay Home Loan', will enable young working professionals get a higher loan amount compared to their loan eligibility under normal schemes. But borrowers will have to ensure that they have the cash resources to meet 10-20% of the property value as this is a regulatory requirement. "We obtain an authorization from the borrower to raise the EMI if there is an increase in interest rates. This ensures that their principal liability does not increase," said Jayanthi Lakshmi, chief general manager (real estate and housing development). It would also not benefit those who seek to refinance their existing loan. SBI chairman Arundhati Bhattacharya had earlier in a panel discussion with RBI governor Raghuram Rajan in August proposed that banks be allowed to reintroduce 'teaser rate' home loans. Teaser rate loans are those where the interest burden is lower in the initial years but rises subsequently. Rajan had turned down the proposal. "In Flexipay, there is no step-up interest rate. The loan is similar to a regular home loan, except for the moratorium on principal repayment," said Lakshmi. Customers under this scheme will be offered the option of paying only interest during the moratorium (pre-EMI) period of three to five years. The new home loan is available primarily to salaried individuals with a two-year track record. The upper age limit for this scheme is 45 years. Given the target group, the bank offers loans with a repayment tenure of 25 to 30 years under the scheme. However, customers will be free to make prepayments towards their home loan without any prepayment penalty. The scheme from SBI, which claims to be the largest home loan provider in the country, is aimed at boosting the home loan portfolio at a time when there is a slowdown in loan offtake by corporates.

Lighten up your mood

LEDs have revolutionised lighting and their versatility makes them great for IoT applications such as smart bulbs.

By Gagandeep Singh Sapra

No, that is not a price for one lamp. It is the cost of a personal wireless lighting starter pack that includes a bridge that acts as a controller between the Internet and your lights, and three wireless bulbs. The bulbs though, wireless, need electricity. You can control the brightness and hue of the light. To get started, plug in the bridge using a LAN cable to your home Internet connection. Then download the Philips Hue App for your iPhone, iPod Touch, iPad or Android phone/tablet, and just in case you are on a Windows phone or tablet you can use the Huetro app instead. You can control toggle between settings such as reading, relaxing, or even a sunset shade, or go into the settings and select your favourite colours. Watching a movie set on planet Mars, you can set your lights to an orange-red glow to make the environment more immersive. All this is fun, and there are more possibilities. If you want more advanced controls, you can interface your Philips Hue with a Portal such as IFTTT (If this then that). It lets you programme internet connected devices to do something when something happens, so you can switch on the lights the moment you turn into the road leading to your house or switch them off when you are leaving your house. You can even change the color or light a lamp every time you have a tweet from your best friend - all this be programmed and runs without your phone, as Philips Hue Bridge sits between your lights and the Internet. Each Bridge can manage up to 50 lights, and you get stand alone bulbs starting at Rs. 3,995 to LED light strips that you can use for decorating your house for ` 6,500 and even table lamps for ` 22,995. You can even programme the lights to gently come up every morning as you wake up, to gently turn off at night.

CUBE26 Iota Lite (Rs.1,899)

While the Philips Hue system lets you do all this jazz, and costs some money, the Cube26 IOTA Lite is a great way to get introduced to IoT lighting in a limited way. The Cube 26 IOTA uses Bluetooth to communicate with the bulb in your house or office. The bulb gets plugged into any bulb receptacle you may have using a convertor and you can programme the shade of the lamp and its brightness. No home connection bridge or wireless settings are needed. Just put the bulb in, download the app - available for iOS and Android - and you are ready to go. While you can setup advanced settings on the Hue to react to events on the Internet, you cannot do the same with the Cube 26 IOTA Lite bulb, though your phone can still do some fancy stuff, from changing the shade of the bulb every time you get an incoming call to reacting to weather changes or social media messages. But all this works only when your phone is connected to the bulb or in the 10m range of Bluetooth connectivity. Like the Philips Hue you can setup modes for every mood, or even ask the bulb to react to the music you are playing to bring to life every beat you listen to. The Lite app can control up to 7 bulbs and you can plug these both into your table lamp or outside on the patio.

Other Chinese Imports (Rs. 999)

There are other Chinese cheaper imports also. They connect to your smartphone over Bluetooth just like the CUBE 26 IOTA. There are different apps and different experiences. Though these may seem like an interesting option, we would urge you to stay away from unbranded stuff, especially since it's related to electricity in your house.

Footnote: If this , then that

Though we have written about IFTTT in the past, but this is in case you missed it, IFTTT allows you to write simple recipes or actions based on "if this happens then do that" algorithm. So you could head on to IFTTT.com and choose one of the existing recipes or make a new one. IFTTT can keep your social media accounts updated: for instance, a simple recipe can sync your profile pictures on Facebook and Twitter and change them simultaneously.