

IEIGOA NEWS

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GOA STATE CENTRE

'98 Years of Relentless Journey Towards Engineering Advancement for Nation Building'


Issue No. 66

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From the Chairman's Desk

 ear friends,

The Institution of Engineers (India) Goa State Centre has rich history & many achievements to its credit. Active participation by the members ensures that the Goa State Centre will always be in dynamic mode. The 25th Convocation of The Institution of Engineers (India) was the best example of Unity, Understanding, Devotion, Dedication and Discipline of members. It was indeed a grand success with memorable activities.

In the month of March, on the 22nd we organised the World Water Day 2018 at International Centre Goa, Dona Paula on the theme '**Nature for Water**'. Dr. Fraddy D'Souza, Fellow & Area Head, TERI (Goa) brought out the dangers faced by us on account of the contamination of water. A full day workshop on '**Aspects of Non-destructive Testing**' was organised on 28th March 2018 at Goa Science Centre which was attended by more than 50 participants.

The Goa State Centre has over 1200 Members. All members are doing excellent job at their professional places. If on an average of 15 years of experience per member is considered, then total years of experience is 18000 years, that too from different fields of engineering.

This brain power is actively working in engineering sector in Goa to solve various issues & ensure better quality of life. It is obvious that their contribution might have been registered by media or through the technical papers at local/individual levels.

There is urgency that the local Govt. need to take recognition of their efforts & for this the members should come forward & myself, as Chairman of IEI GSC assure you all that I shall leave no stone unturned to see that the achievements of the IEI members are appreciated.

I am sure that this new initiative will receive wholehearted response from the members & will be well received by one & all.

I request all Members to invite at least one new member to join us in this relentless journey towards engineering advancement for Nation Building.

With Best Wishes,
Er. Gurunath M Naik Parrikar
Chairman
9168694667



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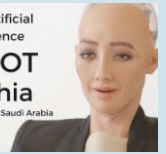
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ARTIFICIAL INTELLIGENCE : AN OPPORTUNITY OR THREAT ?

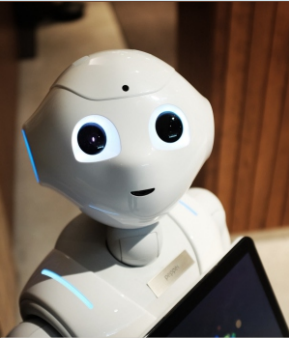
By Deepak A. Karmalkar

Super Artificial
Intelligence
ROBOT
Sophia
Declared Citizen of Saudi Arabia



Artificial Intelligence (AI) is the term coined by John McCarthy refers to a machine's ability to imitate human cognitive abilities like learning, understanding of language, speech and strategic thinking and problem solving. AI can be categorized in any number of ways, but here are three ways:

1. Artificial Narrow Intelligence : Artificial Narrow Intelligence (ANI) or Weak AI is the phenomenon that machines which are not too intelligent to do their work and can be built in such a way they seem smart. This type of Intelligence has been used in different machines for a long time and therefore it is a tested field, and many developments are being made in it to further improve it. All the AI created to date is classified as Weak AI as they have narrow applications. They can make decisions and solve problems in a very limited area. One example is the Chess playing Computer. It made international headlines when IBM's Deep Blue defeated Chess Grandmaster Gary Kasparov. Does this mean that AI was smarter than Gary? Clearly not. It was a better at playing chess but could not debate in other fields like politics, Arts etc.



Chatbot Robot can talk to humans

2. Artificial General Intelligence: Artificial General Intelligence (AGI) also known as Strong AI, which makes use of human mind and tries to perform activities on its own without any external help. The goal of this technology is to develop an artificial intelligence to the point where the machine's intellectual capability is functionally equal to a human's. This is just in the initial stage, and there is a long way to go before such machines can be used, but research is being carried out on it. Currently there are no specific examples of AGI, but one area which makes use of this technology is the Chatbot robot which talks to humans.

3. Artificial Super intelligence: The level of artificial intelligence has been reached when a computer has exponentially surpassed the intelligence level of a human by several orders of magnitude. As such, a super intelligence would likely have abilities such as consciousness, intentionality, emotional intelligence, self-awareness, imagination, creativity, problem solving and rational thought. The foundation that has been put up by Hong-Kong based AI specialist Dr. David Hanson of Hanson Robotics by developing Humanoid called Sophia is truly amazing. The Humanoid Sophia has been declared as the citizen of Saudi Arabia. The goal of the humanoid will be conscious, creative and capable as any human, and serving in health care, therapy, education and customer service applications.

Benefits of AI: There are numbers of real life examples in which human are being benefited as follows: Voice Recognition systems such as Apple's Siri, Microsoft's Cortana and Amazon's Alexa uses machine learning and deep neural networks to imitate human interaction. Apps like Spotify,

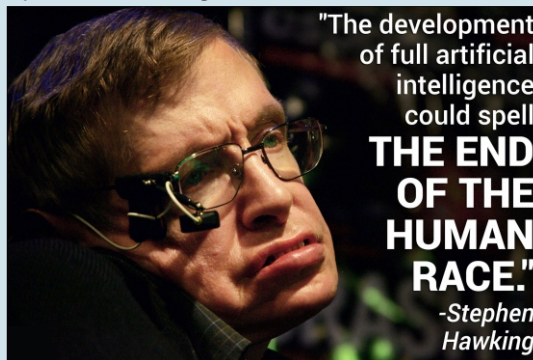
Pandora and Netflix for recommending music and movies that would never get noticed. IBM Watson is used in different fields such as finance, engagement and health care to help users to enable smarter healthcare solutions. Google Maps deep learning algorithms help the app to extract street names and house numbers from photos taken by street view cars and increases the accuracy of search results. The Tech Giant Uber use the Machine Learning algorithm to determine arrival times, pick-up locations and delivery estimations. Google Rank Brain is use to decipher the semantic content of a search query. E-discovery software for legal applications is intended for use during the discovery phase of the trial process. Self driving cars like those produced by Google and Tesla improves the state of Transportation.



Self-driving car taking measures to avoid accidents

Drawbacks of AI: Nothing is perfect in this world, everything has its pros and cons. If robots start replacing human resources in every field, we will have to deal with serious issues like unemployment in turn leading to mental depression, poverty and crime in the society. Artificial intelligence carries the risk in the minds of some of taking control away from humans – de-humanising actions in many ways. Creation of artificial intelligence requires huge costs as they are very complex machines, their repair and maintenance require huge costs.

Recent Interest in AI Safety: Scientist Stephen Hawking states that "The Development of full artificial intelligence could spell the end of the human race". He argues that human could not compete with an AI which would redesign itself and reach an intelligence that would surpass that of humans. Tesla and SpaceX CEO Elon Musk warned Governors that AI poses a "fundamental risk to the existence of the human Civilization". The movies send out a strong message to exercise caution. However Microsoft Co-founder Bill Gate says "AI is on the verge of making our lives more productive and creative". Facebook founder and CEO Mark Zuckerberg says "AI is going to make our lives better in the future". Recently five large technologies namely Google, Facebook, Microsoft, IBM and Amazon and afterwards Apple joined together to study and formulate best practices on AI technologies, to advance the public's understanding of AI and to serve as an open platform for discussion and engagement about AI and its influences on people and society.



"The development of full artificial intelligence could spell **THE END OF THE HUMAN RACE.**"
-Stephen Hawking

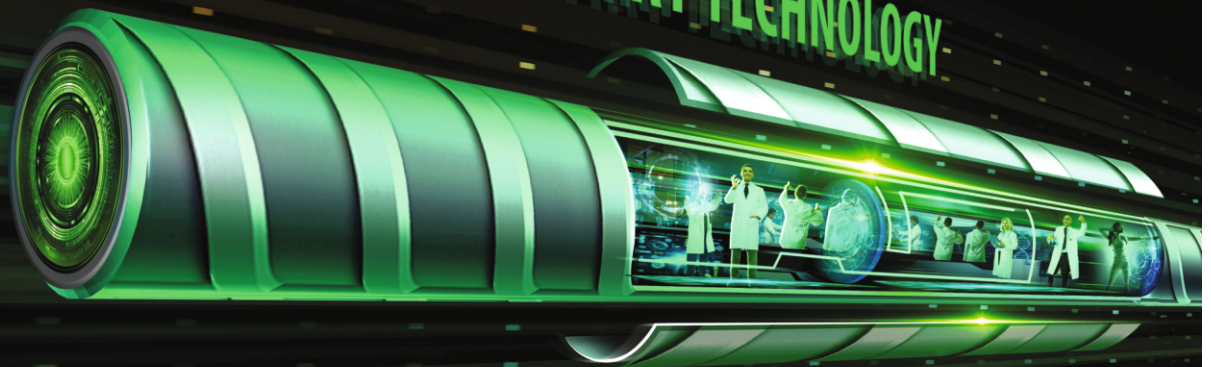
Conclusion: So far, Creating AI is one of the most remarkable events for humankind, As AI Continues to adapt and become part of our daily lives, Engineers need to ensure that the AI they create has the ability to learn, discern bias and avoid making the same mistakes prior to replacing traditionally human-held positions in the workforce and in society, in

Continued on page ...4

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RERA : REAL ESTATE (REGULATION AND DEVELOPMENT) ACT, 2016



By Er. Chandrashekar Prabhudessai, FIE, IEI



RERA Act has paved the way for setting up of Real Estate Regulatory Authority (RERA) for regulation and promotion of real estate sector while promoting transparency and equity in real estate transactions.



WHY IS THIS ACT REQUIRED..

1. Real Estate and the housing sectors were highly unregulated sectors
2. Lack of transparency in projects
3. No proper information about the builder
4. Lack of remedies available to the buyers

CASES THAT LED TO THE PASSING OF THE ACT

1. EMERALD COURT OWNER RESIDENT WELFARE ASSOCIATION V/s STATE OF U.P [Writ Petition No. 65085 of 2012]. In 2014, in Noida, where two towers of the Supertech Emerald Court group housing project were ordered to be demolished by the Allahabad High Court as construction was in violation of building plans.. The Flat buyers were left high and dry.

2. Esha Ekta Apartment Cooperative Housing Society Limited and Ors V/s. Municipal Corporation of Mumbai and Ors [Civil Appeal No. 7934 of 2012]. In the instant matter the Supreme Court referred to a 2004 judgement (Friends Colony Development Committee vs.. State of Orissa) which stated that: "Unwary purchasers in search of roof over their heads and purchasing flats/apartments from builders, find themselves having fallen prey and become victims to the designs of unscrupulous builders. The builder conveniently walks away having pocketed the money leaving behind the unfortunate occupants to face the music in the event of unauthorized constructions being detected or exposed and threatened with demolition"

SCOPE OF THE ACT

1. The Act applies to not only residential apartments but to all apartments, plots and buildings whether residential or

commercial.

2. The Real Estate Project as defined in the Act, states that it shall include:

- a) Development of buildings;
- b) Development of buildings consisting of apartments;
- c) Converting existing buildings or part thereof into apartments (e.g.:- converting a bungalow or hotel into apartment);
- d) Development of land into plots or apartments for the purpose of selling all or some of the said apartments or plots or buildings.

Thus, it is pertinent to note that the Act is wide enough to cover within its scope development of land for buildings, apartments as well as plots. Further, the Act covers not only residential projects but also commercial projects.

NEED OF RERA

- a) To ensure accountability towards allottees and protect their interest.
- b) To infuse transparency, ensure fair-play and reduce frauds & delays.
- c) To introduce professionalism and pan India standardization.
- d) To establish symmetry of information between the promoter and allottee.
- e) Imposing certain responsibilities on both promoter and allottees.
- f) Establish regulatory oversight mechanism to enforce contracts.
- g) Establish fast-track dispute resolution mechanism;
- h) Promote good governance in the sector which in turn would create investor confidence.

To be continued in next edition...

Continued from page 2...



ARTIFICIAL INTELLIGENCE : AN OPPORTUNITY OR THREAT?

general society's responsibility is not to make AI more human-like, but to make AI that significantly improves human lives. Time will show us whether AI is our greatest opportunity that will improve our quality of

life or poses existential threat to human civilisation. In view of this, the smartest approach would be keeping an eye on how the technology evolves, and not getting too nervous at the thought of machine takeover.

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ASPECTS OF NON DESTRUCTIVE TESTING - A REPORT



Er. P. Chodankar, Guest Speaker demonstrating NDT machines

A one day workshop on the topic 'Aspects of Non Destructive Testing' was organized by The Institution of Engineers (India), Goa State Centre under the aegis of Mechanical Engineering Division on 28th March 2018 at Goa Science Centre, Miramar. The workshop was aimed at covering the fundamental

aspects of NDT in engineering and focused on the various methods used in NDT such as Dye Penetrant Tests, Magnetic Particle Tests, Radiographic Tests and Ultrasonic Tests.

Basic theory of each test was covered in detail and was followed by practical demonstrations using testing equipments. It was expected that the participants would be able to prepare themselves and their subordinates to tackle day to day problems of plant maintenance, inspection and testing in a systematic, scientific and logical manner. The expert faculty for the workshop were Er. Subhash Bandodkar, retired Deputy General Manager, Zuari Agro Chemicals Ltd. and Mr. Pritesh Chodankar, Proprietor, Indo-Veritas inspection and NDT training services,

Taleigao. The workshop was attended by a large number of participants from industry and institutions from all over Goa. Mr. Nilesh Dessai, General Manager, Zuari Agro Chemicals Ltd. was the Chief Guest for the occasion. The Hon. Secretary, IEI Goa Er. Deepak A. Karmalkar presented the vote of thanks. Er. Balkrishna M. Chodankar was the Convener of the workshop.



Er. G. M. N. Parrikar, presenting memento to a Resource Person Er. S. Bandodkar



Participants at the NDT Workshop along with the Resource Persons and Dignitaries

WORLD WATER DAY - BRIEF REPORT



Er. Anwar Khan, Convener

The Institution of Engineers (India), Goa State Centre celebrated the World Water Day 2018 on 22nd March 2018 in association with the International Centre Goa in the Abollim hall, ICG at Dona Paula.

At the outset, Er. Gurunath M. Naik Parrikar, Chairman, IEI Goa State Centre, welcomed the Guest Speaker and the audience. He highlighted the activities of the State Centre.

Er. Anwar Khan, Convener brought out the importance of the World water Day.

Guest Speaker, Dr. Fraddy D'Souza, Fellow and Area Head, TERI-Goa while presenting on the theme 'Nature for water' said that there is a need to focus on exploring nature based solutions to save water. Speaking further, he informed that sewage and deforestation are the main reasons for water problems in Goa and there is an instant need to tackle the

situation. Dr. Fraddy D'Souza was introduced by Er. Gerard J. D' Mello, Past chairman, IEIGSC. The Bimonthly Magazine



Audience from various fields attending World Water Day Programme



The Managing Committee of IEI, GSC with the Guest Speaker, Dr. Fraddy D'Souza

of The Institution of Engineers (India), Goa State Centre, 'The IEI Goa News' March 2018 was released by the dignitaries.

The Hon. Secretary, IEI Goa Er. Deepak A. Karmalkar presented the vote of thanks. Audience drawn from various organizations from the government, private and the autonomous departments from Goa attended the programme.

IRAN DEVELOPS ULTRA HIGH PERFORMANCE CONCRETE

Capable of resisting 6 tonnes of TNT (bomb) and earthquakes

By Austin S. Rodrigues



Did you know that the engineers from the earthquake prone country, Iran has developed some of the toughest building materials in the world? Yes, the UHPC or Ultra High Performance Concrete developed by the engineers in Iran is made of cement and sand, just like any other high strength concrete, mixed with powdered quartz in its pure form along with various reinforcing metals and fibres. This concrete is reported to be at least four times stronger than Ductal. Ductal, till date has been considered to be a revolutionary, ultra-high-performance material that delivers up to 200 MPa compressive strength. As compared to Ductal, the normal concrete, practically has almost no (very low) flexural strength, whereas Ductal offers flexural strengths up to 40Mpa. Therefore, Ductal is bendable of course within limits, and ductile, providing a larger factor of safety. Ductal concrete results in slender and sleek members which are architecturally very aesthetic. Normal ordinary concrete is brittle and shatters catastrophically when it fails.

It has been revealed that Mahmoud Nili of Bu-Ali Sina University in Hamadan, has been using polypropylene fibres and quartz flour, known as fume, in his mix. This concrete has great amount of toughness to absorb far heavier impacts than regular concrete. Dr. Rouhollah Alizadeh, University of Tehran is currently working at Ottawa University, Canada on the molecular structure of cement. Researchers believe that the internal structure of concrete can be

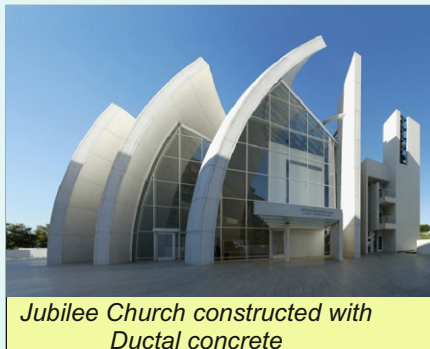
changed or altered using nanoparticles. Ali Nazari and his colleagues at Islamic Azad University, Saveh have published several papers on how to do that with different types of metal-oxide nanoparticles such as oxides of iron, aluminium, zirconium, titanium and copper. The experiments have demonstrated that at the nanoscale, materials can take on extraordinary properties. The UHPC developed by the scientists in Iran is believed to be a result of this type of research.



Precast Concrete Association block made with UHPC

Earthquake-safe dams, sewers, slender tall buildings, bridges, etc may all find this type of UHPC in its applications the near future. But, the odd applications of these could be more worrying from military or defense angle. A study published by the University of Tehran was aimed at the ability of UHPC to withstand the impact of steel projectiles. This study stated that concrete which contained a high proportion of long steel

fibres in its structure or polymer fibres, its impact resistance improved sevenfold. Ironically, such materials could also be used to protect hidden nuclear installations from the artificial equivalent of small earthquakes, namely bunker-busting bombs.



Jubilee Church constructed with Ductal concrete



Landscape Feature with UHPC



Bus shelter made with Ductal

When will the gap close?

The mathematics professor lined up all the boys in the class against one wall and the girls against the other opposite wall, then told the boys to move half the distance to the girls and stop. Then, he told them to move half the remaining distance and stop, again and again. Mathematically, the boys would never actually reach the girls, but in time, would become close enough "for all practical purposes".

PUZZLE

You have a glass of water and a glass of milk. You need to empty the two liquids into a barrel such that 1. The two liquids (water and milk) can be differentiated 2. You are able to separate milk and water.

Please Note:

Any type of divider in the box is not allowed.

(Answer on page 12)

LIGHTER ZONE



BRAIN TEASER

From Old Goa each morning I drive at an average speed of 30 kmph to the Margao Railway station, which is 30km away, and just catch my train. On a particular morning there was a lot of traffic at Cortalim and at the halfway point I found I had averaged only 15 kmph. How fast must I drive for the rest of the way to catch my train?

(Answer on page 12)

ONE DAY WORKSHOP ON 'INDUSTRIAL SAFETY' - A REPORT



The Department of Mechanical Engineering, Don Bosco College of Engineering organized a one day workshop on 'Industrial Safety' in association with DBCE Student's Chapter of The Institution of Engineers (India) and ONGC, Goa (IPSHEM) for second year students of Mechanical

Engineering on 24th March 2018. In all 62 students and 4 lab assistants attended the workshop.

Dr. Neena Panandikar, Principal praised the Mechanical Department for consistently organizing workshops and expert talks to address the gaps in the curriculum. Rev Fr. Kinley D'Cruz, Director recalled how in the past safety procedures and First Aid in industry were given utmost importance and that in Australia knowledge of safety precautions was given prime importance in selecting candidates for jobs in Industry. Prof. Ajit Salunke, HOD-Mechanical and Dr. H.K. Amarnath, Professor were also present.

Mr. Suhas Naik, OSH Auditor, speaker of 'Basic Industrial Safety' and 'Machinery Guarding' highlighted the

negligence towards safety in India leading to hazards in Mechanical Industries like physical, electrical, fire and explosives etc through illustrations, photos and videos and explained the damages caused by the hazards and the safety measures to be practiced to prevent accidents.



He talked about the different types of guards installed around the machinery in industry to provide safety to the operators. Dr. Jovito Lopez, Medical Practitioner, speaker on 'Introduction to First aid and CPR' said that the heart attacks would be the most common killer by 2020 and explained about the Cardiac massage, Automated External Defibrillator and other emergency measures in case of heat attacks. A live demonstration followed on to conduct a 'AVPU' Test for emergency first aid. Mr. J.K. Singh, Manager, Fire Services, ONGC, Goa (IPSHEM), speaker on Fire Prevention and Protection gave the fire safety precautions to be followed in high rise buildings, various classes of fire, fire tetrahedron and fire extinguishers for the classes of fire. This followed a live demo on fire fighting conducted by ONGC for the students. The coordinators for the workshop were Prof. Swapnil Ramani and Prof. Sanjeel Naik.

We welcome the newly enrolled members attached to Goa State Centre of The Institution of Engineers (India)

**NEW
MEMBERS**

SUKHAD SUBODH KESHKAMAT (FIE) CIVIL ENGG. DIVISION

ANTONIO OLAVO CARVALHO (FIE) CIVIL ENGG. DIVISION

NAIK SUSHMITA KIRANKUMAR (AMIE) CIVIL ENGG. DIVISION

GOMES LIONEL KEITH, (AMIE), CIVIL ENGG. DIVISION

GAWALI SHANU CHANDRASHEKAR, (AMIE), CIVIL ENGG. DIVISION

FERNANDES ANTHONY BERNARDINO, (AMIE), MECHANICAL ENGG. DIVISION



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Answer to Puzzle on page 6

- Step 1. Pour the water in the barrel.
- Step 2. Freeze it.
- Step 3. Pour the milk in the barrel.

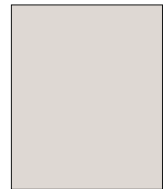
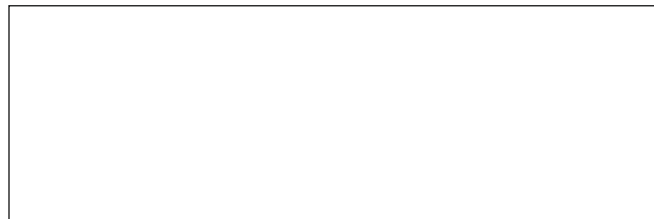
Answer to Brain Teaser on page 6

The train is just about to leave the station when I am at the halfway mark and there is no way I will be able to catch it this time.

APPEAL

We request our members to get more interactive with the Institution. We'd love to have your contributions towards our bulletin, too. Do send in your articles, reports and other information that you'd like to share with other members to our office: **The Institution of Engineers (India)**, Goa State Centre, D-Type Quarters, D-8-1, Government Polytechnic Campus, Altinho Panaji, Goa. Tel.: 2434686. Email: goastatecentre@gmail.com Website: www.ieigoasc.org

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