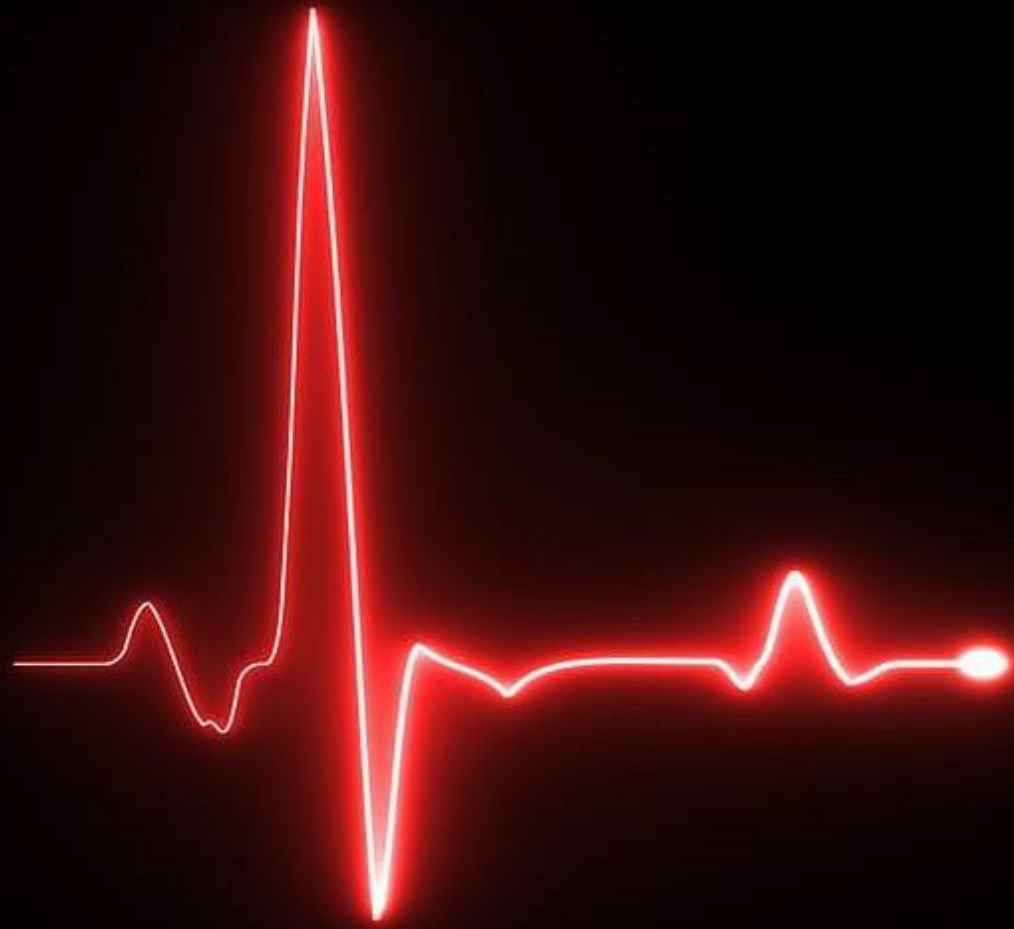


THE PULSE

NEWSLETTER
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



Vision

To emerge as a center of academic excellence in the Electronics & Communication Engineering field to address the dynamic needs of the industry upholding moral values.

Mission

- Impart in-depth knowledge in Electronics & Communication Engineering to achieve academic excellence.
- Develop an environment of research to meet the demands of evolving technology.
- Inculcate ethical values to promote teamwork and leadership qualities befitting societal requirements.
- Provide adaptability skills for sustaining in the dynamic environment

MESSAGE FROM FACULTY

Digital Twin - Accelerating Innovative Product Design

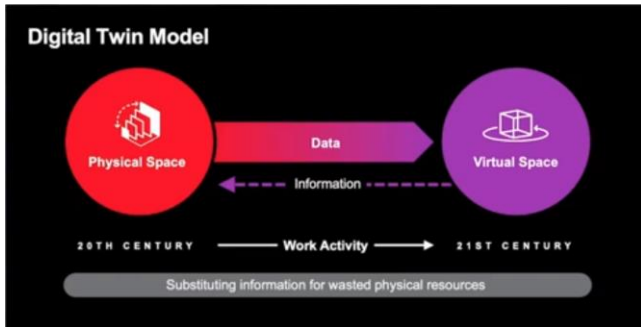


Figure 1

Computing capability has now reached a stage of 80 billion transistors on a chip which has enabled the possibilities of modeling and simulation and Artificial Intelligence. By 2030 the computing capability is expected to increase to 7 trillion transistors and by 2040 it is expected to reach 885 trillion. Digital twins are the next Engineering innovation that utilizes this computing capability. The ultimate vision for digital twins is to create, test, and build our equipment in a virtual environment. Only when it performs to our requirements, we do physically manufacture it. The digital twin model is shown in Figure 1.

The two aspects of Digital twins are physical space and virtual space. The third aspect is to have data that comes from the physical world and populates this virtual world because we want actual information and physical data from the physical world, and we will use the information that we create in the virtual world to populate the physical world. This will move the work done in the 20th century and before into the virtual world in the 21st century and beyond. This must be done only if it creates value. The value it creates is our ability to replace wasted physical resources with information. All the waste we incur in manufacturing the product, replacing the product, and supporting the product can be replaced with information.

Earlier when we have an idea, it must take the form of a physical shape like a blueprint or a physical drawing, or a prototype. Now, this physical shape can be moved to the virtual world

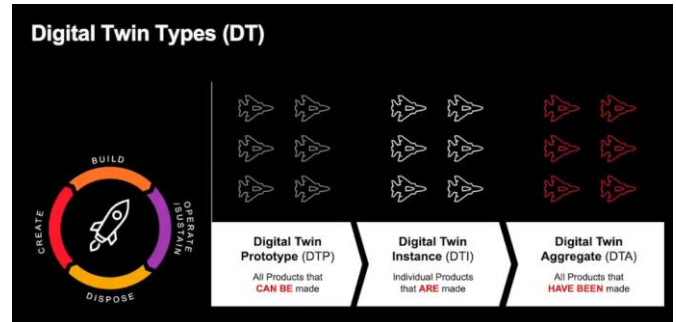


Figure 2

and can be more effective and efficient than ever before.

The different stages of digital twins are shown in Figure 2: The first stage is creating all information and making all products that can be built. The second stage is having an instance of the products made, i.e., having a digital twin of individual products, i.e., a particular kind of assembly or a particular kind of tolerance to have several of what we have measured. Next is the digital twin aggregate which can predict the problems and fix them, i.e., predict how these products are going to work when they go to the assembly line.

The digital twin capabilities are given below:



Figure 3

AI comes into play in the digital twin of "cued ability" where the problems are determined and avoided to achieve the goal of not wasting resources.

-Syam Chandran K

EVENTS

Highlights of the Month:

- Organized Career Guidance Programme on “Career Avenues Through Education Abroad” by Jamboree Education, Bangalore held on 16.08.2022.
- Organized ECE Department’s Association, CUESTIC-2022 Annual Inauguration program inaugurated by Col. Prashant Jha, Technology Project Leader and Author, and delivered an inaugural speech on “Emerging Technologies” held on 24.08.2022.
- Dr. Shobhana Mathews, Professor & Head, Department of English and Cultural Studies, CHRIST (Deemed to be University), Dr. Pukhraj Agarwal, Assistant Professor, Department of Law, CHRIST (Deemed to be University) and Dr. Sheeja Remani B Karalam, Professor, Department of Sociology and Social Work, CHRIST (Deemed to be University) visited as Internal Auditors for IQAC Internal Academic Audit 2020-2021 held on 29.08.2022.
- Prof. Deepak Jose and Prof. Syam Chandran K successfully defended their Ph.D. thesis on 05.08.2022 and 24.08.2022 respectively.
- IQAC Internal Academic Audit 2020-2021 has been conducted on 29.08.2022. Department IQAC coordinator Prof. Sushanth. G and Dr. Kishore Kumar coordinated during the audit session.
- Jonnagiri Likhidhar Reddy (2060657) 5BTEC Student under the guidance of Dr. Sarwesh P has been shortlisted in the Top 50 of “Samsung Solve for Tomorrow Competition” and Received Samsung Vouchers up to Rs.1,00,000 Grant to study online courses, Mentorship and Regular Training by FITT, IIT Delhi.
- Dr. Praghash.K published an article “Optimization and Design of a Sustainable Industrial Grid System”, in Mathematical Problems in Engineering Journal.
- Dr. Chidambaram.S journal article entitled as “Hybrid Sparse and Block-based Compressive Sensing Algorithm for Industry based Applications” has been accepted for publication in International Journal of Enterprise Network Management, August 2022.

STUDENT CONNECT

Resoluteness

As firmness--A firm or unwavering adherence to one's purpose. Ever wondered what the actual purpose of life is? Purpose can guide life decisions, influence behavior, shape goals, offer a sense of direction, and create meaning.

In the realm of living species, elephants have the largest brains of any land animal. The cortex of an elephant's brain has three times as many neurons as the human brain. Dolphins are often cited as the smartest animals on the earth due to their well-developed metacognition. The chimpanzee is another great ape, having impressive intellectual abilities. In addition to having more neurons in the association cortex, brain imaging studies comparing the brains of humans to other primates show humans having a great number of fibers connecting the brain regions involved in such specialized functions as language, tool making, reasoning, and social cognition. The combination of skills and abilities that allow animals to live in and adapt to their specific environment.

Among all of them, 'humans' stand out as being especially gifted. Having a strong culture and system of communication and how we have evolved. As a number, a 'petabyte' means 1024 terabytes or a million gigabytes, so the average adult human brain can store the equivalent of 2.5 million gigabytes of digital memory. Despite that, humans use only a small fraction of our brain tissue. On one side, it explores what it takes to enhance one's life to its maximum potential; on the other is the chaotic edge of existence. Humans have come a long integral way, from hunting our food to growing it to ordering it over the phone. While the progress is turning to be saturated in a certain way. Humans aren't just making the earth warmer; however, they are a testimony to the climate chaos, global pandemic, highest unemployment rate, intolerance, hate speech, and conflict.

According to studies, developing an intelligence quotient in addition to an emotional quotient, social quotient, and adversity quotient is necessary. Whereas we are living in a moment of global chaos. Chaos does not mean the complete absence of order but suggests a level of turbulence, fragility, and contemporary geopolitical uncertainty. Unpredictability and instability become the norm. Chaos and governance in the modern world system address the controversies affecting a range of fields. The recent deceleration of normalizing has been affecting us in drastic ways. It's the ability to fit things into a narrative that flatters our ability to reason, sometimes the aim of conscious attempts to manipulate the norm of changing attitudes. Inequality is a threat to our social fabric. Inequality is not confined to humans. Animals are divided by privilege, too.

Contemporary events reveal that there is growing intolerance, refusal of beliefs, opinions, and discriminatory responses every day.

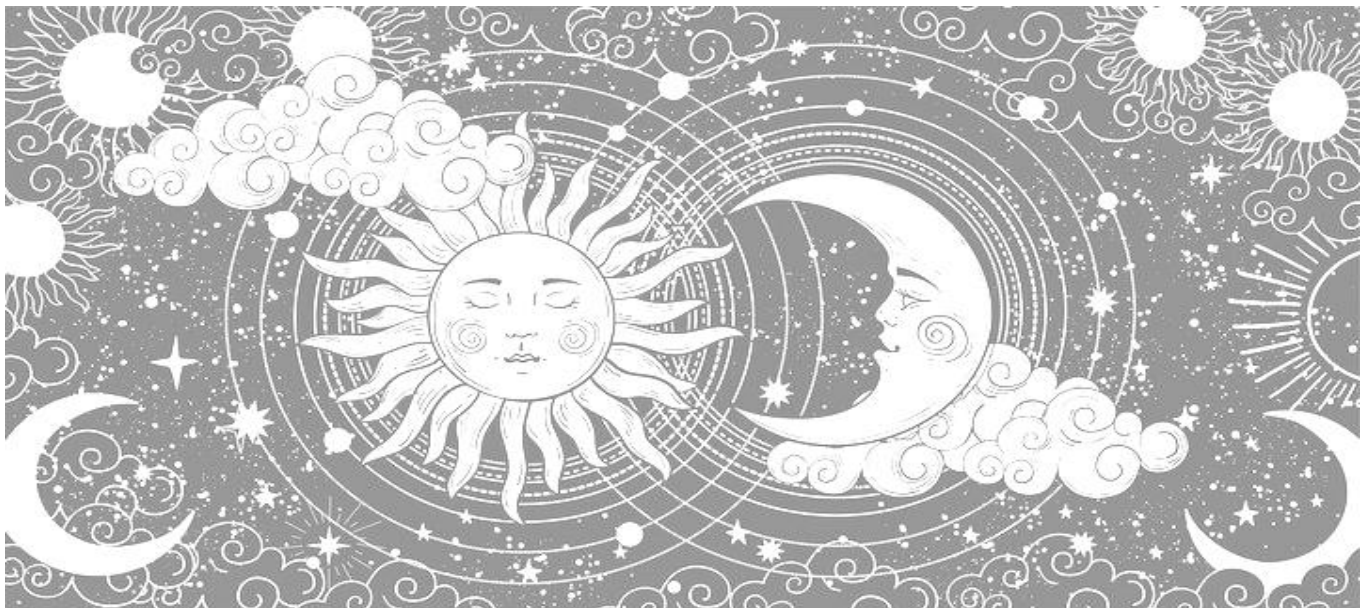
Intolerance is a state of mind or disbelief when a person disagrees with a particular caste, subject, or religion in a society. Intolerance can be very destructive and disturbing to the country's peace. Religion, and race is an embodied phenomenon that may fill the human need for finding meaning, sparing us from existential angst while also supporting social organizations. It also proliferates the form of practice for social interactions that can improve psychological health. In current times, in the fast-moving advancements, cultural identity has often been misused to divide people rather than unite them. The transformation of organized practices, and beliefs into a weapon used to ostracize and demean rather than comfort. Similarly, social media hampering information is one of the offenses which has been a trigger, personally and socially. Time and understanding are quite the essentials in life. While we live our regularly imperfect and certain changes that occur to us in waves. Many times, we think we could have done a few things better if we had this ability and the understanding present with us, today.

A craving for a better understanding of the distorted life we live in. Understanding the gigantic possibilities of it is quite a thought. Every hour, every minute that ticks forward, we are being pushed through the dimension we know as time. It is hard to understand the time and the paradoxes within it. The truth is we always don't end up with something we feel is deep and meaningful. Some chapters of our lives are filled with fogged lenses.

One of the keys to staying sane and enjoying most of life is boosting your brain activity. Studies show an increase in brain activity enables a much more humble, self-critical, and creative brim in our lives. Meditation sought to define and characterize various practices. Meditation is shown to thicken the pre-frontal cortex, it also changes your neural circuitry in ways that make you more compassionate. The superior parietal cortex is related to attentional function developed during the practice of mindfulness meditation.

In a representative case, imagine waking up every day with 84600 dollars in your bank account, and every day at the end of the night, it's gone whether one wastes it or not. The next day you get another 84600 dollars, you would do anything in your power to spend it because you know the next day, you would get another 84600 dollars. You want to leave nothing there, you make the best of it, right? You get 84600 seconds, why waste time? It doesn't carry over to the next time, it doesn't earn interest.

Now taking every day, every moment of it to make something positive out of it. Yet the thought where it somewhere perfectly fits out blank spaces of our lives of some bizarrely blank moments for a greater meaning to life.



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Kindly share your thoughts and research experiences via e-mail with our team, and befeatured in next month's issue!