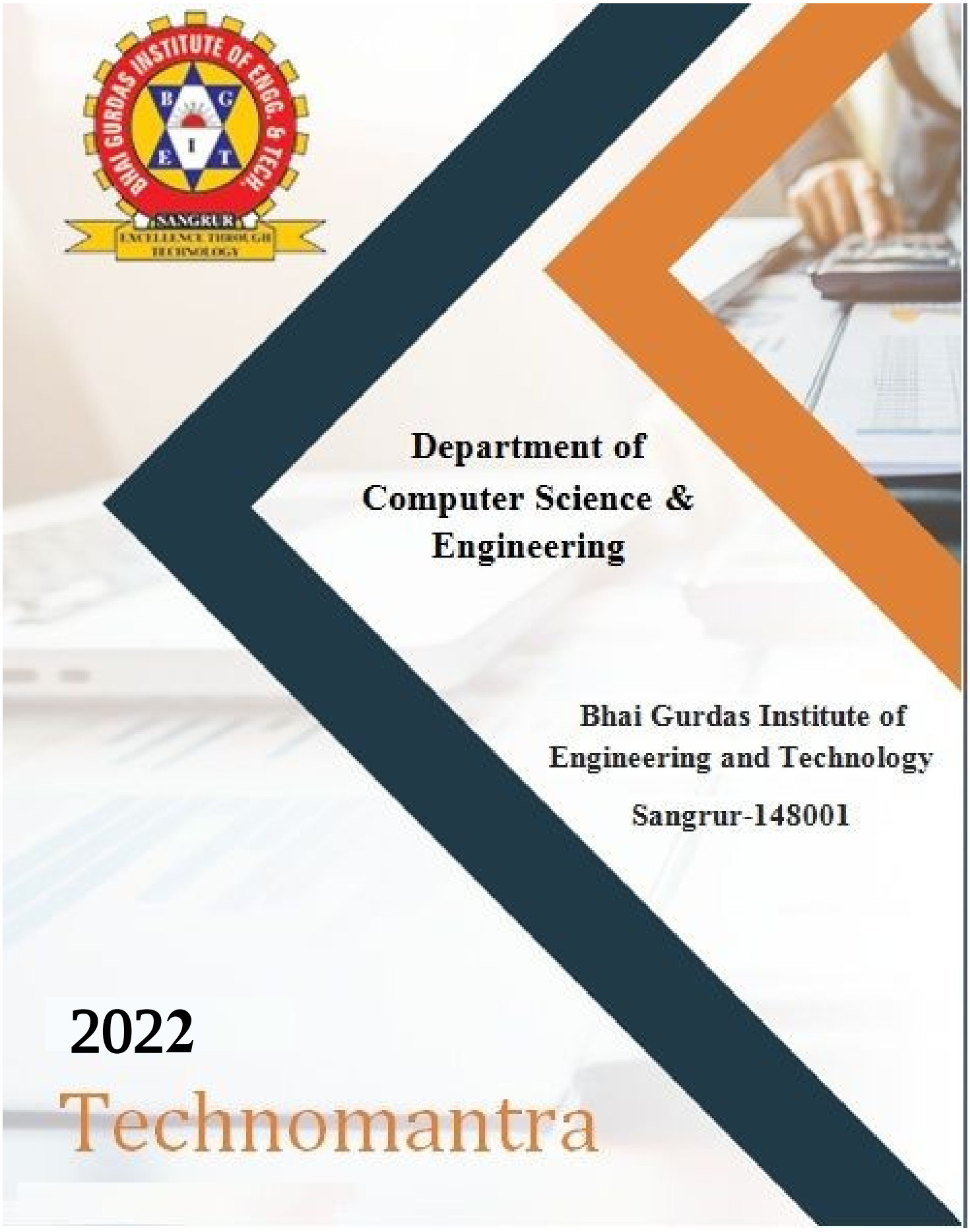

Department of Computer Science & Engineering

Bhai Gurdas Institute of Engineering and Technology

Sangrur-148001

2022

Technomantra

Message

Dr. Guninderjit Singh Jawandha
Chairman
Bhai Gurdas Group Of Institutions

From Chairman Desk

I am delighted to have the opportunity to release "Technomantra', the annual college magazine. In this era of cut throat competition, apart of study. one needs to have the holistic development of personality & this is our prerogative to chisel your thinking & persona here. The magazine will act as a platform for your creativity & writing aptitude & I intently believe that you would have an all round development of your personality during your sojourn in this temple of learning.

I congratulate the Director, staff & students for publishing "Technomantra'. I hope this issue would be meaningful, enjoyable & memorable in achieving its objectives.

Dr. Gurinderjit Singh Jawandha
Chairman
Bhai Gurdas Group Of Institutions

Message

(Prof) Dr. Tanuja Srivastava
Director
Bhai Gurdas Institute of Engineering & Technology

From Director's Desk

It is a matter of great pleasure for me to learn that Editorial Board is bringing out an issue of the College magazine 'technomantra'. I would like to appreciate those who have contributed articles for the college magazine as this shows the hard work, and the hidden potential of the students.

I hereby congratulate those who contributed for the college magazine and welcome those who want to avail the opportunity next time.

(Prof) Dr. Tanuja Srivastava
Director

Dr. Arun Kumar Singh

(H.O.D)CSE DEPTT.

From Head of Department Desk

I am happy that department of cse is publishing yet another issue of “Technomantra 2021” This magazine is by the student & for the Students. It aims at providing a platform to the students to explore their latent Capabilities & talent, to express their creativity and to develop their technical skills As you scan through the pages of the magazine, It will enlighten you with the important milestone the department has achieved this year. Beside, Our budding talent have expressed their thoughts, ideas, hopes, feelings, aspirations & Convictions in a creative way.

I Congratulate the editorial board for unleashing the hidden potential of the students & appreciate them for their effort in bringing out their issue.

Wishing the magazine a lasting success.

Dr. Arun Kumar Singh (H.O.D)
CSE DEPTT.

Er. Yogesh Kumar
Assistant Prof. CSE DEPTT.

From Editor's Desk

It gives us great pleasure to bring you another issue of Technomantra, the college magazine of Bhai Gurdas Institute of Engineering & Technology. The name and fame of an institute depends on the caliber and achievements of the students and teachers. The role of a teacher is to be a facilitator in nurturing the skills and talents of students. This magazine is a platform to exhibit the literary skills and innovative ideas teachers and students. Technomantra presents the achievements of students and contributions of teachers. We would like to place on record our gratitude and heartfelt thanks to all those who have contributed to make this effort a success. We profusely thank the management for giving support and encouragement and a free hand in this endeavor. Last but not the least we are thankful to all the authors who have sent their articles. We truly hope that the pages that follow will make an interesting read.

Er. Yogesh Kumar
Assistant Prof.
CSE DEPTT.

Vision of the Department:

To be a center of excellence in technical education, research and support services to produce comprehensively trained, innovative Computer Science Engineers of highest quality to contribute to the Nation's development

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Mission of the Department:

1. Create an environment of skill learning through faculty training, online learning, sound academic practices and research endeavors.
2. Provide opportunities to promote organizational and leadership skills in students through various extra- curricular and co-curricular events.
3. To uplift innovative research in Computer Science and Engineering to serve the needs of industry, Government and society.
4. Providing social awareness and responsibility in students to serve the Nation and to protect environment.

PEOs

1 **Technical Expertise**: Implement domain knowledge of core courses for developing effective computing solutions by incorporating creativity and logical reasoning.

2 **Successful Career:** Deliver professional services in the field of Computer Science to respond swiftly to the challenges of 21st century.

3 **Soft Skills:** Develop leadership and interpersonal skills with effective communication & time management in the profession.

4 **Life Long Learning**: Produce globally competent graduates with moral values and ethics for personal and professional development.

Contents

Computing Power

Computing power will continue to explode in 2022. We now have considerably better cloud infrastructure, and many businesses are re-platforming to the cloud.

We are also seeing a push towards better networks – 5G is being rolled out, and 6G is on the horizon. That means even more power in our phones, in our cars, and in our wearable devices. You might wonder how many instructions one processor must have in order to be as powerful as another. The answer is: the above set of instructions is more than enough. But the idea of computer "power" is somewhat vague. Sometimes people use it to mean "speed" and sometimes to mean "what a processor can compute." Usually it means a fuzzy combination of both. Let us use the following definition:

Computing Power: Two processors have the same computing power if they can run the same programs (after translation into each processor's machine language) and produce the same results. For example, say that two processors have the same power. Then if one processor can run a particular program, then the other one must be able to run it, and both processors produce the same result. This must be true for all programs (after appropriate compilation into the machine language for each processor).

Narinder Gautam
1801529
CSE- 8TH Sem

Smarter Devices

Growing computer power is enabling us to create smarter devices. We now have intelligent televisions, autonomous cars, and more intelligent robots that can work alongside humans to complete more tasks.

In 2022, we'll see continued momentum for this smart device explosion, including the introduction of intelligent home robots.

Smart devices are all of the everyday objects made intelligent with advanced compute, including AI and machine learning, and networked to form the internet of things (IoT). Smart devices can operate at the edge of the network or on very small endpoints, and while they may be small, they are powerful enough to process data without having to report back into the cloud. They range from sensors to refrigerators and wearables to container transportation, capable of running autonomous workloads.

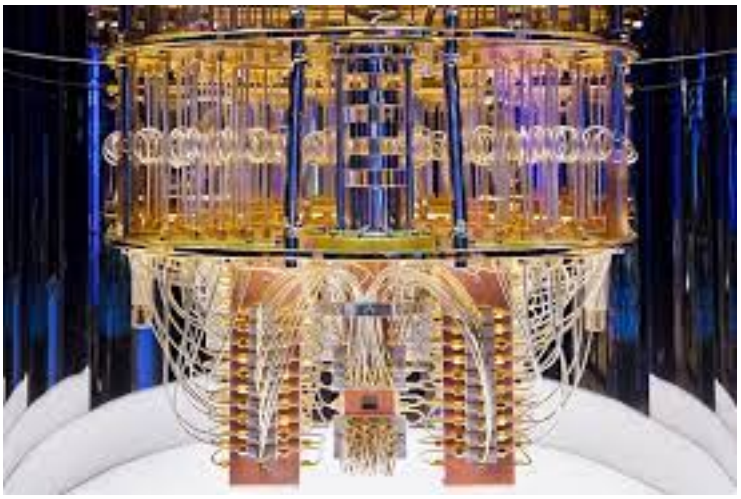
Smart devices can be combined to bring intelligence to both objects and spaces, such as smart homes and buildings, and can help automate processes and controls. They can be used in almost any industry, from smart manufacturing to healthcare, helping to improve efficiency and optimize operations.

Anmol Noor
1801497
CSE- 8th Sem

Quantum Computing

The trend of quantum computing — the processing of information that is represented by special quantum states – enables machines to handle information in a fundamentally different way from traditional computers. Quantum computing will potentially give us computing power that is a trillion times more powerful than what we get from today's advanced supercomputers.

I predict that in 2022, quantum computers could fundamentally change how we approach problems like logistics, portfolio management, and drug innovations.



There are several types of quantum computers (also known as quantum computing systems), including the quantum circuit model, quantum Turing machine, adiabatic quantum computer, one-way quantum computer, and various quantum cellular automata. The most widely used model is the quantum circuit, based on the quantum bit, or "qubit", which is somewhat analogous to the bit in classical computation. A qubit can be in a 1 or 0 quantum state, or in a superposition of the 1 and 0 states. When it is measured, however, it is always 0 or 1; the probability of either outcome depends on the qubit's quantum state immediately prior to measurement.

Anmol Noor
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CSE- 8th Sem

Datafication

Datafication refers to the collective tools, technologies and processes used to transform an organization to a data-driven enterprise. This buzzword describes an organizational trend of defining the key to core business operations through a global reliance on data and its related infrastructure.

Datafication is also known as datafy. An organization that implements datafication is said to be datafied.

Anmol Noor
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CSE- 8th Sem

Extended Reality

We now have more augmented reality (AR) capabilities on our devices (particularly our phones and tablets), and we're seeing an even bigger push toward virtual reality (VR). In 2022, we'll see new, lighter, more portable VR devices, so instead of having clunky headsets that require WiFi connections, we will have devices that are more like glasses that connect to our phones and give us superior VR experiences on the go.

These extended reality advances pave the way for incredible experiences in the meta-verse, a persistent, shared virtual world that users can access through different devices and platforms.

Extended reality (XR) is a term referring to all real-and-virtual combined environments and human-machine interactions generated by computer technology and wearables.[1][circular reference] E.g. It includes representative forms such as augmented reality (AR), mixed reality (MR) and virtual reality (VR)[2] and the areas interpolated among them. The levels of virtuality range from partially sensory inputs to immerse virtual, also called VR.
XR is a superset which includes the entire spectrum from "the complete real" to "the complete virtual" in the concept of reality–virtual continuum introduced by Paul Milgram. Still, its connotation lies in the extension of human experiences

Narinder Gautam
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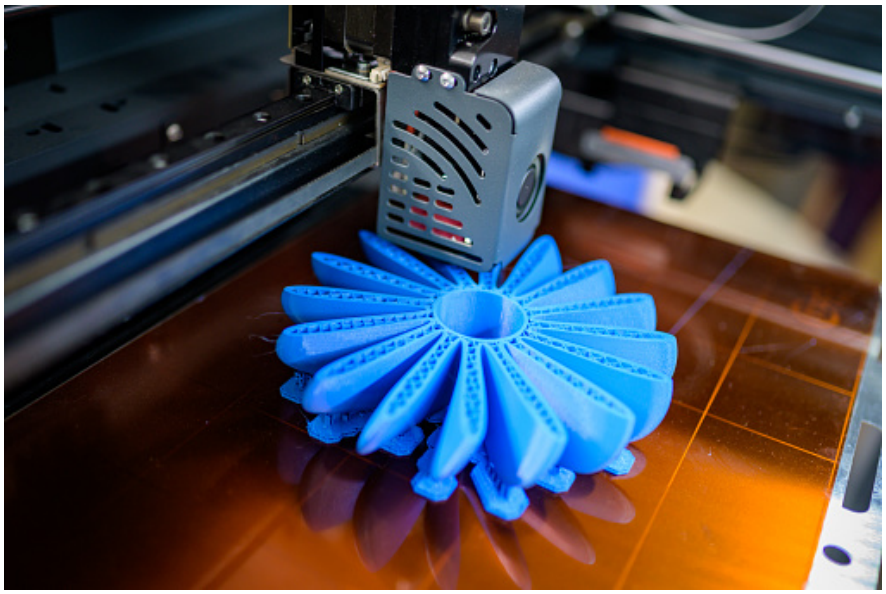
CSE- 8TH Sem

Digital Trust

Blockchain technology, distributed ledgers, and non-fungible tokens (NFTs) are transforming our world, and we will continue to see advances in this technology in 2022. These innovations go beyond Bitcoin to things like smart contracts that allow us to verify ownership with NFTs. This year, we will see more companies and individuals enhancing physical objects with blockchain technology and tokens.

The increased connection between businesses, government, industrial equipment and personal devices is generating increased cyber and privacy risks. Since most businesses are now working digitally in some way, their success is impacted by trust as much as it is by designing new products. As consumers share more and more personal information online with different businesses, they put more at risk and the importance of their confidence in the company increases.

DALWINDER SINGH
1801501
CSE- 8th Sem



3D Printing

We can now make things with 3D printing that we would never have dreamed of a decade ago. In 2022, we'll see transformations in manufacturing and beyond, from 3D printing technological innovations, including mass-produced customized pieces, concrete for houses, printed food, metal, and composite materials.

3D printing, or additive manufacturing, is the construction of a three-dimensional object from a CAD model or a digital 3D model. The term "3D printing" can refer to a variety of processes in which material is deposited, joined or solidified under computer control to create a three-dimensional object,with material being added together (such as plastics, liquids or powder grains being fused together), typically layer by layer.

In the 1980s, 3D printing techniques were considered suitable only for the production of functional or aesthetic prototypes, and a more appropriate term for it at the time was rapid prototyping. As of 2019, the precision, repeatability, and material range of 3D printing have increased to the point that some 3D printing processes are considered viable as an industrial-production technology, whereby the term additive manufacturing can be used synonymously with 3D printing.One of the key advantages of 3D printing is the ability to produce very complex shapes or geometries that would be otherwise impossible to construct by hand, including hollow parts or parts with internal truss structures to reduce weight. Fused deposition modeling (FDM), which uses a continuous filament of a thermoplastic material, is the most common 3D printing process in use as of 2020.

MANVI GARG
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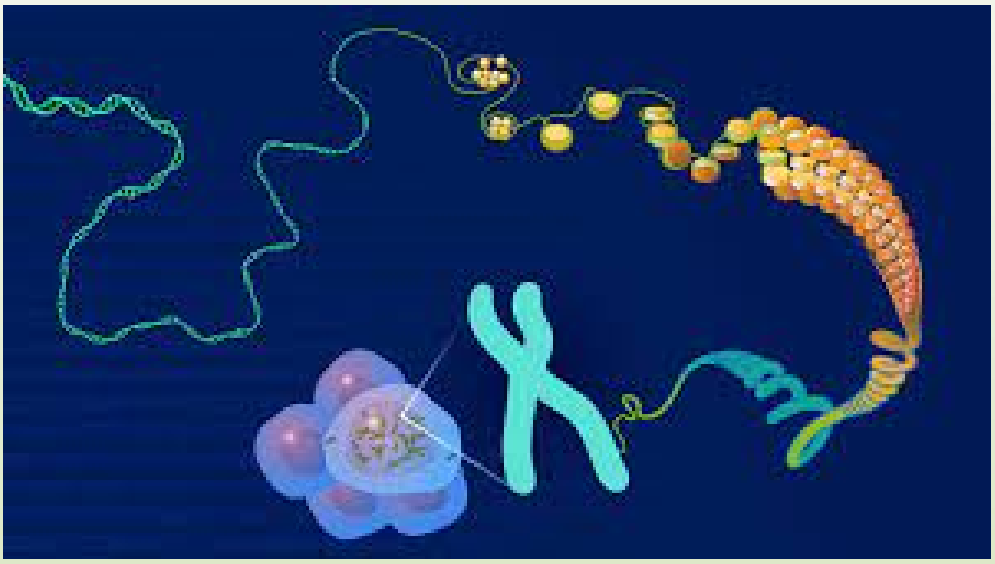
CSE- 8TH Sem

Genomics

The 2020 Nobel Prize in Chemistry was awarded to two scientists, Emmanuelle Charpentier and Jennifer A. Doudna, for their work developing a method for genome editing. Genomics, gene editing, and synthetic biology are a top trend of 2022 because these advancements can help us modify crops, cure and eradicate diseases, develop new vaccines like the COVID-19 shot, and other medical and biological breakthroughs.

Nanotechnology will also allow us to give materials new attributes by manipulating them on a subatomic level, so we can create things like bendable screens, better batteries, water-repellent, self-cleaning fabrics, and even self-repairing paint this year.



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New Energy Solutions

The last hugely important trend is new energy solutions. As we tackle climate change, we'll see continued advances in the batteries we use in our cars, as well as innovations in nuclear power and green hydrogen. These new trends will allow us to power our ships, our planes, our trains and generate energy for the general public.

A new source of renewable energy is under careful observation. Scientists at the Neutrino Energy Group, a research institute in Berlin, Germany, call it neutrinovoltaic energy. At the core of this new energy lies the neutrino particle, a tiny subatomic particle emitted along with an electron during the decay process, discovered at the beginning of the 20th century. A worldwide team of scientists, various international research centers and universities, and the U.S. Department of Energy, which has announced massive neutrino research programs, have started studying the neutrino in earnest. They have found that neutrinovoltaic technology presents a solution that never stops working as these invisible particles bombard the Earth in equal numbers every moment of every day.

Neutrino energy is the equivalent of harvesting energy from our surroundings, regardless of weather conditions, and can pass through almost every substance known to science. In addition, this type of technology harnesses the untapped power of electrosmog, which is the electromagnetic energy produced by man-made electronic devices.

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Andriod OS 12

Android 12 was confirmed back at Google IO 2021 in June, showcasing a revamped look and features that focus more on privacy and interactivity.

We've since seen the public beta release show off refreshed notifications, better screenshot support, one-handed mode and much more.

And after the Pixel 6 launch event, Google launched the software update, and it's available now for older Pixel phones – though the company hasn't confirmed which phones are compatible (we suspected the Pixel 3 might be the oldest phone to get the update given it was the threshold for the Android 12 beta).

Then, devices from Samsung, OnePlus, Oppo, Realme, Tecno, Vivo, and Xiaomi are set to get Android 12 later this year.

It will be up to device manufacturers to bring Android 12 to your phone though, and that often takes months to do, so don't be surprised if your specific handset isn't able to update to Android 12 until 2022.

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