KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE – 638107

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT Bulletin

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EDITORIAL BOARD

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DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 01.07.2023**

ROBOTIC PROCESS AUTOMATION (RPA)

Robotic process automation (RPA), also known as software robotics, uses automation technologies to mimic back-office tasks of human workers such as extracting data, filling in forms, moving files etc. It combines APIs and user interface (UI) interactions to integrate and perform repetitive tasks between enterprise and productivity applications. By deploying scripts which emulate human processes, RPA tools complete autonomous execution of various activities and transactions across unrelated software systems.

How does RPA work?

RPA software tools must include the following core capabilities:

1. Low-code capabilities to build automation scripts
2. Integration with enterprise applications
3. Orchestration and administration including configuration, monitoring and security Automation technology like RPA can also access information through legacy systems, integrating well with other applications through front-end integrations. This allows the automation platform to behave similarly to a human worker, performing routine tasks such as logging in and copying and pasting from one system to another. While back-end connections to databases and enterprise web services also assist in automation, RPA's real value is in its quick and simple front-end integrations.

Submitted by

ABARNA A J

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 03.07.2023**

BEAMFORMING

Beamforming is a technique used to improve the signal-to-noise ratio of received signals, eliminate undesirable interference sources and focus transmitted signals to specific locations. Beamforming is central to systems with sensor arrays, including MIMO wireless communications systems such as 5G, LTE and WLAN. MIMO beamforming in wireless applications can also be used to increase data stream capacity between a base station and user elements. Optimization-based beamforming techniques are becoming more popular in modern wireless communication systems. These techniques include hybrid beamforming, where optimization is used to efficiently partition system architectures between baseband and RF systems to reduce the cost.

Beamforming Applications

Beamforming is also widely used in radar, sonar, medical imaging and audio applications. Beamformers can be used to focus transmitted signals from a sensor array in a specific direction. For received signals at a sensor array, beamformers enhance detection by coherently summing signals across elements of arrays. Conventional beamformers have fixed weights while adaptive beamformers have weights that respond to the environment. For narrowband signals, beamforming can often be achieved by multiplying the sensor input with a complex exponential with the appropriate phase shift. example. In the case of wideband signals, the steering is no longer a function of a single frequency and the operation may need to be carried out in multiple frequency bands.

Submitted by

ABINESH R

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 04.07.2023**

Web 3.0

Web 1.0 was “Read-Only”, Web 2.0 is “Read-Write”, and you can imagine Web 3.0 as “Read-Write and Execute”. This is the next level of internet where the internet will be more interactive and immersive and will be led by user generated content and interaction. For example, to imagine next level of AI in Web 3.0. AI would be used for natural language processing, to recognize emotions and facial expressions to render relevant content.

Features of Web 3.0

Web 3.0 is explained best through its features, namely ubiquity, decentralization, artificial intelligence and semantic web interactivity. Some Web 3.0 technologies have already emerged such as the decentralized concept that underpins blockchain. Other Web 3.0 meanings are yet to be understood, let alone created.

Blockchain technology was created to facilitate cryptocurrency the digital currencies that are decentralized (not controlled by central banks) and that are set to play a large role in Web 3.0. known as Web 3.0 cryptos, these currencies and other digital assets like NFTs will be used to incentivize users and service providers, letting people transact directly with one another without having to go through third-parties like conventional banks.

Decentralization

Web 3.0 envisions a truly decentralized internet, where connectivity is based completely on peer-to-peer network connections. This decentralized web will rely on blockchain to store data and maintain digital assets without being tracked.

Submitted by

ABISHEK G

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 05.07.2023**

BLOCKCHAIN

A block chain is a distributed ledger with growing lists of records (blocks) that are securely linked together via cryptographic hashes. Each block contains a cryptographic hash of the previous block, a timestamp and transaction data (generally represented as a Merkle tree, where data nodes are represented by leaves). Since each block contains information about the previous block, they effectively form a chain (compare linked list data structure), with each additional block linking to the ones before it. Consequently, block chain transactions are irreversible in that, once they are recorded, the data in any given block cannot be altered retroactively without altering all subsequent blocks.

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Submitted by

BARATH.C.S

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 06.07.2023**

AI TRAINED TO RECOGNISE WASTE FOR RECYCLING

Discarded single-use plastic ends up anywhere but a landfill," wrote Mr Swope. "The only way out of the plastics crisis is to stop depending on it in the first place." So called greenwashing is a big problem, says Ms Druckman. "We've seen a lot of claims about eco or green packaging, but sometimes they are not backed up with real fact and can be very confusing for the consumer." To help retailers know that used plastic bottles are in fact being recycled and in what numbers, UK-firm Polytag covers them with an ultraviolet (UV) tag that is not visible to the human eye.When the bottles then arrive at the determined recycling plants, the tags are read by a Polytag machine. The number of bottles is then uploaded to a cloud-based app in real time which Polytag's customers can access.

To make it easier for people to recycle and encourage more to do so, the UK government and the administrations in Wales and Northern Ireland are due to launch a deposit return scheme in 2025.

This is due to see "reverse vending machines" located in shops and other public areas, where people will be able to deposit used plastic bottles and metal drinks cans and be paid money for doing so - around 20p per item.

Submitted by

DHANUSH P

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 07.07.2023**

LLAMA 2

Meta and **Microsoft** have jointly announced the expansion of their artificial intelligence partnership by introducing their new large language model (LLM) called "**Llama 2**". This cutting-edge language model is now available for both research and commercial use, making it a potential competitor to ChatGPT (OpenAI) and Bard (Google). The offering of Llama 2 for free enhances its accessibility and usability in various domains

Llama 2: Features

- Llama 2 comes in three different sizes: 7B, 13B and 70B.
- This new large language model (LLM) demonstrates superior performance compared to other open-source LLMs across various external benchmarks, excelling in reasoning, coding proficiency and knowledge tests.
- Pre-trained on publicly available online data sources, the Llama-2-chat which is a fine-tuned model, makes use of publicly available instruction datasets and benefits from over 1 million human annotations.

Submitted by

DINESH B

II B.Sc. CT

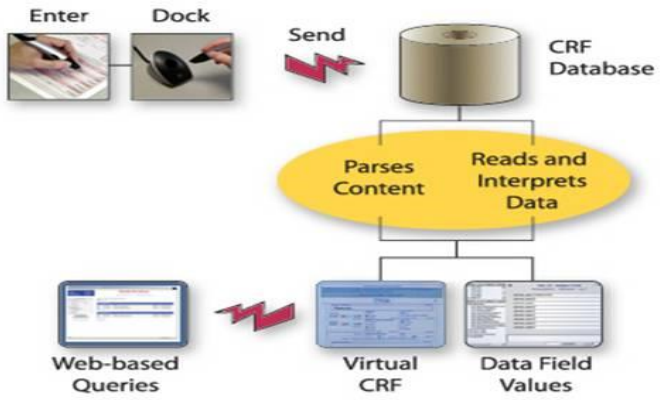
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 10.07.2023**

SMART NOTE TAKER TECHNOLOGY

PC Notes Taker is the world's first device that captures natural handwriting on any surface onto a PC in real time. Based on a revolutionary electronic pen, PC Notes Taker displays the user's handwritten notes, memos or drawings on the computer and stores the image for future use. PC Notes Taker is ideal for markets where handwritten input is essential such as health, educational and financial sectors. Supplied with user-friendly software, PC Notes Taker is compatible with PCs and notebooks.



Adds Handwriting Input to any Computer PC Notes Taker is the world's first device that captures natural handwriting on any surface onto a PC in real time. Based on a evolutionary electronic pen, PC Notes Taker displays the user's handwritten notes, memos or drawings on the computer and stores the image for future use. PC Notes Taker is ideal for markets where handwritten input is essential such as health, educational and financial sectors. Supplied with user-friendly software, PC Notes Taker is compatible with PCs and notebooks.

Submitted by
DINESH S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 11.07.2023**

3D printing technology A "Game Changer"

A novel 3D printing method called High-Throughput Combinatorial Printing (HTCP) significantly accelerates the discovery and production of new materials.

The process involves mixing multiple aerosolized nanomaterial inks during printing which allows for fine control over the printed materials' architecture and local compositions. This method produces materials with gradient compositions and properties and can be applied to a wide range of substances including metals, semiconductors, polymers and biomaterials.

The time-honored Edisonian trial-and-error process of discovery is slow and labor-intensive. This hampers the development of urgently needed new technologies for clean energy and environmental sustainability as well as for electronics and biomedical devices.

This method is called high-throughput combinatorial printing (HTCP) controls both the printed materials' 3D architectures and local compositions and produces materials with gradient compositions and properties at microscale spatial resolution.

Submitted by

DINESHKUMAR P

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 12.07.2023**

ECORECO: A Torchbearer of the E-Waste Recycling Revolution in India

Eco Recycling Ltd (Ecoreco) is India's first and leading professional E-waste Management Company that has set industry benchmarks time and again with its innovative & environment friendly disposal practices.

As the industry pioneer and market leader, Ecoreco provides an end to end seamlessly integrated solution for e-waste management to Multi-National Companies (MNC), Indian Multi-National Corporates (Indian MNC), other Corporates, Retailers, Bulk Consumers, Original Equipment Manufacturers (OEM), Government Departments, NGOs, Households, Philanthropy Organisations, Educational Institutions and all other entities willing to discard their e-waste in an environment friendly manner.

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Submitted by

DIVIT K V

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 13.07.2023**

A "SUPER PROTECTIVE" MASK

It was the idea of Matthieu Gaston, a curious and creative young man with cystic fibrosis. As a globetrotter dreaming of being able to go wherever he wanted without fearing for his health, he imagined a solution that would allow everyone to move more freely in all polluted environments.

After 24 months of Research & Development, in partnership with the INSA / Laboratory of Fluid Mechanics and Acoustics, AIRXÔM launches an active respiratory protection device, a sustainable solution that:

Filters atmospheric pollutants (Volatile Organic Compounds and Carbon Monoxide, Nitrogen Oxides etc.),

Inactivates microorganisms (viruses, bacteria, molds, etc.)

Filters pollen, dust and fine particles (PM10, PM2.5).

Submitted by

DURAIMURUGAN K

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

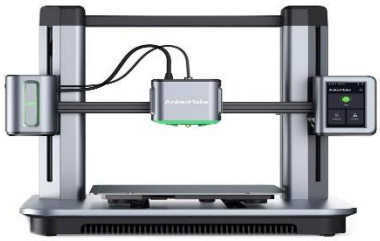
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 14.07.2023**

ANKER ANKERMAKE M5 3D PRINTER

The AnkerMake M5 is our top 3D printer recommendation for most consumers because it can crank out complex objects at best-in-class speed, including elaborate ones that use multiple filament materials. The splurgeworthy product is also elegant and easy to operate via a touchscreen and a companion app.

Other noteworthy features of the AnkerMake M5 include a built-in camera for keeping an eye on the progress of your prints and a die-cast aluminium structure that's sleek and sturdy in equal measure.



- Prints five times faster than the competition so you aren't waiting around
- A robust build for smooth, quiet, high-quality printing despite that speed
- Three-step setup so you're printing just 15 minutes "from the time M5 arrives at your door"
- An "AI camera" to save you if your print fails and make sure it "comes out exactly to your specifications"
- Remote control, notifications and HD viewing over the internet
- Automatic timelapse videos you'd want to share to social media

Submitted by

ESWARAN R

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 15.07.2023**

GPS SMARTSOLE

GPS SmartSole - Tracking for Elderly and Alzheimer's is a GPS device sealed and hidden inside a shoe insole. This ergonomic insoles uses GPS and cellular connectivity like the smartphone to send location updates to the GTX Corp Monitoring System.

The Monitoring System sends out geozone alerts to the caregivers online account or his Smart Locator app. Caregivers will receive text and email messages including links to the last known location of the person.

This tracker is developed especially for an elderly person living with Dementia and Alzheimer's. They are the one commonly exhibiting the habit of wandering; one that can cause great stress to carers and family. By relying on the cutting-edge technology like the GPS trackers, you can significantly lower the safety risks involved with this habit.

SmartSoles let one remotely monitor loved ones at risk of becoming disoriented. No need for them to remember to carry a separate device, they just slip on their shoes and go – like they normally would. This wearable GPS tracker system capitalizes on procedural memory which means even those with advanced memory disorders typically remember to wear shoes!

Submitted by

GOBIKA N

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 17.07.2023**

GRANDPAD

The GrandPad is an easy-to-use tablet designed for not so very tech-savvy seniors in mind. It's simple-to-use and hassle free apps allow seniors to listen to music, play games and browse safely on the internet.

The large buttons and intuitive interface make the GrandPad a simple tablet for seniors who are ready to start video chatting and sharing memories with family and friends around the world.

Family members can also upload photos and adjust settings for the GrandPad user. The device's essential apps and services remove the clutter, distractions and complications of other devices allowing seniors to simply and instantly connect with any ones.

Submitted by

HARAN AP

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 18.07.2023**

VIRTUAL REALITY

Virtual reality immerses you in a virtual world through the use of a **headset** with some type of screen displaying a virtual environment. These headsets also use a technology called **head tracking** which allows you to look around the environment by **physically moving your head**. The display will follow whichever direction you move, giving you a 360-degree view of the virtual environment.

The first type has a **screen built in to the headset**. These devices connect to a computer and require a pretty powerful system to operate smoothly. They have great graphics and perform well, but they're also **pretty expensive**. A few popular examples of these include the Oculus Rift, the Vive and the PlayStation VR which connects to the PlayStation 4 game console.

The other type of headset **houses your phone and uses its screen as the display**. These don't require a computer and run completely off of apps on your smartphone. The graphics and performance levels on these headsets aren't quite as good as those with a built-in screen, but they do tend to be **much cheaper**. Some popular examples include Google Cardboard and the Gear VR.

Submitted by

HARI VISHNU S M

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 19.07.2023**

WeWALK

WeWALK attaches to the traditional white cane, transforming it into an innovative smart cane. This technology increases visually impaired people's independence and promotes full-participation in society via three of its features.

1. **Detects Obstacles:** WeWALK detects obstacles above chest level with an ultrasonic sensor and vibrates when these objects are near.
2. **Paired with Phone:** When paired with the WeWALK mobile application via Bluetooth, the user can use apps with WeWALK's touchpad, without holding his or her phone. For example, the user can get navigation on the WeWALK device.
3. **Evolves with Integrations:** WeWALK is integrated with "Google Maps" and "Amazon Alexa." In the future, WeWALK will be integrated with Smart City Applications. These new integration features are installed through periodic software updates.

Submitted by
HARIHARAN R
II B.Sc. CT

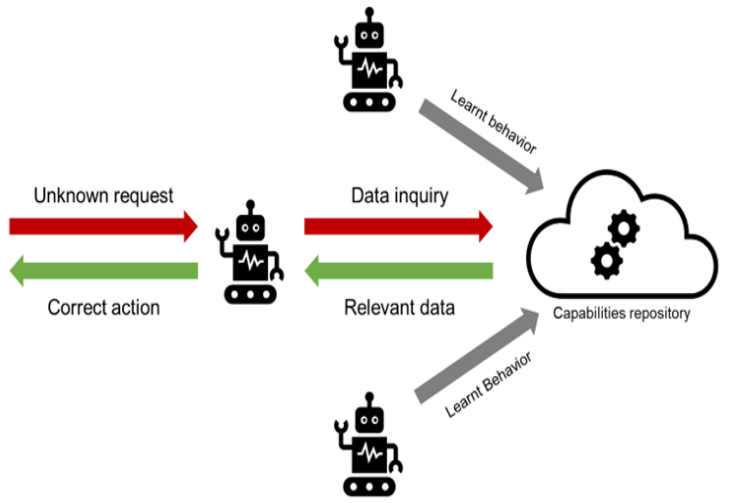
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 20.07.2023**

ROBOT KNOWLEDGE SHARING

Whether they are in factories, in warehouses, at home, or on the street, robots are impressive yet profoundly stupid. They work well in highly controlled environments, but every new situation stumps and/or breaks them which tends to be very expensive. "*Robot knowledge sharing*" technology changes that. Researchers pushing the concept forward aim to create a standardised way for robots to share information with each other.



That information would be gathered through trial and error (aka reinforcement learning) which we know to be an efficient way for AIs to learn. It could take many forms, from the simple knowledge that an obstacle has appeared on a road, to the ability to grab a complex shape. Efficiency will go up exponentially and costs will decrease at breakneck speed.

Submitted by

HARINI M

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 21.07.2023**

GENERATIVE DESIGN

Generative design is a technology in which 3D models are created and optimized by cloud computing and AI. A user sets up requirements for the model such as manufacturing processes, loads and constraints and then the software offers designs that meet those requirements.

That doesn't mean the designer is off the hook when it comes to engineering a product. The human in this scenario still needs to think about weight limits, physical constraints, availability of materials and so on. In fact, the better the engineer defines these different criteria, the better the system can discover possible solutions. Generative design can add a lot of value to engineers' work while taking significantly less time and reducing human bias. It produces multiple solutions simultaneously, all satisfying the given requirements, using the power of cloud computing.

Fortunately, especially for novices, the software can help them explore constraints, too. For example, you could set up a design for 3D printing and then try again with 3-axis milling. From there, you can decide which results best suit your budget, time schedule etc., and set that as the optimal solution moving forward.

Submitted by
HARISH S
II B.Sc. CT

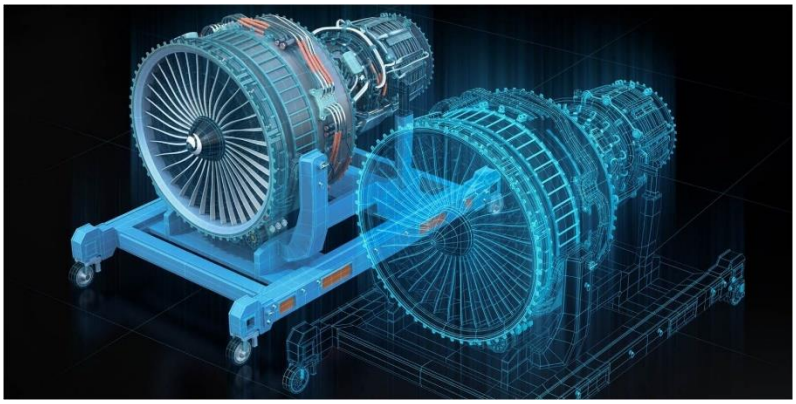
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 24.07.2023**

DIGITAL TWINS

A digital twin is a virtual replica of a physical object, system or process. In 2023, digital twins will become more prevalent, with applications in areas such as manufacturing, aerospace, and transportation. However, their adoption is expected to expand into other sectors such as healthcare, construction and logistics. As companies continue to digitize their operations and processes, the use of digital twins will become increasingly important.



The development of new technologies such as 5G, artificial intelligence and machine learning will enable more complex and sophisticated digital twins. These advancements will also make it easier and more cost-effective to create and maintain digital twins.

Submitted by
JAGADESHWARAN S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 25.07.2023**

NOWATCH

NOWATCH is the only lifestyle wearable that measures skin conductance, the most reliable way to estimate stress, both day and night.

NEXT-LEVEL HEALTH TRACKING SENSORS

NOWATCH uses a more advanced sensor than most wearables. In addition to innovative skin conduction, the infrared (PPG) sensor reaches deeper than green light LEDs, to track subtle changes in your heart rate, sleep patterns, movement and other bio-data.

See how much time you spend in Light Sleep, Deep Sleep, Rapid Eye Movement and Interrupted Sleep each night. Follow your sleep to learn how it influences your day and wake up fresh.

Submitted by
JEEVAA N
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 26.07.2023**

NUWA SMART DIGITAL PEN

This might be a "magical new way to write digitally." That's a good tagline but this beautifully designed pen does indeed seem to offer something magical. You can write with it like a normal pen on normal paper (and the integrated camera system will digitize whatever you write as you write it). This might indeed be the "Pen of the future."

Product Size and Weight

150 x 10.75mm (5.91 x 0.42 inches)
Approximately 28 grams (0.062 pounds)

Sensors

Intelligent motion sensors for orientation and gesture detection 4096 pressure levels
Storage

Unlimited cloud storage: Up to 4Gb Flash

Battery

Rechargeable Nuwa Pen (pogo-pins)
Rechargeable Case (USB-C)
100 mAh in Pen (2 hours of continuous writing)
650 mAh in Case (5 Nuwa Pen Charges)

Processor

Arm Cortex M4

App Support & Others

App support: iOS, Android and web
Menu language: Frisian, Polish, Portuguese,
Dutch, English and more to be announced

Submitted by
JEEVIKA V
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 27.07.2023**

HOLO INDUSTRIES HAPTIC TOUCHLESS SCREENS

Holographic Touch is the ideal solution for customers and employees of businesses who wish to thrive during Covid-19 and in a post-pandemic world.

Don’t spend months of engineering time, Holo’s products work out-of-the-box. Connect to smart terminals or CPUs via HDMI and USB cables and instantly display images or videos as a clear holograph.

Holographic Touch Solutions are available in sizes ranging from 50mm (2”) to 630mm (25”) with larger sizes coming Q1 2022.

This system is accurate to 2mm with zero latency. Pinch to enlarge, zoom, scroll and swipe. Fully function able in hot and cold weather, day and night, even with gloves on!

Submitted by
JEGADHISH G
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 28.07.2023**

ORBITING SATELLITES

Orbiting satellites capture high-resolution multi-spectral images of the vast scene below. Not a single human can be seen in the sprawling acres**.** Today's agriculture is rapidly revamping into a high-tech enterprise that most 20th-century farmers could hardly recognize. It was only 100 years ago that farming transitioned from animal power to combustion engines. In the last 20 years, the global positioning system (GPS), electronic sensors among other new tools have moved farming even further into a technological wonderland. And now, robots empowered with artificial intelligence can zap weeds with extraordinary precision, while other autonomous machines move with industrious efficiency across farms.

It is no secret that the global population is expected to rise to 9.7 billion by 2050. To meet expected food demand, **global agricultural output needs to increase 70%.** AI is helping make that goal possible (1)**.** It is clear a change is coming as farms are seeing an 86% decrease in labor force just in the U.S., while the number of farms continue to rise (2). While today's agricultural technologies and AI capabilities are evolving at a rapid rate, this evolution is just beginning. Factors such as climate change, an increasing population and food security concerns have propelled the industry into seeking more innovative approaches to assure an improving crop yield.

Submitted by
JUDSON K
II B.Sc. CT

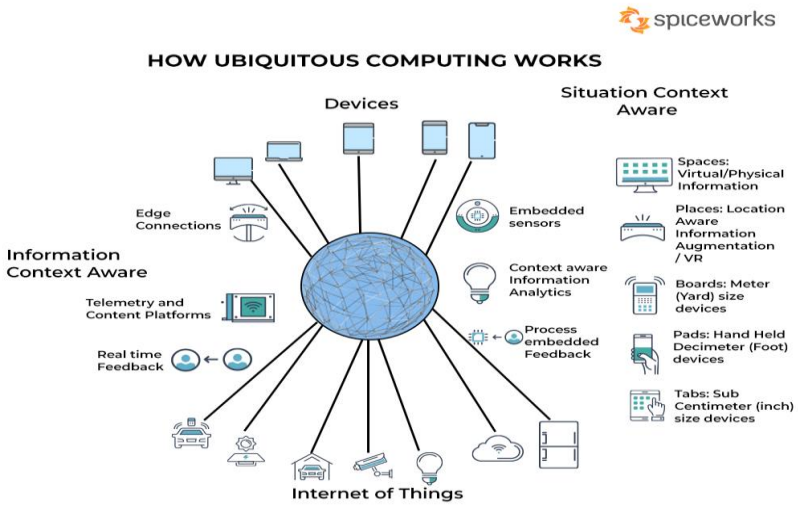
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 31.07.2023**

UBIQUITOUS COMPUTING

The late 1980s were the birthplace of ubiquitous computing. The term “ubiquitous computing” was coined in 1988 by Mark Weiser, CTO at Xerox PARC (or the Palo Alto Research Center). Weiser is credited for coining the term “ubiquitous computing” and diving into its underlying difficulties.



The proliferation of interconnected devices in work, home and transportation environments is called ubiquitous computing or ambient computing. These integrated technologies would make these settings and transportation methods far more engaging and practical via contextual data collection, application and seamless payment mechanisms. Ubiquitous computing tries to make the computer “invisible” by enabling these embedded processors to detect and respond to their application environment autonomously.

Submitted by
KABELASH KUMAR V
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 01.08.2023**

13TH – GENERATION CORE I9

The Infinix ZenBook 13 series maintains a sleek and minimal design inspired by Apple MacBook. Graphics are handled by Intel 96EU Iris Xe integrated GPU and there's no dedicated GPU to keep the frame sleek.

Infinix has refreshed the Infinix ZenBook series with new ZenBook 13 laptops. The new ZenBook 13 series is available in different configurations with the top model featuring 13th-Gen Intel Core i9 CPU, 1TB SSD and 32GB RAM. The base model carries a 13th-Gen Intel Core i5 CPU, while there are two more models with Core i7 processors but with different memory configurations. In terms of looks, the Infinix ZenBook 13 series maintains a sleek and minimal design inspired by Apple MacBook. Graphics are handled by Intel 96EU Iris Xe integrated GPU and there's no dedicated GPU to keep the frame sleek.

Submitted by
KALIYADEVI S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 02.08.2023**

FULL STACK DEVELOPMENT

Full stack development is the process of designing, creating, testing and deploying a complete web application from start to finish. It involves working with various technologies and tools, including front-end web development, back-end web development and database development. And full stack development is a term used to describe a software engineer or developer who works with both the front and back end of a website or application. A full-stack developer is comfortable working with front-end and back-end technologies that power a website or application.

Full-stack developers are often responsible for the entire web application development process, from start to finish which means they must have a strong understanding of all the technologies and tools involved in web development. They also need to work effectively with others on a team, as web development is typically a collaborative process. Most full-stack developers have a firm foundation in web development technologies. They also have experience with server-side technologies. In addition to their technical skills, full-stack developers also deeply understand how the various parts of a website or application work together. Full-stack developers are in high demand because they can build a website or application from start to finish and quickly identify and fix any problems that may arise.

Submitted by
KAMESH M
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

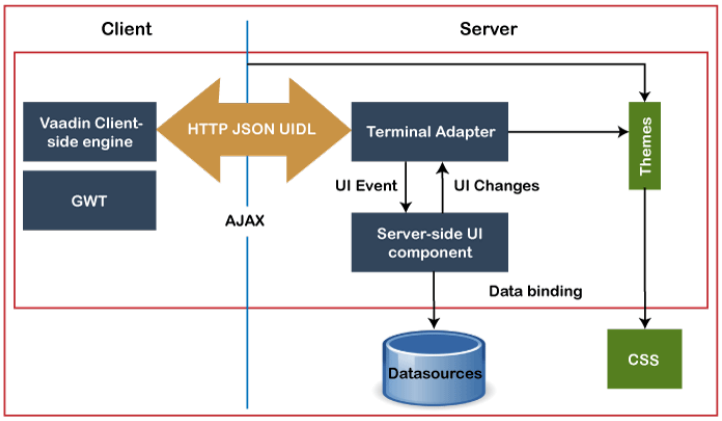
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 03.08.2023**

VAADIN

Vaadin is a web app development platform designed to provide users with the necessary tools to build user-friendly apps. The framework runs on:

- A design system that provides an intuitive user experience (UX) to support digital transformation.
- A collaboration kit to streamline remote work and maintain productivity across teams.
- A flexible Java development model running on open-source code.
- A secure digital architecture to support industries that handle high-risk data such as healthcare, government and financial services.
- A robust front- and back-end that can be customized to match evolving digital trends.



Vaadin can be easily customized to fit the needs of developers, designers, end-users, and business teams to develop apps faster and more effectively.

Submitted by
KEERTHI V
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

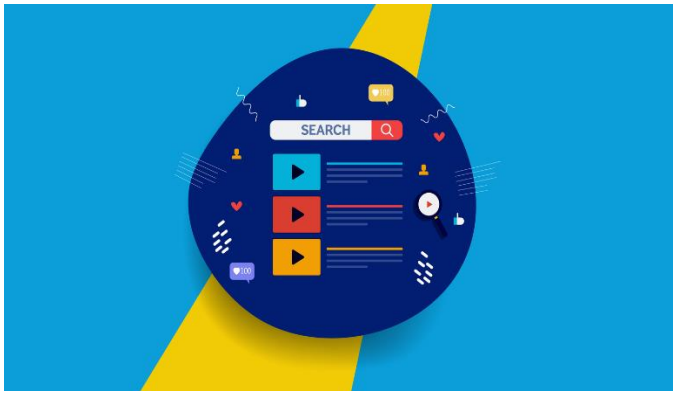
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 04.08.2023**

VIDEO SEARCH ENGINE

A.I. Video Search Engine arguably the **World's Best Video Search Engine** as it is the first to combine 8 search elements into a single video search platform:

- **Speech Recognition** (More than 100 languages)
- **Words or Text** (more than 25 languages)
- **Objects** (detects over 20,000 objects)
- **Motion** (detects motion in specific zones)
- **Faces** (detects up to 64 faces in a single frame)
- **Emotion** (detects up to 8 major emotions)
- **Offensive Content** (detects pornography, nudity, profanity, violence)
- **Custom Search** (e.g. logos, landmarks, objects, etc)



For **Text**, Video Search Engine also has the option to utilize **Video OCR** (Optical Character Recognition) to detect text content in video files. Video OCR will enhance the discoverability of your video content. This is extremely useful in highly textual video like a screen-capture of a video slideshow presentation. The Video OCR detects up to 26 languages, they are: Arabic, Chinese Simplified, Chinese Traditional, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian Cyrillic, Serbian Latin, Slovak, Spanish, Swedish and Turkish.

Submitted by

LALETHAA R P

II B.Sc. CT

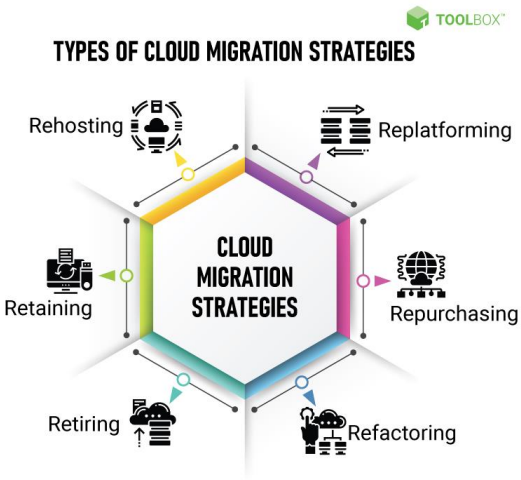
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 05.08.2023**

CLOUD MIGRATION

A cloud migration strategy constitutes an overarching plan outlining the transition of an organization's digital assets which can include services, databases, IT resources and applications from on-premises or co-located infrastructures into a cloud-based environment. This process can be partial or comprehensive, even involving the shift from one cloud platform to another, often referred to as cloud-to-cloud migration.



The execution of a cloud migration strategy typically unfolds in five primary stages: preparation, planning, migration, operation and optimization. This intricate process is not limited to moving data from local data centers to renowned public cloud service providers like AWS, Google Cloud or Microsoft Azure; it can also entail moving from one cloud service to another.

Submitted by
LOHITH L
II B.Sc. CT

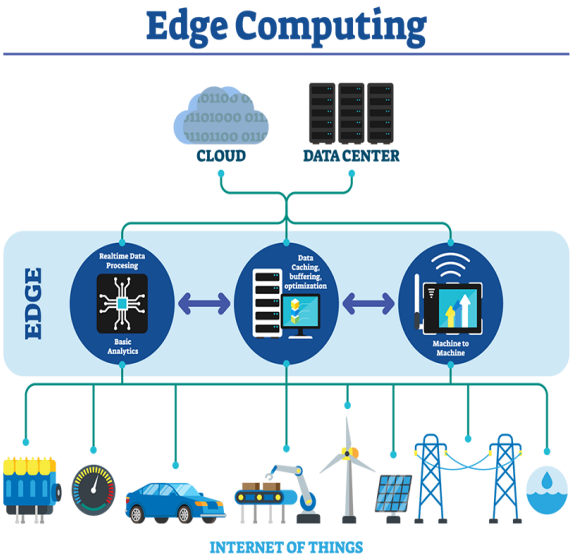
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 07.08.2023**

EDGE COMPUTING

Edge computing is a networking philosophy focused on bringing computing as close to the source of data as possible in order to reduce latency and bandwidth use. In simpler terms, edge computing means running fewer processes in the cloud and moving those processes to local places such as on a user's computer, an IoT device or an edge server. Bringing computation to the network's edge minimizes the amount of long-distance communication that has to happen between a client and server.



Edge computing is a distributed computing framework that brings enterprise applications closer to data sources such as IoT devices or local edge servers. This proximity to data at its source can deliver strong business benefits, including faster insights, improved response times and better bandwidth availability.

Submitted by

MEGADARSHINI M

II B.Sc. CT

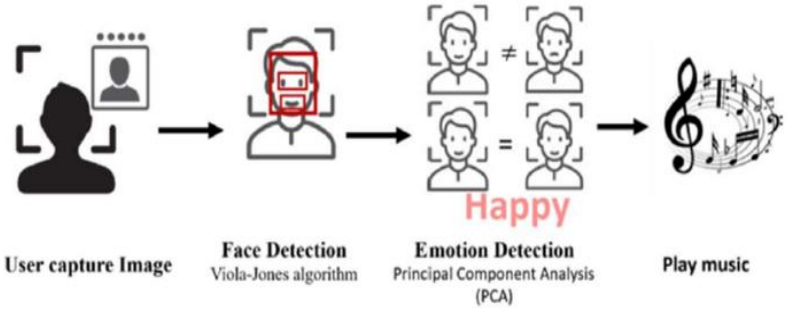
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 08.08.2023**

MUSIC RECOMMENDATION BASED ON CURRENT MOOD USING AI & ML

The human face plays a vital role in the determination of a behaviour and emotion in an individual organ. It takes a lot of time to sort a music collection out manually and create an appropriate playlist based on unique emotional properties. Different algorithms have been suggested and implemented for automatic playlist building. However, existing approaches are slow to calculate, are less accurate and may even require extra equipment such as EEG or sensors. The suggested technique, based on extraction of face expression, creates a playlist which reduces the time and labor necessary to manually render the process. The system will also have song-lyric recommendations as well as system-to-person queries like how did you go? This enables the suggested system to minimize the computing time necessary to create the results and the total cost of the intended system, thereby increasing the overall accuracy of the systems.



A built-in camera captures facial expressions. Calculates the accuracy of systems for the recognition of emotions for real-time photographs. For overcrowded concerns to be addressed and user particular data to be recommended, incorporate a collaborative filter, content-based recommendation, using sentiment-based music, sharing workload between high end servers and mobile low-end devices.

Submitted by
MONISHA M
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 09.08.2023**

CYBER SECURITY

Cyber Security Think about Programs instruct you how to ensure computer working frameworks, systems and information from cyber-attacks. Learn how to track gadgets as they emerge and diminish dangers.

AtZ Technology

The general objective of learning cybersecurity is to assist you to create the specialized abilities vital to anticipate assaults and secure the information and privacy of individuals.

Living within the computerized age implies there are unending openings for programmers and cyber terrorists to target individuals, government teaching and indeed huge trade.

Best organizations are willing to pay a parcel for cyber investigators who can ensure their information and evacuate vulnerabilities to guard against cyber assaults and security breaches.

As businesses and governments alike are going advanced, cybersecurity may be a fast-growing and unavoidable requirement. The number of cybersecurity labourers is rising three times quicker than other tech employments as proof of the solid requirement for cybersecurity experts.

Submitted by
NARAYANA VIGNESH S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 10.08.2023**

DIGITAL TRUST

Digital trust is the confidence users have in the ability of people, technology and processes to create a secure digital world. Digital trust is given to companies who have shown their users they can provide safety, privacy, security, reliability and data ethics with their online programs or devices. When a person decides to use a company's product, they are confirming their digital trust in the business.

With the help of digital trust, a user can easily differentiate a reliable business from an unreliable business. Users commonly gauge reliability through measures put in place by the brand and past reviews.

Digital trust creates a bond between the brand and the customer. This bond assures the customer of the safety of the goods or services being exchanged. The more digitally trustworthy a company is, the higher the increase in consumers.

They are removing risks that can discourage a customer from trusting them and paying keen attention to the inclusion of cybersecurity and privacy personnel in their development process. Companies also enforce stringent rules like the Zero Trust Model which decreases the chances of unauthorised personnel accessing secured content.

Submitted by
NAVEENRAJ B
II B.Sc. CT

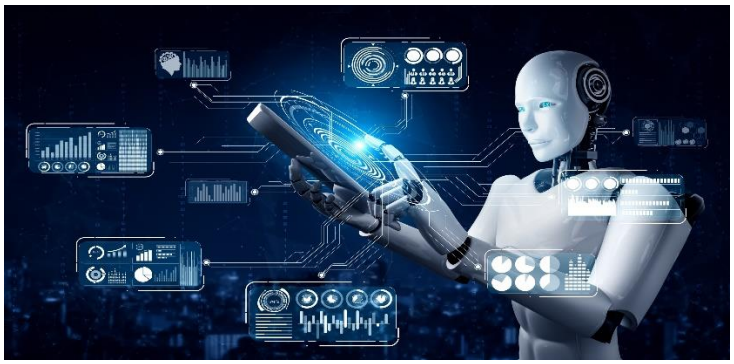
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 10.08.2023**

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

Two of the most significant technological trends are Artificial Intelligence and Machine Learning. Artificial Intelligence is the ability of systems to perform tasks that require human intelligence like perception, reasoning, learning and decision-making. ML is a branch of AI that enables computers to learn using data without explicit programming.



Benefits

- Automating repetitive tasks with AI and ML can decrease time spent on them and boost productivity.
- AI-powered systems can process enormous amounts of data, giving businesses and organizations insightful information.
- Predictive models created using AI and ML assist in the real-time identification of potential issues and opportunities.
- By proffering individualized recommendations and responses, AI can enhance customer service.

Submitted by
NAVEENRAJ B
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 11.08.2023**

AUTONOMOUS VEHICLES

Autonomous vehicles also known as self-driving cars are vehicles that are capable of sensing their environment and navigating without human input. They use a combination of technologies such as sensors, cameras, lidar, radar and advanced algorithms to perceive their surroundings and make decisions about how to move.

There are different levels of autonomy for autonomous vehicles, as defined by the Society of Automotive Engineers (SAE). The levels range from Level 0 which is no automation, to Level 5 which is full automation. New technology such as self-driving cars and quantum computing have the potential to greatly impact society in the future.

Partial Automation, the vehicle can perform some driving functions, but the driver must be ready to take over at any time.

Conditional Automation, the vehicle can perform most driving functions, but the driver must be ready to take over in certain situations.

High Automation, the vehicle can perform all driving functions under certain conditions but the driver must be ready to take over in certain situations.

Full Automation, the vehicle can perform all driving functions under all conditions and the driver is not required.

Submitted by
NAVIN VIJEY N
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

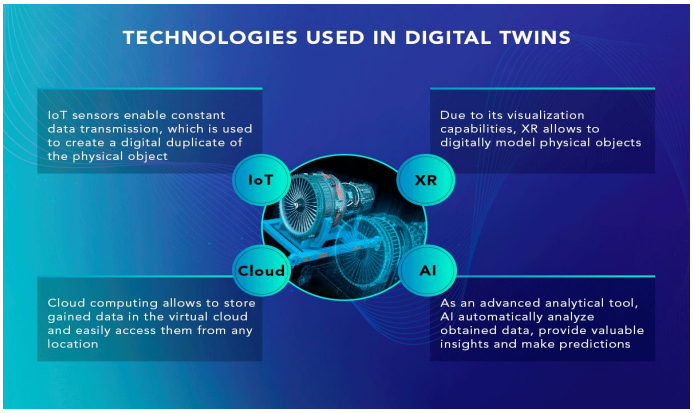
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 14.08.2023**

DIGITAL TWIN TECHNOLOGY

Digital twin technology is a type of digital representation of a physical object or system that allows for the simulation and analysis of its performance in a virtual environment. It is an integration of various technologies such as Internet of Things (IoT), big data analytics, cloud computing and 3D modeling.

A digital twin can be used to model and simulate the behavior of a physical object or system in a virtual environment, allowing for the prediction of its performance in the real world. This can be used for a wide range of applications such as product design and development, testing, simulation and optimization.



Digital twin technology can be used in a variety of industries such as manufacturing, transportation, healthcare and construction, to improve efficiency, reduce costs and optimize performance. For example, in manufacturing, digital twin technology can be used to simulate the performance of a new product design, identify potential issues before it is built and optimize the manufacturing process. In healthcare, digital twin technology can be used to model and simulate the behavior of a patient's body, allowing for personalized treatment plans.

Submitted by
NISATH M K
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 16.08.2023**

REST API

Representational **S**tate **T**ransfer (REST) is an architectural style that defines a set of constraints to be used for creating web services. **REST API** is a way of accessing web services in a simple and flexible way without having any processing.

REST technology is generally preferred to the more robust Simple Object Access Protocol (SOAP) technology because REST uses less bandwidth, simple and flexible making it more suitable for internet usage. It's used to fetch or give some information from a web service. All communication done via REST API uses only HTTP request.

Working: A request is sent from client to server in the form of a web URL as HTTP GET or POST or PUT or DELETE request. After that, a response comes back from the server in the form of a resource which can be anything like HTML, XML, Image or JSON. But now JSON is the most popular format being used in Web Services.

Submitted by

PONGIRI K

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 17.08.2023**

WORLDCOIN CRYPTO

Worldcoin is a crypto-currency project that is launched by the Open AI CEO Sam Altman along with Alex Blania and Max Novendstern with the main aim to provide its users with a private digital identity "a World's Identity" after they register in person, where an "Orb" imaging device scans their eye's unique iris pattern to verify they are "a real and unique person."

Orb: Orb is a silver sphere that can capture a high-resolution image of the iris which is unique for every individual. The orb then encrypts the image and sends it back to a blockchain network, where it is matched with a Worldcoin address. The person who scans their eyes receives some Worldcoins as a reward for joining the network.

Purpose of Worldcoin crypto project:

The purpose of Worldcoin crypto project is to create a universal and decentralised digital identity that can protect people's privacy and enable them to access various services and benefits online. The project also has a vision of using Worldcoin as a means to distribute universal basic income (UBI) to everyone in the world, regardless of their location, income or status.

Submitted by

PRASANTH R

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 18.08.2023**

COLOR CHANGING CARS

BMW recently showcased a concept car dubbed the iX Flow and this new technology invention is an absolute gamechanger for those who can't stick with just one color for their next car.

With a single press of a button, users can switch the color of their car from white to black or vice versa, instantly.

How does it work? On the exterior, one will find electrophoretic film all around the body containing tiny microcapsules. Depending on a positive or negative charge, these microcapsules turn white or black. BMW calls this technology E Ink.

For the first time, users have the option to change the color of their car depending on their mood or surroundings for the option to personalize their car effortlessly.

Submitted by
PRAVEEN K
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 19.08.2023**

HEALTH BODY SCANS

A scale that not only provides precise weight readings but also muscle mass, heart health and vascular age.

Although this new technology invention currently going through clinical and regulatory tests, there's no doubt this product is a ground-breaking innovation when it's finally released publicly. While the Body Scan looks like a typical scale, in fact, comes with a retractable handle at the front to provide incredibly accurate body composition information.

By using the handle, users can get accurate measurements of the fat and muscle mass of their torso, arms and legs. And the Body Scan will also tell you if your readings are below or above average. In addition, users can get insights into their vascular age and cardiovascular health. The scale itself can also provide readings of small nerve activity in the feet. Users can track all their health metrics and even receive personalized health plans based on the results through the Withings app.

Submitted by
PRAVEEN S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

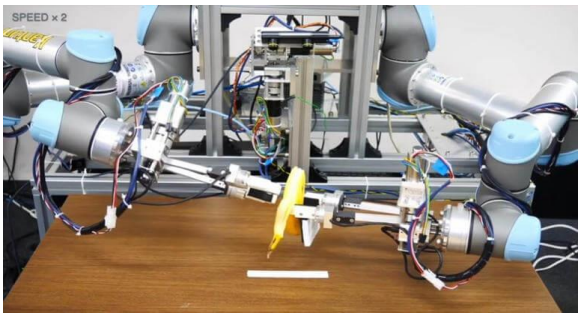
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 21.08.2023**

BANANA-PEELING ROBOT

Robots are pretty good at discrete, repeatable tasks. That's why we use them in factory settings where they're only usually called upon to the do the one thing they were specifically made for. More complex tasks, however, are typically reserved for humans. At least that was the case before engineers from the Intelligent Systems and Informatics Laboratory at the University of Tokyo built their new banana-peeling robot.

Peeling a banana is such a simple task that even a monkey could and often does it. For robots, peeling a banana is a shockingly difficult task. We're not asking them to punch parts from sheets of metal or move solid objects from one place to another. Peeling a banana requires finesse.



Peeling a banana also requires spatial awareness. Unlike the parts of a car, for instance, bananas come in all different sizes and shapes. That means the robot can't simply repeat the same set of motions over and over. Instead, it has to know where the banana is, what part it needs to grasp and how to move its robotic hands.

Scientists used AI deep learning to mimic the movements of human hands completing the same task. Even with the leading edge of machine learning, it's still only successful a little more than half the time. In fairness to the robot, we've messed up simpler tasks.

Submitted by
PRITHIKA M
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 22.08.2023**

ONEXPLAYER MINI HANDHELD PC GAMING

Handheld gaming is undergoing something of a revival with the popularity of the Nintendo Switch, Analogue Pocket and similar retro gaming devices. The biggest limitation of those systems is the quality and selection of games one is able to play. That's where the OneXPlayer Mini comes in. It takes the power of a gaming computer and puts it in the palm of your hand.

Building on the popularity of the Steam Deck, OneXPlayer is hoping to capture consumers who are currently waiting for Steam Deck to become available again. The major downside is price the OneXPlayer can be twice the cost of a Steam Deck, depending on which version you choose.

It comes standard with Windows pre-installed and is essentially a shrunken gaming laptop. If one doesn`t have the patience to wait for the Steam Deck to re-emerge or if just prefer Windows over Linus, and one has the disposable income, the OneXPlayer Mini could be the solution to handheld PC gaming needs.

Submitted by
PRIYANKA V
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 23.08.2023**

APPLE'S SMART WATER BOTTLE

From watches and phones to household appliances, everything is getting smarter. Now, thanks to Apple, that's also true of the water bottle.

The HidrateSpark Pro Smart Water Bottle a mouthful, know takes all the guesswork out of tracking the water intake. The vacuum-insulated exterior should keep liquids cold for up to a full day and it has a host of other neat features.

Apple's smart water bottle integrates with Apple Watch and Apple Health. It takes into account daily steps and exercise to calculate how much water need (per Apple). The LED puck at the bottom of the bottle lights up to remind you when it's time for a drink and tracks how many ounces or millimeters of water drink throughout the day, using BlueTooth. It can also get a slightly less expensive version, without the insulation, in the form of the HidrateSpark Pro Tritan Plastic Sea Glass.

If ever wanted a fancy way to micromanage basic survival tasks, the HidrateSpark Pro Water Bottle can't be beat.

Submitted by
RAGUL S V
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

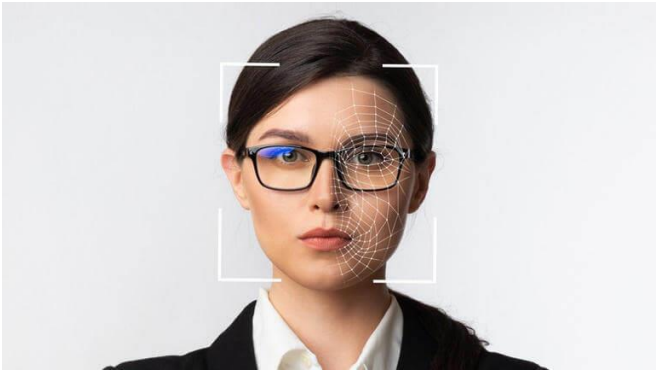
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 24.08.2023**

AN AI THAT JUDGES YOUR FACE

Facial recognition software isn't new, but it is gaining new abilities. It has some version of it on your phone right now. Count on those programs to recognize us and grant access to our technology when we need it. Count on them not to judge us for appearance, even on worst days. In the future, however, all of that could change because of a new advancement in facial recognition.

Researchers taught an AI not only to recognize facial features, but to make snap judgements about a person's appearance. While being judged by a machine might hurt, it has important implications about the ways humans judge one another.



According to a research paper published in the Proceedings of the National Academy of Sciences, the first impressions we form upon meeting a new person influence decisions we make about them, including decisions about hiring and sentencing.

Researchers used machine learning to train an algorithm to make judgements based on photographs of faces which closely mirrored the judgements we make about ourselves and others. It's unclear what factors the algorithm used to make its judgments (per Tech Xplore) but scientists think that the data can still teach how appearance impacts the way we engage with the world.

Submitted by
RAJAGOKUL R
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

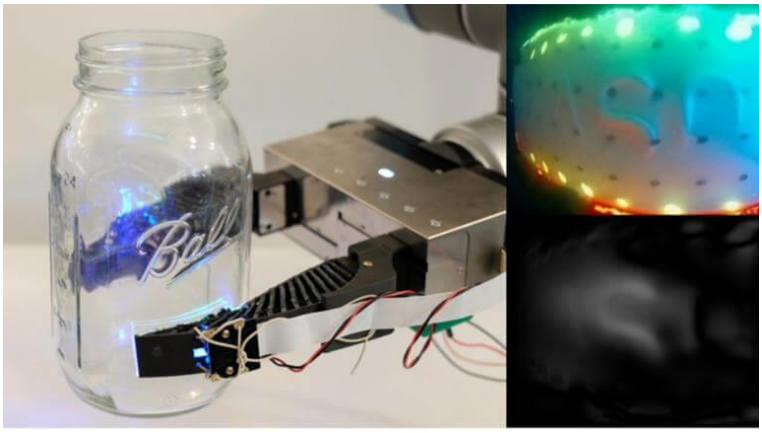
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 25.08.2023**

A ROBOTIC GRIPPER WITH A SENSE OF TOUCH

As interactions between humans and robots become more common, it will become increasingly important that robots have a better sense of the environment around them. The last thing we want is a robot harming someone or breaking something because they don't know their own strength.

Scientists and engineers from MIT developed a new robotic system that uses Fin Ray grippers imbued with a sense of touch. After fish fins are useful for their ability to conform to the surface of an object, they curl inward to wrap around it rather than bend away from a surface.



Scientists achieved a sense of touch through an array of cameras embedded inside the grippers that watch for the way the fingers deform when in contact with a grasped object. By acutely measuring the way the gripper's shape changes.

Submitted by
SANJEEV T V
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 28.08.2023**

3D PRINTED BONES

3D printing is an industry promising everything from cheap house building through to affordable rugged armour, but one of the most interesting uses of the technology is the building of 3D printed bones.

The company Ossiform specialises in medical 3D printing, creating patient-specific replacements of different bones from tricalcium phosphate – a material with similar properties to human bones.

Using this 3D printed bones is surprisingly easy. A hospital can perform an MRI which is then sent to Ossiform who create a 3D model of the patient-specific implant that is needed. The surgeon accepts the design and then once it is printed, it can be used in surgery.

What is special about this 3D printed bones is that because of the use of tricalcium phosphate, the body will remodel the implants into vascularised bone. That means they will enable the full restoration of function that the bone it is replacing had. To achieve the best integration possible, the implants are of a porous structure and feature large pores and canals for cells to attach to and reform bone.

Submitted by
SARANITH S B
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 29.08.2023**

DISPLACE WIRELESS TV

Displace TV is a 55-inch 4K OLED display that does not have any wires or ports. Connecting 4 TVs would make it an 110-inch 8K display while combining a total of 16 displays would result it being a 220-inch 16K resolution.It comes with four hot-swappable batteries that can last up to a month on a single charge if used for 6 hours per day.

Displace TV does not need to have a wall mount either. Instead, it has an active-loop vacuum technology that allows the TV to stick on the wall. It also weighs 20 lbs.

The TV also comes with what appears to be a retractable webcam. This allows users to use hand gestures to interact with the TV and browse through content.

The Displace TV comes in three packages: the first pack offers one Displace TV with one base control unit for USD 4,499; the second pack offers two Displace TV with two base control unit for USD 8,099; the third pack offers four Displace TV with four base control unit for USD 13,499.

Submitted by
SARITHASRI N
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

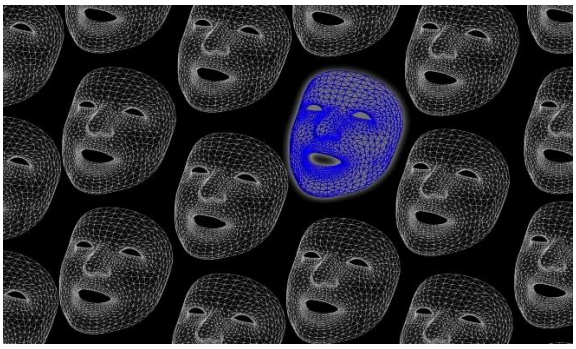
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 30.08.2023**

FACIAL RECOGNITION

Facial recognition is a blossoming field of technology that's playing an ever-growing role in our lives. It's a form of biometric authentication that uses the features of your face to verify your identity.

The tech helps us unlock devices and sort photos in digital albums, but surveillance and marketing may end up being its prime uses. Cameras linked to facial recognition databases containing millions of mugshots and driver's license photos are used to identify suspected criminals. They also could be used to recognize your face and make personalized shopping recommendations as you enter a store.



Both activities raise privacy concerns, which range from law enforcement overreach, to systems with hidden racial biases, to hackers gaining access to your secure information. And some systems aren't always accurate. Even so, the market isn't showing any signs of stalling. In the US alone, the facial recognition industry is expected to grow from $3.2 billion in 2019 to $7 billion by 2024.

Submitted by
SASIPRABHA E
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 31.08.2023**

TCL RAYNEO X2 - AR GLASSES

Li Hongwei, founder and CEO of TCL RayNeo, said that all AR glasses makers in the market form a pyramid. The bottom layer of the pyramid is smart glasses that offer display functionality but are not real AR glasses. The second layer is made up of AR glasses that use a Birdbath scheme and waveguide scheme.

TCL RayNeo (RayNeo™), an industry leader in consumer-level augmented reality (AR) technology innovation, has announced a host of impressive upgrades to TCL RayNeo X2, the world's first binocular full-color, Micro-LED optical waveguide AR glasses. Following TCL RayNeo X2's remarkable debut earlier this year, the enhancements are set to deliver an even more intuitive and comfortable wearable AR experience that seamlessly integrates into users' everyday lives.

Submitted by
SASMITHA J
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 01.09.2023**

GAME HACKING APPS FOR ANDROID - LUCKY PATCHER

Lucky Patcher is a powerful Android application, offering users various features to enhance their mobile experience which is not ethical as it defeats the purpose and principles on which the application was made. With this app, users can remove annoying ads, back up important data, eliminate license verifications and unlock premium features in paid apps without paying for it. While some individuals may choose to utilize Lucky Patcher to bypass restrictions or avoid in-app purchases within mobile games, it's important to note that the app also provides many other useful functionalities.

Awareness of the potential risks of using certain applications is essential. When one downloads and installs these apps, one`s device becomes vulnerable to malware and other security threats. Additionally, using manipulated apps or services may result in a ban from that platform or service altogether.

For Lucky Patcher to perform its functions effectively, it requires "root" access on Android devices. However, it is important to note that granting root access can have some negative consequences. These include voiding one`s device warranty, increasing the risk of exposing your device to potential security threats and potentially causing instability in one`s device's performance. It is generally advised not to root one`s device unless one fully understands and accepts the potential risks.

Submitted by
SATHYAPRIYA J S
II B.Sc. CT

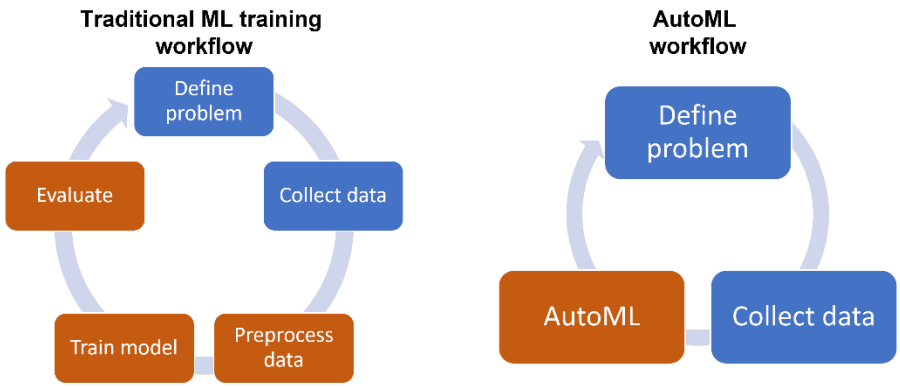
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 02.09.2023**

AUTOMATED MACHINE LEARNING (AUTOML)

Automated Machine Learning (AutoML) automates the process of applying machine learning to data. Given a dataset, one can run AutoML to iterate over different data transformations, machine learning algorithms and hyperparameters to select the best model.



In general, the workflow to train machine learning models is as follows:

- Define a problem
- Collect data
- Preprocess data
- Train a model
- Evaluate the model

Preprocessing, training and evaluation are an experimental and iterative process that requires multiple trials until one achieves satisfactory results. Because these tasks tend to be repetitive, AutoML can help automate these steps. In addition to automation, optimization techniques are used during the training and evaluation process to find and select algorithms and hyperparameters.

Submitted by
SHEYAM D
II B.Sc. CT

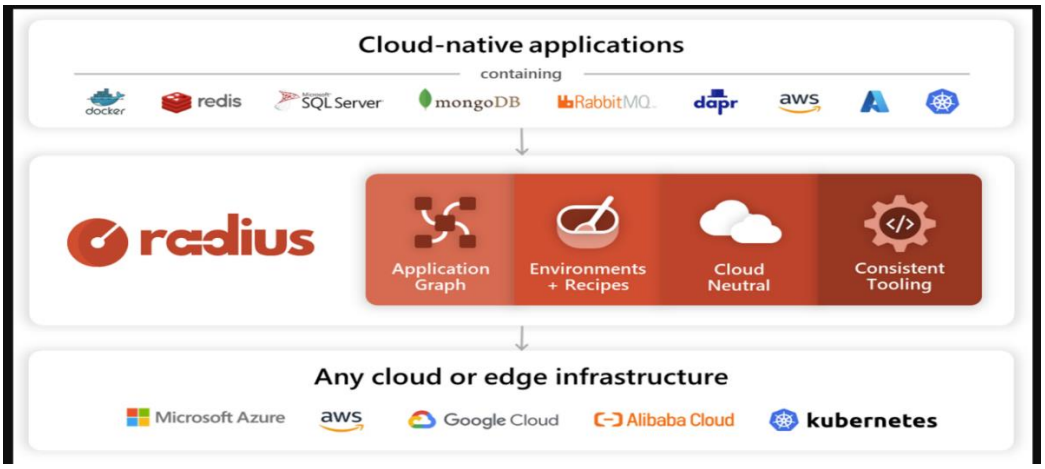
KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 04.09.2023**

OPEN SOURCE APPLICATION – RADIUS

Microsoft today announced the launch of Radius, a new open source, language-agnostic application platform for building and running cloud-native applications. The project is being spun out of the Microsoft Azure Incubation team, the same group that previously launched open source projects like Dapr for building microservices, the KEDA event-driven autoscaling solution and Copacetic, a security tool for patching container image vulnerabilities. Dapr and KEDA are already part of the Cloud Native Computing Foundation's (CNCF) stable of projects and Microsoft recently submitted Copacetic as well. It's no surprise then the company also plans to submit Radius for inclusion in the CNCF within the next six months.



With Radius, developers will be able to deploy applications to private clouds, Microsoft's own Azure and Amazon's AWS, with support for Google Cloud coming soon. The overall idea here is that while Kubernetes has made it easier to build applications that can at least in theory and run anywhere, those applications have become increasingly complex, making it harder to manage them. Ideally, an application platform abstracts all of this away and lets developers focus on writing their applications.

Submitted by
SHRIVANTH K S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

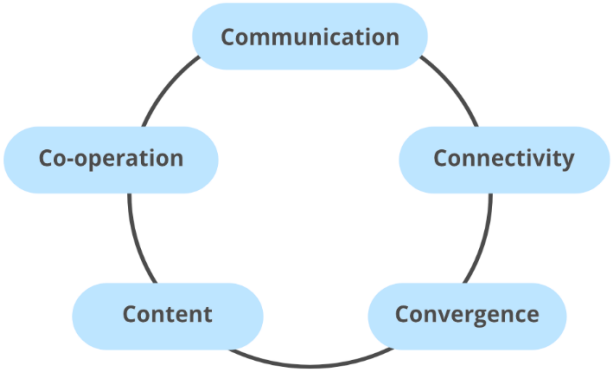
DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 05.09.2023**

WISDOM (WIRELESS INNOVATIVE SYSTEM FOR DYNAMICALLY OPERATING MEGA COMMUNICATION)

WISDOM is an important concept that explains 5G. In simple terms, we can define a 5G system as a combination of 4G and WISDOM technology. WISDOM can offer frequencies up to Terahertz and data rate up to Tera bps. Here, it accomplishes Tera bps by using millimeter waves.

The main objective of WISDOM is to provide a wireless infrastructure for human-centric mega communication, which helps to interconnect different sectors by bridging their communication gap with higher capacity and performance. This can be made possible by:



1. Designing an air interface that provides 3 to 5 times more channel efficiency.
2. Creating novel cross-layer and cross-network domain optimization.
3. Developing a converged WISDOM system.
4. Utilizing smaller size cells and virtual cells with optimized dynamic spectrum management.

Submitted by
SIVABALAN T
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

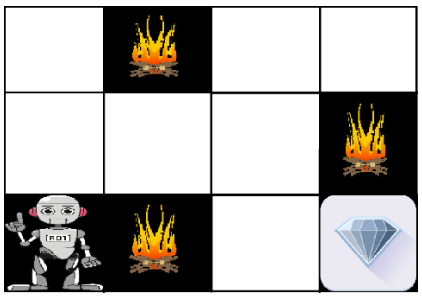
IT BULLETIN **Date: 07.09.2023**

REINFORCEMENT LEARNING

Reinforcement Learning is a part of machine learning. Here, agents are self-trained on reward and punishment mechanisms. It's about taking the best possible action or path to gain maximum rewards and minimum punishment through observations in a specific situation.

Example:

The problem is as follows: We have an agent and a reward, with many hurdles in between. The agent is supposed to find the best possible path to reach the reward. The following problem explains the problem more easily.



The above image shows the robot, diamond and fire. The goal of the robot is to get the reward that is the diamond and avoid the hurdles that are fired. The robot learns by trying all the possible paths and then choosing the path which gives him the reward with the least hurdles. Each right step will give the robot a reward and each wrong step will subtract the reward of the robot. The total reward will be calculated when it reaches the final reward that is the diamond.

Main points in Reinforcement learning :

- Input
- Output
- Training
- The model keeps continue to learn.
- The best solution is decided based on the maximum reward.

Submitted by

SOUNDHARYA SWATHI S

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 08.09.2023**

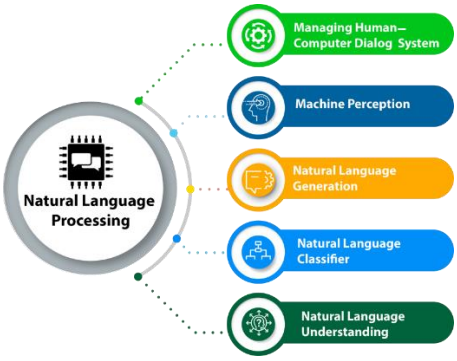
NATURAL LANGUAGE PROCESSING

NLP simplifies numerous routine tasks. NLP is an alternative to manual input and content search. The machine recognizes the voice and speech automatically with the help of software.

Main applications that employ NLP in business:

- Mood analysis;
- Translation;
- Extracting text;
- Grouping themes;
- Chatbots.

The possibilities of this machine learning element constantly extend, new communications methods appear, and they are hard to differentiate from an actual human.



The common functional examples are:

- Alexa;
- Siri;
- Google Assist.

The applications can transfer human language to digital form so the machine can read and understand it. These processes employ pre-set algorithms. Chatbots are also a famous example that fits any sector including hospitals, educational institutions or customer assistance centers.

Submitted by

SREE HARINEE S

II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 11.09.2023**

NAVIGATING THE FUTURE: THE PROMISING PROGRESS IN AUTONOMOUS SYSTEMS

Autonomous systems are rapidly gaining momentum in various industries, with transportation and logistics being the most prominent. These systems leverage sophisticated sensors, cameras and other cutting-edge technologies to operate cars, drones, robots and other machines without human intervention. With the potential for reducing accidents, increasing mobility and improving efficiency, the future of autonomous systems is auspicious.

Self-Driving Cars: A Well-Known Example

Self-driving cars are the most widely known example of autonomous systems. Tesla, Google and Uber have been working on self-driving technology for several years. These cars use advanced sensors and algorithms to navigate and safely operate on the road. The goal is to make transportation safer, more convenient and more efficient for everyone.

Autonomous Drones: Delivery at Your Doorstep

Amazon has successfully implemented autonomous drones to make package delivery more efficient. The drones use sophisticated computer vision and machine learning algorithms to navigate and deliver packages.

Autonomous Systems in Healthcare

The da Vinci surgical system developed by Intuitive Surgical is an excellent example of an autonomous system used in healthcare. The system is a robot-assisted surgical system that performs minimally invasive surgeries with high precision. Other autonomous systems in healthcare are being developed to improve patient care and reduce the workload of medical professionals.

Submitted by
SRIRAM GANAPATHY M
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 12.09.2023**

THE INTERNET OF THINGS CONNECTS GADGETS AROUND THE WORLD

Today, IoT (Internet of Things) sensors are widely used in various fields. The most common and familiar system where they are used is the “smart home”, in which devices such as a TV, smart speaker, lighting door and window control system and refrigerator can communicate and transmit data to each other.

This allows a person to receive visitor notifications at the door of their home, check for perimeter violations and home entry attempts. In addition, the refrigerator can make a shopping list itself, a smart speaker can announce the latest news and a smart TV and lighting control system can entertain. In addition, a smart car (that’s another story) can also use IoT sensors.

There are similar, but larger systems for doctors, military, law enforcement and scientists from different fields. However, there is a problem that the products work on different platforms which are not always compatible with each other.Next year, developers intend to eliminate this problem by creating standards and protocols that will be applicable to all devices in the Internet of things.

The IoT network continues to grow and already includes millions of devices around the world. Therefore, in 2023, the technological trend in this area will be related to the cybersecurity of the Internet of things. This is due to the fact that hackers have repeatedly hacked into users using vulnerabilities in smart gadgets.

Submitted by
SRIVISHNU S R
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 13.09.2023**

SUPER APPS FOR IOT AND THE METAVERSE

In mobile applications, platforms and digital ecosystems to function harmoniously in the metaverse or the Internet of things system, super applications are need one of the new technologies. These apps are like digital Swiss Army knife that has a variety of tools to suit the needs of each user.

The super app will be based on one platform and provide a wide range of services, allowing users to enjoy a personalized and unique user experience. With it, users will be able to have fun, study, work, shop, receive virtual medical care and even travel without leaving the application.

In addition, the super app will contain an intelligent chatbot and combine IoT-based technologies with immersive experiences such as the metaverse

Submitted by
SUBHASH K
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 14.09.2023**

BLOCKCHAIN FOR ENHANCED SECURITY AND TRANSPARENCY

Blockchain, originally designed to secure cryptocurrency transactions, has found its way into various sectors, including engineering. Here are 5 ways blockchain technology is enhancing security and transparency in engineering with specific examples.

Unchangeable Data Records: Blockchain's : decentralized ledger system ensures that once data is recorded, it cannot be altered without consensus. This immutability is invaluable in engineering projects, where data accuracy is crucial.

Supply Chain Management: Blockchain can improve end-to-end traceability in complex engineering supply chains. Parts and materials can be registered on the blockchain. This transparency helps in verifying authenticity and quality, reducing the risk of subpar components making their way into the pipeline.

Smart Contracts : Smart contract**s** are self-executing agreements with the terms of the contract between buyer and seller being directly written into code. In engineering, smart contracts can automate various processes at specific milestones and are a crucial component of smart factories. This application ensures transparent and accurate record-keeping, contributing to overall reliability in engineering environments.

Quality Control and Compliance **:**Blockchain can store information related to quality control tests and certifications. Manufacturers can easily access this data to ensure that each component meets the required quality standard.

Data Security and Privacy **:**Engineering often deals with sensitive and proprietary data. Blockchain enhances information security by only allowing data access to authorized personnel. Blockchain enables access control, ensuring that only approved individuals can view and edit the documents.

Submitted by
SURENTHAR R
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 15.09.2023**

ROBOTS-AS-A-SERVICE (RAAS)

Robots-as-a-service (RaaS) is a business model in which robotics companies offer the use of their robot devices via a subscription-based contract. As robotic adoption increases, more and more companies are seeing the value of the RaaS model to reduce risk and provide scalable solutions for customers.

The benefits of the RaaS model over traditional robotics programs include:

- Flexibility
- Scalability
- Lower cost of entry

The RaaS model is not without its challenges and limitations. Some of the obstacles include the amount of customization that is required in order for the platform and robotic fleet to meet the needs of a company. The implementation can be complex with both the physical implementation of robotic units in a warehouse or factory as well as the implementation of the software component for human operators. In addition, the RaaS model requires significant training to ensure the proper use of the robotic units.

Robots-as-a-service has opened up robotics to a wider range of small to medium-sized businesses. With RaaS smaller businesses can scale up their robotics operations relatively quickly to keep up with changing market conditions and company needs.

Submitted by

VIDHYAVARSHINI P
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 16.09.2023**

FLYING VEHICLES

Before one asks about traffic infrastructure and regulations, just imagine how cool it would be to drive a personal flying vehicle.

Ultra-quiet, safe, emission-free and compact, SkyDrive's personal flying vehicle looks like a new technology invention from the future.

Currently in the prototyping phase, the purpose of the SkyDrive is to help transport oneself, others or goods quickly and efficiently. It can take off, fly and land without a runway autonomously or with a pilot. And with a maximum load of 500 kg, flying altitude of 500 meters and a speed of 100 km/h, there are an endless number of use cases for a flying vehicle of this size.

From rapid emergency response to day-to-day deliveries, SkyDrive leverages airspace to get goods and people to their destinations faster than ever before.

At CES 2022, SkyDrive showcased a prototype model, the SD-03 and how they intend to use the SkyDrive as an air taxi. Their goal is to have the next iteration, the SD-05, ready in time to do just that for the 2025 World Expo.

Submitted by
VIMAL T S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 19.09.2023**

FOLDABLE TECH DEVICES

Samsung entered this realm recently with their popular Galaxy smartphone line of folding new technology inventions. At CES 2022, we witnessed ASUS enter the fray with the introduction of the Zenbook 17 Fold.

Featuring a huge 17.3-inch screen, the versatile screen functions as a laptop, tablet, book or even a PC. Indeed, users may attach a Bluetooth keyboard and touchpad to the bottom half and the Zenbook transforms into a fully functional laptop. Or simply fold it in half to use the virtual on-screen keyboard.

Fold it in half and the size shrinks down to just 12.5 inches and compact enough to carry easily in one`s arms, backpack or messenger bag. It also comes equipped with all the bells and whistles including an OLED screen, HDR, Dolby Atmos and much more.

Submitted by
VISHNU S
II B.Sc. CT

KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS), ERODE

DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date : 20.09.2023**

AUGMENTED REALITY

Augmented reality allows you to **see the world around you with digital images layered on top of it**. There are currently a couple of AR headsets available, including the Microsoft HoloLens and the Magic Leap. However, they are currently more expensive than VR headsets, and are marketed primarily to businesses.

Augmented reality can also be used on devices like **smartphones** and **laptops** without the use of a headset. There are a variety of apps that use AR, including some that allow you to **translate text using your camera**, **identify stars** in the sky and even **see how your garden would look with different plants**. You may have even previously used AR without realizing it, while playing a game like **Pokemon Go** or using **filters on Snapchat**.

Submitted by

VITHARSHANA B

II B.Sc. CT