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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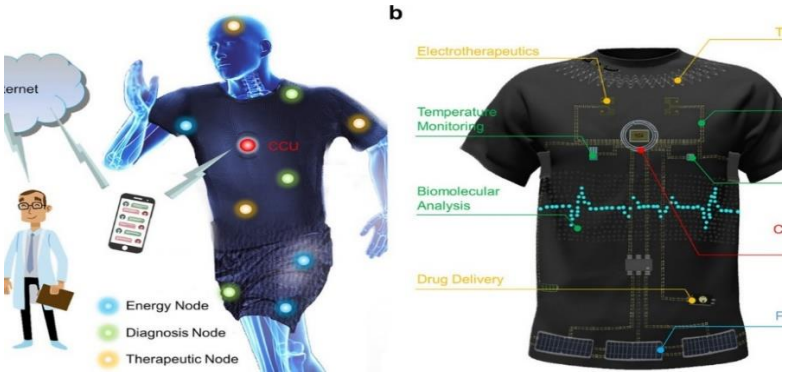
IT BULLETIN **Date : 18.06.2024**

E-TEXTILES

Electronic textiles (or smart clothing) are fabrics embedded with digital components to provide added value to the wearer. It seamlessly integrates conductive threads, sensors, and other electronic elements into the fabric, creating functional and wearable technology.

This convergence of textiles and electronics opens up a myriad of possibilities for applications in various industries. For example, smart clothing with integrated sensing capabilities can be designed to monitor physiological signals, track movement, or provide haptic feedback.



In sports, e-textiles can track performance metrics and enhance training. In the fashion industry, they can enable designers to create interactive and adaptive clothing, merging aesthetics with functionality.

Smart clothing holds promising potential for future applications, with envisaged uses in health monitoring, tracking soldiers, and monitoring pilots. The integration of personal physiological monitoring, communication features, as well as heating and lighting capabilities stands out as key areas where this technology can offer significant benefits.

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3D BIOMETRICS

The use of biometric information is rising every year, particularly in banking, forensics, and public security. While most biometric recognition relies on two-dimensional images, recent years have seen the development of more advanced techniques.

These techniques can be grouped into three categories:

- 3D Facial Recognition: In addition to 2D face, it captures depth information to create a more detailed and unique representation of an individual's face
- 3D Fingerprint Recognition: It offers more robust and accurate identification than 2D fingerprint systems.
- Iris Recognition: It captures the unique features of the iris in three dimensions

The purposes of human-computer interaction or enhanced security, there will be a wide application of robust biometrics. For example, it can have integrated within electronic transactions or financial operations to further secure user authentication and minimize the risk of unauthorized access.

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IT BULLETIN **Date : 20.06.2024**

FLEXIBLE AND FOLDABLE ELECTRONICS

Flexible and foldable electronic devices are made with flexible materials such as plastic or organic compounds. They can conform to different shapes, bend, and, in some cases, be folded without compromising their functionality.

This technology opens new avenues for portable and wearable electronics, as well as innovative form factors for multiple devices. One of the most popular examples is OLEDs based on a flexible substrate (common flexible substrate materials include plastic, organic compounds, and metal foils). These flexible OLEDs are very thin, light, and somewhat shatter-proof. LG and Samsung have already launched prototypes of such displays. The LG 65-inch 4K OLED TV, for example, has a rollable display.

Flexible electronics are also ideal for wearable devices like fitness trackers, health monitoring devices, and smart clothing. These can conform to the contours of the body for improved comfort. The current-generation foldable devices have many flaws and are too expensive. Many of them serve as proof-of-concept devices designed for early adopters rather than being practical for the mass market. However, it’s clear that flexible displays are evolving into something very different, which may lead to astonishing developments across the tech industry.

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IT BULLETIN **Date : 21.06.2024**

LARGE LANGUAGE MODEL (LLM)

Large Language Model (LLM) is a type of Artificial Intelligence (AI) program that can recognize and generate text, among other tasks. LLMs are trained on huge sets of data — hence the name "large." LLMs are built on machine learning: specifically, a type of neural network called a transformer model.

LLMs use a type of machine learning called deep learning in order to understand how characters, words, and sentences function together. Deep learning involves the probabilistic analysis of unstructured data, which eventually enables the deep learning model to recognize distinctions between pieces of content without human intervention.

LLMs are then further trained via tuning: they are fine-tuned or prompt-tuned to the particular task that the programmer wants them to do such as interpreting questions and generating responses, or translating text from one language to another. LLMs may also be used in Sentiment analysis, DNA research, Customer service, Chatbots and Online search.

Examples of real-world LLMs include ChatGPT (from OpenAI), Bard (Google), Llama (Meta), and Bing Chat (Microsoft). GitHub's Copilot is another example, but for coding instead of natural human language.

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IT BULLETIN **Date : 01.07.2024**

DIGITAL IMMUNE SYSTEM

A digital immune system does not refer to a specific piece of technology, but instead is a term to cover a comprehensive cybersecurity network of software, hardware, and strategy that aims to protect the business against digital attacks and malfunctions. It is therefore analogous to the human immune system, as a catch-all term for an integrated, composite system with one common aim: to protect against any threats to functionality.

The core concepts of a Digital Immune System are below:

Threat Detection

The ability to detect and identify potential threats to an organization's digital assets. This includes using technologies like firewalls, intrusion detection systems, and security information and event management (SIEM) tools to monitor network activity and identify suspicious behavior.

Threat Intelligence

The use of external sources of information to inform threat detection and response. This includes data from security researchers, government agencies, and industry groups to stay up-to-date on emerging threats and vulnerabilities.

Continuous monitoring and improvement

It must be continually monitored and updated to stay effective against new and evolving threats. This includes regular vulnerability assessments, penetration testing, and ongoing training and education for personnel.

Collaboration

A digital immune system requires collaboration and communication between stakeholders, including IT teams, security personnel, executives, and third-party vendors. This ensures that everyone is working together to protect the organization's digital assets and respond to security incidents promptly and effectively.

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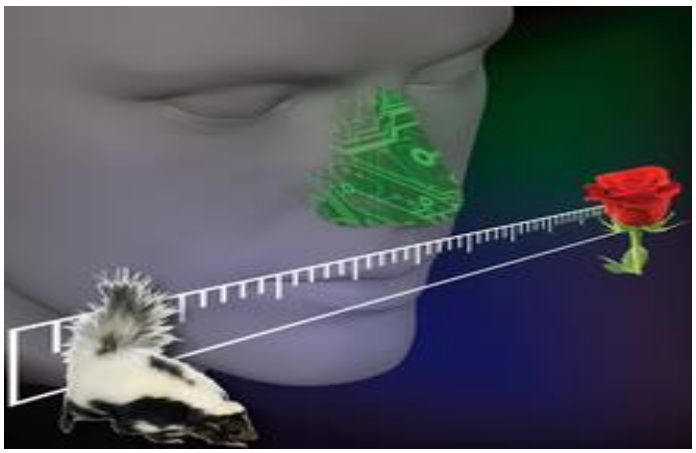
IT BULLETIN **Date : 02.07.2024**

ELECTRONIC NOSE

An electronic nose identifies certain components of an odor and analyzes its chemical makeup. It contains a mechanism for chemical detection, including an array of electronic sensors and artificial intelligence tools for pattern recognition.

Such devices have been around for over two decades but are typically expensive and bulky. Researchers are trying to make these devices less expensive, smaller, and more sensitive.

Electronic nose instruments are used by research facilities, production departments, and quality control laboratories for various purposes such as the detection of contamination, spoilage, and adulteration.



They also find applications in healthcare, aiding in disease diagnosis through breath analysis. Additionally, they play a crucial role in detecting gas leaks and pollutants, contributing to environmental protection efforts.

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IT BULLETIN **Date: 03.07.2024**

AI TRUST, RISK, AND SECURITY MANAGEMENT (AI TRISM)

The record of 2024 trends and technologies is incomplete without AI TRiSM - focusing on managing the risks and security challenges associated with the deployment of artificial intelligence systems. The goal is to ensure that AI systems are trustworthy, secure, and safe for use in various applications, ranging from healthcare to finance, transportation, and beyond.

AI TRiSM encompasses a range of practices, including data privacy, security, governance, and ethics. In terms of business objectives, user approval, and adoption, enterprises that operationalize AI transparency, trust, and security will experience a 50% improvement in their AI systems by 2026.

In a nutshell, the emergence of AI TRiSM as a technology trend highlights the growing recognition of the need for responsible and ethical use of AI, which is critical for building trust in AI products and promoting their widespread adoption in various industries and applications.

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IT BULLETIN **Date : 04.07.2024**

SUPER APP DEVELOPMENT

"The front end of a platform into which internal developers and third-party providers can publish microapps (or miniprograms)" which users can activate and choose to use. Superapps serve as a platform or marketplace for microapps built internally or by third-party companies.

Super apps are another rapidly evolving sector that totally earns its place in the list of current technology trends in 2024.These are multifunctional mobile applications that offer a wide range of services and features to users within a single platform. These types of apps typically integrate various services such as messaging, social networking, eCommerce, gaming, ride-hailing, food delivery, and financial services into one app.

The idea behind a super app is to provide a seamless and convenient user experience where users can access multiple services without having to switch between different apps.

One great example of this kind of app is WeChat. With over 1 billion users in China, it allows them to chat with friends, make payments, order food, book taxis, and even shop online. By integrating a bunch of different apps into a single platform, WeChat has been gaining tremendous traction as a prominent use case of a super app.

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IT BULLETIN **Date : 05.07.2024**

SERVERLESS COMPUTING

Serverless computing suspends the work of managing the infrastructure of server setup which allows developers to focus solely on writing code. In this model, cloud providers handle server management, auto-scaling, and resource allocation. Serverless computing simplifies application deployment and scaling, making it ideal for modern, cloud-native applications.

Aspects	Serverless Computing	Server-Based
Cost	In a serverless architecture, one follows a pay-per-use model which is a cost-effective solution.	Maintaining servers leads to a cost overhead due to constant server maintenance and monitoring.
Portability	Vendor lock-in is a major drawback, i.e. migrating to other service providers is difficult.	In a service-based model, one can easily move applications between various cloud providers or on-premise servers.
Scalability	Serverless architecture provides the provision of automatic scaling where resources are added or released based on the traffic.	Service-based models require manual intervention to scale up or scale down the application.
Performance	Serverless architecture leads to variable performance in case of cold and warm starts.	Service-based models have a consistent performance.

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IT BULLETIN **Date : 06.07.2024**

PHYGITAL CONVERGENCE

Phygital convergence, a portmanteau of "physical" and "digital," represents the growing trend of blending digital experiences with the physical world. In 2024, this convergence is reshaping how we interact with our environment, transforming industries, and creating new paradigms for user experiences.At its core, phygital convergence aims to create seamless interactions between the digital and physical realms, enhancing real-world experiences with digital technology. This trend is driven by advancements in technologies such as the Internet of Things (IoT), Augmented Reality (AR), Virtual Reality (VR), and 5G networks.

In healthcare, phygital convergence is enabling more personalized and effective patient care. Wearable devices continuously monitor health metrics, feeding data to AI-powered systems that can predict potential health issues before they become serious. Telemedicine platforms are evolving to include AR and VR capabilities, allowing for more immersive remote consultations and even virtual surgical planning.The entertainment industry is at the forefront of phygital experiences. AR-enhanced live events, such as concerts or sports matches, provide attendees with real-time statistics, instant replays, and interactive elements. Theme parks are incorporating VR and AR to create hybrid experiences that blend physical rides with digital worlds.

Education is another sector benefiting from phygital convergence. AR and VR technologies are being used to create immersive learning experiences, allowing students to interact with 3D models of historical sites or complex scientific concepts. IoT-enabled classrooms can adapt to individual learning styles and preferences, creating more engaging and effective educational environments.

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WEB 3.0

Web 3.0, often referred to as the "Semantic Web" or the "Decentralized Web," represents the next evolution of the internet in 2024. This new paradigm aims to create a more intelligent, open, and user-centric web experience, leveraging technologies like blockchain, artificial intelligence, and decentralized networks.

Decentralization is a key principle of Web 3.0. Through the use of blockchain technology and distributed ledger systems, Web 3.0 applications (often called dApps) operate on peer-to-peer networks rather than centralized servers. This not only enhances security and reduces single points of failure but also promotes a more democratic and open internet.

The concept of "data as a service" is gaining traction in the Web 3.0 era. Users can monetize their own data, choosing when and how to share it with businesses or other entities. This shift in data ownership and control has significant implications for digital marketing and advertising, potentially leading to more direct and transparent relationships between brands and consumers.

Decentralized Finance (DeFi) is one of the most prominent applications of Web 3.0 principles. By leveraging blockchain and smart contract technology, DeFi platforms offer financial services without traditional intermediaries, potentially democratizing access to financial products and services globally.

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IT BULLETIN **Date : 09.07.2024**

QI2 WIRELESS CHARGING

Qi2 is the new open wireless charging standard from the Wireless Power Consortium (WPC), and it brings important upgrades over the original Qi standard. The headline is the Magnetic Power Profile (MPP), which is based on Apple's MagSafe technology. (Apple was involved in developing the Qi2 standard.) This allows Qi2-branded devices to add a ring of magnets to ensure perfect alignment with chargers and allow for faster charging speeds.

Qi2 is also fully backward compatible, so one can charge an older Qi Android phone or MagSafe iPhone on a Qi2 charger. One has tested several, and this seems to hold true. One's also expected any old Qi chargers to charge Qi2 devices, albeit at slower speeds, but it turns out that is not true.

The HMD Skyline, for example, did not work with several old Qi chargers we tested, and it seems this may be par for the course. One will have to wait for more Qi2 phones to find out, but with heavyweights like Google and Samsung failing to adopt Qi2 in their latest flagships it might be awhile.

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IT BULLETIN **Date : 10.07.2024**

MIXED-REALITY HEADSETS

Mixed-reality headsets are wearable devices. They let one interact with the virtual and physical world through an on-screen interface and real-world actions like eye tracking and hand gestures. They are a natural advancement of virtual reality and augmented reality.

Unlike virtual reality, which does not bring in elements of the real world into digital spaces, mixed reality does through spatial computing. It has screen overlays and holographic projections that they can interact with in a natural way.

For example, one can wear mixed-reality headsets that display one`s operating system on a holographic projection. From there, one can interact with it by using hand gestures or eye tracking. Without using a mouse and keyboard, one can type, drag and drop files, and browse the web.

Real-world applications in 2024:

- Release of Apple Vision Pro
- Xreal Air 2 Ultra glasses
- Upcoming Samsung XR/VR headset

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IT BULLETIN **Date : 11.07.2024**

SMART HOME MAPPING

Samsung unveiled the new 3D Map View feature for SmartThings. Map View allows one to manage all of one`s Samsung smart home devices through a virtual 3D map of one`s home. It uses spatial AI and LiDAR sensors in one`s Samsung devices to create digital twins to generate an accurate floor plan. This means that one no longer need to provide a copy of one`s floor plan, as was the case for the previous 2D map feature.

With a birds-eye view of one`s home's layout, one can manage one`s smart home devices at a glance. One can also activate the feature on one`s TV or smartphone, allowing one to monitor vital information about one`s home – temperature, cameras, appliances in real-time.

3D smart home mapping allows users to create detailed virtual representations of their homes, enabling intuitive management of connected devices and a better understanding of spatial relationships. This technology uses various techniques, including LiDAR and AI, to map a home's layout accurately, creating a 3D model accessible within smart home apps like SmartThings.

Real-world applications in 2024:

- Map View is available now for all SmartThings users.
- Amazon has a similar Map View feature, where one use one`s phone's camera to scan one`s home and generate an interactive map.

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IT BULLETIN **Date : 12.07.2024**

PERSONALIZED TECHNOLOGICAL EXPERIENCES

Personalization technologies play a crucial role in customer engagement. Sophisticated tools like personalization engines and AI enhance marketing strategies, increasing sales and customer satisfaction.

Effective personalization across multiple channels and digital platforms, leveraging behavioral data and predictive analytics, can significantly improve customer acquisition, conversions, and loyalty, as seen with industry giants like Amazon, Spotify, and Netflix.

Businesses must balance the pursuit of personalized customer experiences with the protection of privacy and data security. They must adopt measures to ensure customer trust while complying with evolving regulations like GDPR and CCPA.

Enhanced Customer Insights

One of the most significant impacts of AI on personalized shopping is the ability to gather and analyze vast amounts of customer data. AI algorithms can process information from various sources such as browsing history, purchase patterns, social media activity, and even customer reviews. This data-driven approach enables retailers to gain deeper insights into customer preferences, allowing them to tailor their offerings to meet individual needs.

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IT BULLETIN **Date : 15.07.2024**

VOICE-ACTIVATED TECHNOLOGY

Voice-activated technology has become more sophisticated, with devices now able to understand and process natural human speech more accurately. This technology is widely used in smart speakers, home automation, and customer service bots. It enhances accessibility, convenience, and interaction with technology through hands-free commands and is increasingly integrated into vehicles and public spaces.

Components of Voice Technology

Natural Language Processing

Analyzes syntax, semantics, and context to understand and interpret text; this is known as NLP. With NLP, systems can understand user intents and develop suitable replies.

Text-to-speech

Communication synthesis uses text-to-speech techniques. Voice techs make the sound coming out of the speakers in your smart speaker, speakers, or headphones sound natural.

Voice Biometrics

When verifying and identifying persons, voice biometrics is a game-changer. This innovation improves safety by identifying individual speakers from their unique vocal patterns.

Speech Recognition

Translates speech into text so systems can understand and process user inputs.

Dialogue Management

Manages and processes user-system conversations to keep them on topic and appropriate to the context.

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IT BULLETIN **Date : 23.07.2024**

STAGE-GATE MODEL

The Stage-Gate Model structures the innovation process into distinct stages separated by decision points, or "gates." Each stage involves specific activities such as concept development, feasibility analysis, and prototyping. At each gate, decision-makers evaluate the progress and determine whether the project should proceed, pivot, or halt. This structured approach ensures rigorous evaluation, reduces risk, and improves resource allocation throughout the innovation process.

Implementing the Stage-Gate Model

Innovation management software organizes and monitors the various stages of the innovation process, providing tools for evaluation at each gate to make informed decisions about project continuation. It helps in managing resources and budgets efficiently throughout the stages.

Innovation management software supports the Stage-Gate process by ensuring that all necessary information and data are available for decision-makers at each gate. This includes features for project tracking, milestone management, and real-time collaboration.

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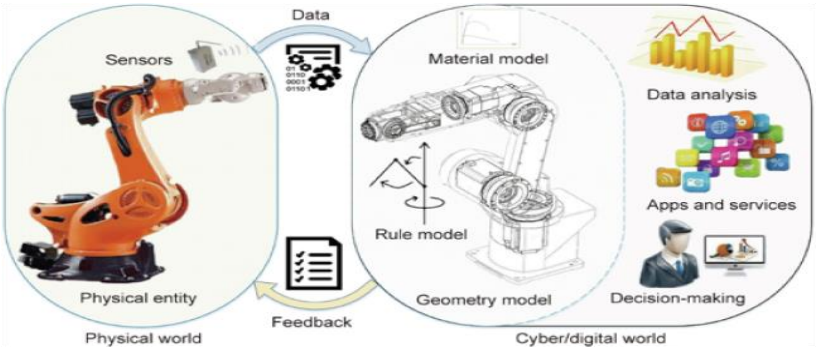
IT BULLETIN **Date : 24.07.2024**

APPLICATION OF DIGITAL TWIN IN INDUSTRY

A digital twin is a digital representation of a real-world entity or system. The implementation of a digital twin is an encapsulated software object or model that mirrors a unique physical object, process, organization, person or other abstraction. Data from multiple digital twins can be aggregated for a composite view across a number of real-world entities, such as a power plant or a city, and their related processes.

The digital twin concept consists of three distinct parts: the physical product, the digital/virtual product, and connections between the two products. The connection between the physical product and the digital/virtual product is data that flows from the physical product to the digital/virtual product and information that is available from the digital/virtual product to the physical environment.



The development and creation of a digital twin is used mainly for three main issues:

- Digital Twin Prototype (DTP): before creating a final physical product, a digital one is made to see what it would really look like and how it would behave.
- Digital Twin Instance (DTI): once a product has already been manufactured, the digital twin is used to test different scenarios of use with the virtual and not with the real one.
- Digital Twin Aggregate (DTA): Collects information from the above case to determine a product's capabilities, run forecasts, and test operational parameters.

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IT BULLETIN **Date : 25.07.2024**

CYBER-PHYSICAL SYSTEMS (CPS)

This technology integrates computational algorithms and physical processes for creating intelligent systems that bind the cyber and physical components. These systems have several applications, from industrial automation and smart infrastructure to healthcare and transportation. Cyber physical system uses a network of connected sensors, actuators, and computational components to continuously monitor and manage physical processes. Because of the smooth connection between the physical and cyber domains, CPS can improve efficiency, adjust to changing circumstances, and maximize performance.

CPS, a component of the Internet of Things (IoT), helps build a "smart environment" where real-time data is continuously gathered, examined, and utilized to guide choices and simplify procedures.

Importance of CPS:

CPS are playing an increasingly important role in various sectors, enabling:

Increased efficiency: By automating processes and using data analytics to optimize performance.

Improved safety: By using sensors and real-time control to monitor and prevent accidents.

Enhanced reliability: By using redundant systems and monitoring data to ensure continuous operation.

New applications: By enabling new products and services that were not previously possible.

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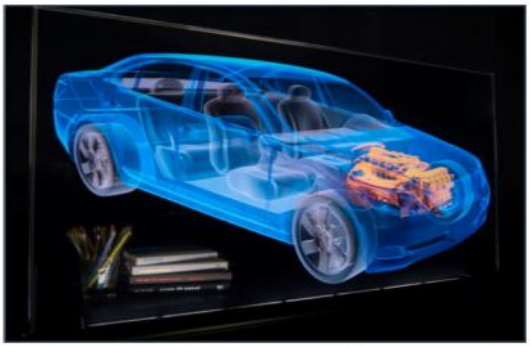
IT BULLETIN **Date : 26.07.2024**

TRANSPARENT OLED TECHNOLOGY

Transparent OLED is a transparent display technology that displays dynamic or interactive information on a transparent surface glass, allowing users to view what is shown on the display while being able to see through it. Designers can overlay text, digital images and video content onto physical objects or scenes that sit behind the glass. Transparent OLED displays are self-emitting and utilize Organic Light Emitting Diode (OLED) technology to eliminate the need for a backlight or enclosure, making it possible to create truly see-through installations in a virtually frameless glass design.

White or bright content will be opaque and shine from the screen and appear in the foreground



Black or dark (or off-state) content will be see-through

Black is Clear – White is Opaque

Unlike transparent LCD displays, black or dark content on the display is clear and white or bright content is opaque. one can see this in the photos below. The car image appears to be floating in space and through the black background one can clearly see the books and pencils, physical objects set behind the display. The full screen image of the boat appears in the foreground, but if one looks closely at the hull of the boat one will see some objects behind the display, made visible by the dark area.

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DEPARTMENT OF COMPUTER TECHNOLOGY AND INFORMATION TECHNOLOGY

IT BULLETIN **Date: 29.07.2024**

HUAWEI MATE XT ULTIMATE DESIGN LAUNCHED: WORLD'S FIRST TRI-FOLD PHONE

Huawei has announced the Mate XT Ultimate Design at an event in Beijing, China. This is the world's first tri-fold smartphone. Unlike every other foldable-screen device available today which has only one hinge and a separate outer screen, the Mate XT has two hinges, and just one screen, of which a 6.4-inch portion is visible when the device is folded. It can open up into a 7.9-inch or a 10.2-inch panel when either two or all three segments are opened up.

The total battery capacity is 5600mAh, split across three packs. Wired charging speed goes up to 66W and wireless charging can work at up to 50W if using Huawei's own proprietary accessories. There's also 7.5W reverse wireless charging.

The unit has two nano-SIM slots. It measures 12.8mm thick when fully folded and 4.75mm when flattened. Its weight comes in at 298g. Huawei promises that this phone's steel hinges are durable and smooth. A protective layer is affixed to the screen, and the company also warns users not to try sticking any other film on, to avoid damaging it. All specifications have been machine-translated from Chinese.

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IT BULLETIN **Date: 30.07.2024**

ELEVATE EBIKE MOTOR SYSTEM

Elevate is a removable, lightweight, and powerful ebike motor that cleverly attaches to bike's disc brake mounts. The ebike kit includes: drive unit (motor), battery, rotor-gear, wiring harness, mounting hardware, battery charger, and variable output throttle - everything you need to Elevate your bike.

Using Elevate with a throttle turns one`s bike into a Class 2 ebike system limited to 20mph. Please check local and state regulations and ride safely! We are developing a pedal assist option to offer Class 1 compliance. Elevate systems purchased today will be compatible with pedal assist after a future firmware update and purchase of the sensor in development.

Considering the unit’s compact, lightweight and removable design, we were a bit skeptical that the Elevate could compete with dedicated e-bikes but the Bimotal system quickly squashed that skepticism. I rode the Elevate retrofitted to a Juliana Joplin mountain bike for a quick lap around Sea Otter’s eMTB race course and it boosted up a ridiculously steep section designed to strain even the most powerful motors.

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IT BULLETIN **Date: 31.07.2024**

EDELKRONE TRIPOD X ANNOUNCED – FULLY MOTORIZED TRIPOD

The edelkrone Tripod X looks like every other mid-size classic video tripod: three telescopic legs, a spreader, and a rather robust centerpiece for the bowl and head. A second glance will reveal just how innovative it is. First – there's no bowl, and for a good reason. The Tripod X needs no bowl because it automatically levels using its motorized legs. This will work on a slightly uneven surface as well as on stairs. Bear in mind that the spreader can't be detached since the Tripod X is mostly an indoor tripod. As edelkrone's website puts it: "Indoor use highly suggested. Mild climate outdoor usage is also possible. Sandy environments, such as beaches or deserts, should be avoided. It is not water-resistant and should not be used in the rain or on wet surfaces."

The Tripod X is relatively large compared to other tripods. Considering its functionality, a different comparison comes to mind – in a way, it's more a pedestal than a tripod. Under this classification, it's actually quite compact. Maximum height is 148cm (58.27 inches) and minimum goes as low as 34cm (13.39 inches). Both are measured with no head attached. Load capacity maxes at 30kg (66.14 pounds), but to function fully motorized, we'll have to cut the weight to 20kg (44.09 pounds) The Tripod X is made of machined aluminum and weighs 9kg (19.84 pounds). As of its release, it only works on battery power (a power adapter is coming). A 12V min 3Ah GBA-type power tool battery will provide around 300 height adjustments.

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IT BULLETIN **Date: 01.08.2024**

ACTION CAMERA EXTRAORDINAIRE
INSTA360 X4

Basic Usage

Buttons and Controls : Get familiar with the camera buttons, including the power button, shutter button, and quick button for easy access to one`s favourite shooting modes.

Touchscreen : Navigate the camera's menus and settings using the touchscreen. Swipe down to access the shortcuts menu, where one can adjust settings like lens guard mode, screen brightness, and more.

Connectivity and File Transfer

The Insta360 X4 can be connected to one`s smartphone or computer for file transfer. Use the Insta360 app to import, view and edit one`s shots right on one`s phone.

Functionality and Usage

Temperature Reduction : When recording videos, especially in high resolution, the camera can generate a lot of heat. The Thermo Grip Cover is designed to reduce the surface temperature of the camera, making it more comfortable to use, especially if one hand-holds the camera for long periods of time.

Installation : The cover installs easily on the body of the Insta360 X4 . Start by aligning the top of the cover with the top of the camera and slide it down until it sits securely. Make sure the blanket fits properly to maximize temperature reduction effectiveness.

Precautions and Maintenance

Installation and Removal : Handle the Thermo Grip Cover with care to avoid scratching the lenses or damaging the camera. Install and remove the cover when the camera is turned off to avoid disturbing recordings in progress.

Usage and Restrictions : Although the Thermo Grip Blanket is effective in reducing heat, it is not recommended for use in extreme activities such as skiing, water sports, motorcycling, and cycling, where the camera may be exposed to impacts or prolonged immersion in water.

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IT BULLETIN **Date: 02.08.2024**

HONOR MAGIC V3

The Honor Magic V3 is the best book-style folding phone. The daring design is impossibly slim and light, there are some interesting AI features, and it ticks all the traditional flagship boxes with a versatile camera, long battery life, and fast charging. Honor's software has dragged its devices down in the past, but a few minor issues aside.

The global version of the Honor Magic V3 comes with Google's apps onboard. It feels like a regular Android smartphone when closed, much like the new Google Pixel 9 Pro Fold, but one can always pry it open to play games or videos on the big screen.

The Honor Magic V3 runs Android 14 with MagicOS 8 on top, but it is easy to customize and comes with just a sprinkling of bloatware. They can also decide how to take advantage of the dual screen with multiple windows and different layouts in the settings.

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IT BULLETIN **Date: 05.08.2024**

A SAFER TOOL FOR TINKERERS
iFixit FixHub POWER SERIES SMART SOLDERING IRON

With USB-C power, this 100W iron heats up in under 5 seconds, giving one full-size soldering performance in a compact, easy-to-handle design.

Designed with both professionals and beginners in mind, the Smart Soldering Iron includes automatic cool-down when set down and auto re-heating when picked up - so one can work efficiently and safely. The ring light indicator clearly shows when the iron is heating, hot, or cooling.

Features

- ✓ 100W power
- ✓ Factory Preset 350°C (660°F) for optimal soldering
- ✓ Adjustable tip temperature between 100°C and 420°C using the FixHub Power Station or the Web Interface
- ✓ Ergonomic shape
- ✓ USB-C power delivery for power source flexibility
- ✓ Illuminated ring for heat indication
- ✓ Ready to solder in under 5 seconds
- ✓ Compact design for portability
- ✓ Durable and repairable

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IT BULLETIN **Date: 06.08.2024**

FOLDABLE STRUCTURAL SECURITY CAMERAS

The camera features clean lines and geometric structures that highlight function above all else. The most progressive touch is the transformable design based on its operational state. Additionally, it has a 2K resolution with an impressive 6x zoom.

Trend Themes

1. Transformable Security Solutions - Incorporating innovative designs like foldable structures to enhance functionality and privacy features in security cameras.

2. Minimalist Aesthetic Technology - Embracing Bauhaus concepts to create clean lines and geometric structures in technological devices for a sleek and functional appeal.

3. Adaptive Surveillance Equipment - Utilizing transformable features and high-resolution capabilities to offer versatile surveillance solutions in the security industry.

One of the most intriguing features of the Genie S is its “ViewSay” technology. This AI-powered system goes far beyond simple motion detection. ViewSay analyzes and interprets the visual data it captures, providing users with intelligent notifications. Imagine receiving a notification that says “Pet cat playing on the couch” instead of a generic “motion detected” alert. This level of detail allows for a more informed response and peace of mind.

The Genie S prioritizes user control over data privacy. Unlike some security cameras that rely on cloud storage subscriptions, the Genie S offers local storage options (32GB or 64GB). Additionally, users can customize motion detection alerts to receive notifications only for specific events such as people, pets, or vehicles.

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IT BULLETIN **Date: 07.08.2024**

WIRELESS WEATHERPROOF CAMERAS

The Argus 4 Pro by Reolink is a significant advancement in the home security camera market, being the first to offer 4K resolution with a battery-powered system, ColorX night vision, and dual-image stitching. It features ColorX night vision, which provides full-color video even at night or in low-light conditions, and dual-image stitching technology that combines images from two lenses to create a wide 180-degree view. This ensures comprehensive coverage of the monitored area, capturing everything in high definition, whether it's for monitoring children, pets, a home lawn, or valuable items such as package deliveries.

The camera's extended battery life is enhanced by 30% due to the efficient ColorX technology, which reduces energy consumption in night vision mode. It also supports the latest Wi-Fi 6 standard, enabling faster data transfer rates and improved connection stability, which is crucial for live viewing. For storage, the Argus 4 Pro offers versatility with support for microSD cards, FTP servers, NAS systems, or integration with the Reolink Home Hub Series. It boasts smart features such as accurate motion detection and customizable privacy settings, all accessible remotely and without the need for subscription services. The device is designed to be 100% wireless, with a weatherproof build, and comes with various mounting options for easy installation indoors or outdoors.

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IT BULLETIN **Date: 08.08.2024**

OPENAI o1 SYSTEM CARD

The o1 large language model family is trained with reinforcement learning to perform complex reasoning. o1 thinks before it answers—it can produce a long chain of thought before responding to the user. OpenAI o1 is the next model in this series (previously OpenAI o1-preview), while OpenAI o1-mini is a faster version of this model that is particularly effective at coding. Through training, the models learn to refine their thinking process, try different strategies, and recognize their mistakes. Reasoning allows o1 models to follow specific guidelines and model policies one have set, helping them act in line with our safety expectations. This means they are better at providing helpful answers and resisting attempts to bypass safety rules, to avoid producing unsafe or inappropriate content.

The two models were pre-trained on diverse datasets, including a mix of publicly available data, proprietary data accessed through partnerships, and custom datasets developed in-house, which collectively contribute to the models' robust reasoning and conversational capabilities.

The two models were pre-trained on diverse datasets, including a mix of publicly available data, proprietary data accessed through partnerships, and custom datasets developed in-house, which collectively contribute to the models' robust reasoning and conversational capabilities.

The initial launch in September 2024 included two models:

- **OpenAI o1-preview** -- excels at tackling sophisticated problems.
- **OpenAI o1-mini** -- provides a smaller, more cost-efficient version of o1.

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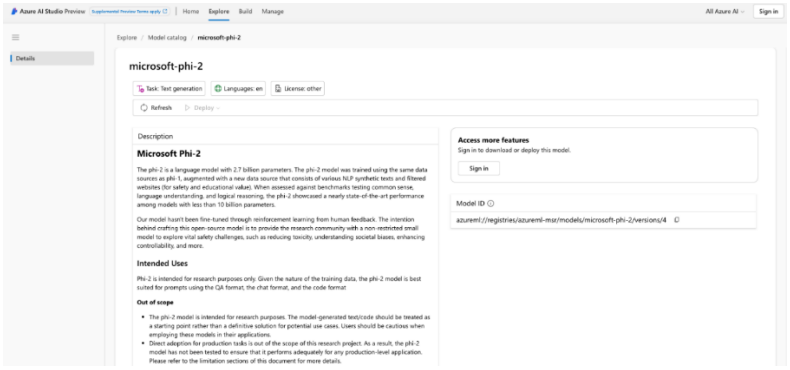
IT BULLETIN **Date: 09.08.2024**

PHI-2

Microsoft Research has developed Phi-2, a 2.7 billion parameter language model. It uses a Transformer architecture trained on diverse quality data. The goal is state-of-the-art performance with a smaller model size. Phi-2 builds on Microsoft's previous Phi models. It transfers embedded knowledge from Phi-1.5. Phi-2 aims to demonstrate reasoning ability and general knowledge. Responsible governance is crucial for such advanced AI systems. Overall, Phi-2 represents notable progress in efficient large language model design.



- Phi-2 uses a transformer architecture to predict words, like other modern language models.
- Phi-2 was trained on 1.4 trillion data tokens. It has 2.7 billion parameters, which is considered small compared to other models.
- Phi-2 is very good at language understanding and common-sense reasoning. It outperforms other, smaller models. Microsoft made it to advance AI research.

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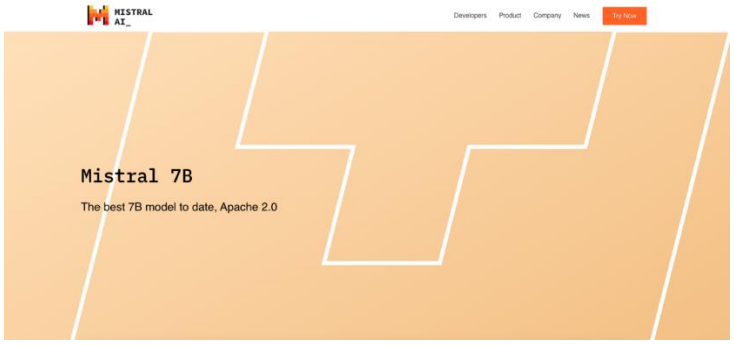
IT BULLETIN **Date: 12.08.2024**

MISTRAL 7B

Mistral AI has released Mistral 7B, a 7 billion parameter AI model. It uses innovative attention mechanisms like sliding window attention for efficiency. Mistral 7B achieves strong performance on English language tasks and coding. A fine-tuned version called Instruct outperforms other 7B models on conversational benchmarks. Mistral provides model weights and instructions to facilitate use but lacks moderation. Overall, Mistral 7B represents notable open-source language model progress. However, responsible governance remains crucial.



- Mistral AI represents a major advance in generative AI with its ability to produce human-quality content and solutions. Far more capable than previous models.
- Its conversational responses stand out for containing accurate, up-to-date information. Much less prone to false or misleading output.
- The mobile and browser integration grants easier access to Mistral's powerful AI capabilities. Significantly more user-friendly compared to past solutions.

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IT BULLETIN **Date: 13.08.2024**

NEUROMORPHIC COMPUTING

Neuromorphic computing is a computing approach inspired by the human brain, aiming to create hardware and software that emulate neural and synaptic structures and functions for efficient information processing.

Key Features:

- ✓ **Parallel Processing:** Neuromorphic systems often use a distributed network of neurons, enabling parallel processing, which is crucial for speed and efficiency.
- ✓ **On-Chip Memory:** Neuromorphic architectures often integrate memory and processing units, eliminating the "von Neumann bottleneck" where data transfer between memory and processor is a major bottleneck in traditional computing.
- ✓ **Event-Driven Computation:** Neuromorphic systems can process information in a more event-driven manner, similar to how neurons in the brain respond to signals, rather than relying on fixed time steps.
- ✓ **Learning and Adaptation:** Neuromorphic systems can learn and adapt in real-time, mimicking the brain's ability to learn and adjust to new situations.

Applications:

Neuromorphic computing has potential applications in various fields, including:

- ✓ **AI and Machine Learning:** Training large language models, image recognition, and natural language processing.
- ✓ **Edge Computing and IoT:** Processing data from sensors and devices in real-time with low power consumption.
- ✓ **Robotics:** Developing more intelligent and adaptive robots.
- ✓ **Neuroscience Research:** Understanding the brain and its functions.

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IT BULLETIN **Date: 14.08.2024**

HOLOGRAM TECHNOLOGY

Hologram technology uses light waves and laser beams to create 3D images, or holograms, that appear to float in space. These images are formed through the science of optical holography, which captures light from an object and projects it into a three-dimensional form that can be viewed from multiple angles.

Stereoscopic vs. Realistic Holograms

For the production of life-like holographic displays for applications such as mixed reality, there are two types of holograms: stereoscopic and realistic. Stereoscopic images remain static while realistic ones can be altered over time with advanced technology like HoloStudio software that helps designers create engaging experiences through these dynamic visuals. Realistic digital images use advanced technology to create 3D models or virtual scenes that feel real. This helps build an environment where people can interact as if they were with a real person.

Hologram Technology in Real Life

Holographic technology is revolutionizing many industries, enabling us to view and learn things with greater depth than ever before. In healthcare, medical experts rely on holograms for three-dimensional visualization as well as preparing operations in advance. Resulting in far more precise outcomes. Education has also been enriched by this tech: digital lessons now incorporate interactive features such as lifelike 3D visuals which enable students to better comprehend challenging concepts.

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IT BULLETIN **Date: 16.08.2024**

NEUROMORPHIC COMPUTING

Neuromorphic computing is a computing approach inspired by the human brain, aiming to create hardware and software that emulate neural and synaptic structures and functions for efficient information processing.

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Applications:

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- **AI and Machine Learning:** Training large language models, image recognition, and natural language processing.
- **Edge Computing and IoT:** Processing data from sensors and devices in real-time with low power consumption.
- **Robotics:** Developing more intelligent and adaptive robots.
- **Neuroscience Research:** Understanding the brain and its functions.

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IT BULLETIN **Date: 17.08.2024**

ORCAM MYEYE 3 PRO

The leading aid for low vision provides a wide range of reading capabilities that can be activated by voice command, hand gestures, or a touch bar. With its scan to text capability, it starts reading from any surface, and from any point of the text.

OrCam remains committed to providing our Low Vision users with the highest quality, most advanced, and robust products. One remain focused on our Low Vision users by providing advancements and support to our users. One are working closely with our US-based distributors to best address one`s needs seamlessly. Customer Support, Research & Development, Manufacturing, and Operations continue to function and respond to our users' needs. One`s devices are warehoused in the United States to ship out directly and one look to further minimize delay in getting our products out to our users. One`s are excited to announce that with the use of our OrCam App, available on both Android and iOS, users will experience software updates regularly and seamlessly without additional steps for the appropriate devices.

Benefits:

- Provides real-time assistance for reading and recognizing objects.
- Enhances independence for visually impaired users.
- Uses advanced AI and computer vision technology.

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IT BULLETIN **Date : 19.08.2024**

TEMPTRAQ WEARABLE TEMPERATURE MONITOR

TempTraq is an FDA Cleared Class II medical device that gives Healthcare providers the first wireless continuous temperature monitor in the form of a soft, comfortable, disposable patch. TempTraq can significantly improve the way temperature is measured in the clinical environment and provide clinicians a quicker, easier, and more effective way to measure temperature.

FDA Cleared : Class II medical device

Operating Life : 72 hours; disposable/single use

Accuracy Rating : Conforms with ASTM E1112-00 (2011) +/- 0.1°C or +/- 0.2°F

Wireless: Bluetooth low energy

Power: Eco-friendly, 2 – 1.5-volt carbon zinc batteries

Safe: For all ages and all skin types

Temperature display: Fahrenheit or Celsius

Alerts : Audible and/or visual notifications of rising temperature via applications

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IT BULLETIN **Date : 20.08.2024**

MOVERIO BT-350 SMART GLASSES

Designed for multi-user applications, Moverio BT-350 smart glasses feature an adjustable design, made to fit multiple sizes. With included admin software[1] and an optional USB dock, management of multiple devices is easy. Ideal for indoor and outdoor use, these highly transparent glasses redefine augmented reality (AR) with a groundbreaking Si-OLED display. Motion-tracking sensors and a high-resolution camera make it ideal for 360-degree apps. The binocular display enables stereoscopic content too. With wireless and Bluetooth Smart (BLE) connectivity, the BT-350 supports multiple accessories.

- **Innovative design** : durable hinge design accommodates a wide range of user head sizes
- **Designed for multi-user applications** : Epson Moverio Admin (EMA) device management software[1] and optional USB dock (holds up to five devices) enables scalable implementation
- **Ideal for both indoor and outdoor use:** built-in flip-up shade makes it easy
- **Hands-free operation** : head tracking and gesture control support hands-free user interfaces; includes neck strap and controller pouch
- **Ideal platform for developing AR apps:** seamlessly blend digital content into the world around one with highly transparent Si-OLED display
- **Dual (binocular) displays**: each lens has its own display, in one`s field of vision, projected into one`s surroundings; ideal for stereoscopic 3D content

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IT BULLETIN **Date: 21.08.2024**

ROBOTICS AND AUTOMATION

Robotics and automation continue to transform industries, from manufacturing to healthcare. Collaborative robots, or cobots, are working alongside humans in factories, enhancing productivity and safety. In warehouses, autonomous mobile robots are optimising logistics operations, while surgical robots are enabling minimally invasive procedures with unprecedented precision. In agriculture, robotic systems are automating planting, harvesting, and crop monitoring.

Drones are finding applications in everything from package delivery to search and rescue operations. Meanwhile, software robots, or bots, are automating complex administrative tasks in offices around the world. As artificial intelligence becomes more sophisticated, these robotic systems are becoming increasingly autonomous and adaptable.

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IT BULLETIN **Date: 31.08.2024**

INTERNET OF THINGS (IOT) AND HYPERCONNECTION

The Internet of Things continues to expand, creating a vast network of interconnected devices that collect and share data. This hyperconnected ecosystem is optimising everything from home energy use to entire city infrastructures. Smart homes equipped with IoT devices can automatically adjust lighting, temperature and security systems based on occupants preferences and behaviours. In agriculture, IoT sensors are enabling precision farming, optimising water usage and crop yields. Industrial IoT is revolutionising manufacturing, with connected machines that can predict maintenance needs and optimise production processes.

As 5G networks proliferate, the capabilities of IoT will expand exponentially, enabling real-time data processing and decision-making. This constant flow of data raises important questions about privacy and security, but also promises a future where our environment constantly adapts to our needs, creating more efficient and sustainable systems.

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IT BULLETIN **Date: 02.09.2024**

NANOMEDICINE

As a branch of nanotechnology, nanomedicine is another technology idea for the future that proves revolutionary in treating diseases that have till now proven resistant to treatment with modern medicine. Traditional medicines tend to go through our digestive process too quickly for effective absorption so that we often end up excreting much of the medicine as waste. Future technology like nanomedicine can prevent this and stay in the human system for much longer and to better effect.

Already, scientists have created incredibly small robots that can swim through our bodies towards a specific part of our insides whilst carrying a pharmaceutical payload. With effective miniaturization and the proper programming, the potential for nanomedicine is staggering and may well pave the way for the future of healthcare technology. In theory, nanomedicine could be used to ferry chemotherapy drugs to cancerous cells without having to be absorbed by a person's whole body, and therefore reduce the negative side effects of such treatments.

These developments will prove revolutionary in reducing the number of side effects patients will face from future treatments. Experts predict that nanomedicine could also help with post-treatment recovery and even be used to stabilize patients during surgery. With great attention turned to healthcare innovations today, there's a big chance to expect some exciting news in the nearest future.

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IT BULLETIN **Date: 03.09.2024**

SPACE TOURISM

A new golden age of future technology for space travel seems to be upon us, driven by the boom of the commercial space economy. State-space agencies also seem to be working with a renewed purpose, as new projects from NASA look at possibilities for putting man back on the Moon and even a possible manned mission to Mars. At present, the launch costs are likely to mean that space tourism can only be accessed by the very rich. However, thanks to economies of scale and the ever-increasing efficiency of rocket performance, it would be no surprise if space tourism became more widely affordable with future space technology in our lifetimes.

Air travel was also once the preserve of the very rich in the 20th Century. Eventually, air travel costs plummeted and became widely affordable by the 1980s, so it would be no surprise if the same were to occur with space tourism.

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IT BULLETIN **Date: 04.09.2024**

SAND BATTERY

A sand battery is a high-temperature thermal energy storage system that uses sand as a medium to store heat energy. It works by heating sand using renewable energy sources like solar or wind power, and then isolating the heated sand to retain heat for later use. This stored heat can then be converted back into electricity or used for other applications like heating homes or industries.

How it works:

Sand is a good material for storing heat because it has a high heat capacity and can retain heat for long periods. In a sand battery, sand is heated using electricity generated from renewable sources like solar or wind. The heated sand is then contained within a thick, insulated silo, which prevents heat loss.

Advantages:

Sand batteries offer several advantages over traditional electrical batteries, including:

Long-term energy storage: Sand can store heat for extended periods, even months, making it suitable for applications where energy demand is seasonal.

High-capacity storage: Sand batteries can store large amounts of energy, making them suitable for large-scale renewable energy systems.

Cost-effectiveness: Sand is a readily available and inexpensive material, making sand batteries a cost-effective solution for energy storage.

Flexibility: The stored heat can be used for various applications, such as electricity generation, heating homes, or providing industrial process heat.

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IT BULLETIN **Date: 05.09.2024**

ELECTRONIC SKIN

Electronic skin, or e-skin, is a technology that mimics the sensing capabilities of human skin, offering flexibility, stretchability, and the ability to detect various stimuli. It has numerous potential applications in fields like robotics, prosthetics, health monitoring, and wearable devices. Key aspects of e-skin technology:

Mimicry of Human Skin:

E-skin is designed to replicate the sensory functions of human skin, including the ability to detect pressure, temperature, and other external stimuli.

Flexibility and Stretchability:

A key characteristic of e-skin is its ability to bend, stretch, and conform to the body, making it suitable for wearable applications.

Sensor Integration:

E-skin incorporates various sensors, allowing it to detect and measure a range of parameters, such as temperature, pressure, humidity, and even physiological signals.

Potential Applications:

E-skin technology is being explored for applications in areas like robotics, prosthetics, wearable healthcare, and personalized medicine.

Examples of E-Skin Applications:

Robotics:

E-skin can provide robots with a sense of touch, enabling them to interact with their environment more safely and effectively.

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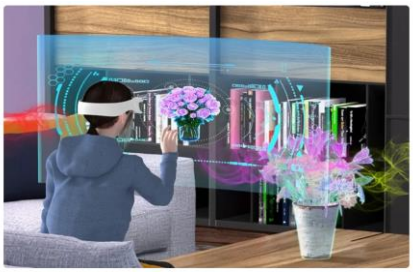
IT BULLETIN **Date: 06.09.2024**

SMELLY VIRTUAL REALITY (VR) TECHNOLOGY

Smelly Virtual Reality (VR) technology is a term that refers to the use of devices that can generate and deliver different scents and odors in the virtual world. These devices aim to enhance the immersion and realism of VR experiences by stimulating the sense of smell, which is often neglected in VR.

It is also known as or related to olfactory VR, multisensory immersion, scentscape, aromaverse, taste and touch XR, 4D immersion, atmospheric VR, immersive storytelling, emotional engagement, moodscape, experiential VR, sensory storytelling, scentsational VR, next-gen immersion, hyperreal simulation, olfactory interface, advanced haptic feedback, multimodal VR, nosedive VR, stinkyverse, sniff and sim, aromageddon, and ode to olfaction.



Practical Applications

Some of the practical applications of smelly VR technology are:

- **4D movie watching**: It can enhance the realism and immersion of watching movies in VR by adding scents that match the scenes such as flowers, food, or smoke.
- **Medical treatment**: It can help patients who suffer from anosmia (loss of smell) regain their sense of smell through VR training. It can also help with mental health issues, such as anxiety or depression, by providing aromatherapy or pleasant smells in VR.

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NEURAL STYLE TRANSFER (NST)

Neural Style Transfer (NST) is a deep learning application that fuses the content of one image with the style of another image to create a brand-new piece of art.

At a high level, NST uses a pretrained network to analyze visuals and employs additional measures to borrow the style from one image and apply it to another. This results in synthesizing a new image that brings together the desired features.

The process involves three core images.

Content image: This is the image whose content one wishes to retain.

Style image: This one provides the artistic style one wants to impose on the content image.

Generated image: Initially, this could be a random image or a copy of the content image. This image is modified over time to blend the content of the content image with the style of the style image. It is the only variable that the algorithm actually changes through the process.

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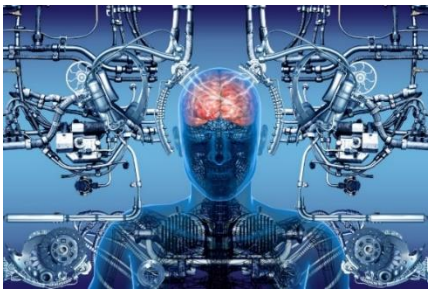
IT BULLETIN **Date: 29.08.2023**

BRAIN READING ROBOTS

The brain–computer interface is the main operating unit of mind-reading robots. This interface is based on electroencephalography (EEG). Electroencephalography is a method used to measure the electrical activity of the brain. A mind-reading robot uses the EEG signals to distinguish between various brain signals pertaining to different body movements with an intended action. Mind-reading robotic technology is the branch of robotics that is human centered.

Each body movement is brought about by an electrical impulse from the brain. Therefore, in order to read the human mind, it is essential to track the electrical activity happening in the human brain.



This data can be reinforced by combining it with the measure of electrical activity in the muscle; as a result, the brain signals are not only detected but their intent is also interpreted. The crux of the mind reading robotic technology is to allow a human to use his/her thoughts and communicate his intention to move to the computer. Human mind-reading may be divided into five main categories, namely, emotions, desires, attentions, intentions and beliefs.

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IT BULLETIN **Date: 11.09.2024**

NEUROMORPHIC COMPUTING

Neuromorphic computing is a technology inspired by the structure and function of the human brain, aiming to create computers that are more efficient and capable of complex tasks. It involves designing hardware and software that mimic neural and synaptic structures to process information.

Brain-Inspired Design:

Neuromorphic systems replicate the brain's architecture, including neurons and synapses, to process information.

Parallel Processing:

Unlike traditional computers that process information sequentially, neuromorphic systems can process multiple streams of information simultaneously, making them suitable for tasks requiring real-time learning and adaptation.

Energy Efficiency:

Neuromorphic systems are designed to be more energy-efficient than traditional computers, as they mimic the brain's ability to perform complex computations with minimal energy consumption.

Applications:

Robotics and Autonomous Systems:

Neuromorphic computing can be used to develop more intelligent, efficient, and autonomous robotic systems.

Edge AI:

Neuromorphic systems are well-suited for processing data at the edge of a network, enabling real-time AI applications on battery-powered devices.

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IT BULLETIN **Date: 12.09.2024**

SMART GRID TECHNOLOGY

Smart grid technology uses digital communication and sensors to monitor and manage the flow of electricity. This technology improves the efficiency and reliability of the power grid.

Technology	**How it works**
Two-way communication	Enables real-time communication between utility companies and customers
Sensors	Gather real-time data on energy usage and grid conditions
Smart meters	Monitor power consumption and communicate with utility companies
Automation	Controls power flow and can curtail load to match generation
AI and IoT	Enable predictive analytics and automated decision-making

Smart grid implementation

The National Smart Grid Mission (NSGM) was established in India to plan and monitor the implementation of smart grid policies and programs.

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IT BULLETIN **Date: 13.09.2024**

6G

6G is expected to launch commercially by 2030. 6G early research and requirements gathering has started, and like with previous generations, will continue throughout its lifecycle. 6G specification development and standardization is slated for 2025-2029. First lab testing and pilots of 6G are expected to begin in 2028, preparing 6G for commercial release in or near 2030.

3GPP Release 19 is expected to lay the groundwork for 6G, and it has an anticipated completion date in late 2025. Further 6G refinements would occur in future releases, including Releases 20-22. While the exact timelines for the subsequent releases aren't formally published at this time, previous release timelines indicate a development cycle not including conceptualization or finalizations of approximately 2 to 2.5 years. As a result, most anticipate the commercial release of 6G in or around 2030.

6G vs. 5G

Whether the next evolution of wireless connectivity brings benefits that are worth capturing in IoT deployments or for other purposes. Functionally, 6G is a successor to 5G, and each evolution of wireless connectivity has brought improvements and new features, enabling new use cases that are not even conceived today.

The primary technological difference between 6G and 5G connectivity is that 6G will utilize higher frequencies than its predecessors. By incorporating higher frequency bands, above 100 gigahertz (GHz) and possibly even above 1 terahertz (THz), 6G would ultimately provide specific improvements to the overall wireless experience, leading to various advantages and making 6G ideal for a variety of next-generation use cases.

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IT BULLETIN **Date: 17.09.2024**

PROFESSIONAL-FOCUSED KEYBOARDS

The 6 Pro keyboard from Das Keyboard is a mechanical keyboard for the modern worker who uses their computer to create amazing things. It is built with the best materials such as an aluminum top case, double-shot ABS keycaps, and Cherry MX switches. It features white LED backlighting, a built-in 2-port USB-C hub, an oversized volume knob, media controls, and a sleep button. The keyboard has a standard 104-key layout and is available in four different language options.

The 6 Pro keyboard from Das Keyboard is priced at $199 USD and can be ordered from the company's website. It is also available on Amazon and other online retailers. The keyboard comes with a 1-year limited hardware warranty and a pair of screw-on feet for tilting. The keyboard is compatible with Windows, Mac, Linux, and Chrome OS devices. The 6 Pro keyboard is designed to provide an understated yet satisfying typing experience for professionals who value quality over gimmicks.

Trend Themes

1. Mechanical Keyboards - The rise of professional-focused mechanical keyboards presents opportunities for companies to create innovative designs that prioritize functionality and durability.

2. Premium Materials - Using high-quality materials like aluminum and double-shot ABS keycaps opens up possibilities for businesses to develop premium, long-lasting products that cater to professionals' preferences.

3. Multifunctional Features - The inclusion of features such as a built-in USB-C hub, media controls, and an oversized volume knob allows for the creation of keyboards that streamline productivity and enhance user experience.

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IT BULLETIN **Date: 18.09.2024**

THE 70MAI DASH CAM

The 70mai Dash Cam 4K A810 is a powerful piece of equipment for drivers to help them keep a crystal-clear eye on the road when driving to ensure peace of mind in case of accidents or emergencies. The unit is equipped with a Sony Starvis 2 IMX678 sensor that will capture footage in stunning 4K HDR resolution not ensure that all footage is clearly visible.

The incorporation of Artificial Intelligence (AI) technology will detect for motion and will automatically start the recording process when a person is identified.
The 70mai Dash Cam 4K A810 also features super-sensing ADAS technology to receive alerts when pedestrians or cyclists are detected. The built-in GPS feature will show the time, speed and exact coordinates to pinpoint the exact location of events.

Trend Themes

1. AI-powered HDR Dash Cams - The incorporation of Artificial Intelligence (AI) technology will detect for motion and will automatically start the recording process when a person is identified.
2. 4K HDR Resolution Footage - The unit is equipped with a Sony Starvis 2 IMX678 sensor that will capture footage in stunning 4K HDR resolution to ensure that all footage is clearly visible.
3. Super-sensing ADAS Technology - The 70mai Dash Cam 4K A810 also features super-sensing ADAS technology to receive alerts when pedestrians or cyclists are detected.

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IT BULLETIN **Date: 19.09.2024**

ELASTOCALORIC COOLING

Elastocaloric cooling offers several benefits over traditional refrigeration methods, including higher efficiency, environmental friendliness, and simplified design. It utilizes the elastocaloric effect, where materials like shape memory alloys absorb or release heat when mechanically stressed, making them suitable for applications like air conditioning, refrigeration, and heat pumping.

1. High Efficiency and Energy Savings:

Elastocaloric systems can achieve higher temperature lifts and cooling capacity compared to other solid-state cooling technologies.

They are more energy-efficient than conventional vapor-compression systems, potentially reducing electricity consumption by a significant margin.

Studies have shown that elastocaloric devices can be 48% more efficient than conventional air conditioning, according to a university in Hong Kong.

2. Environmental Friendliness:

Elastocaloric cooling uses solid refrigerants that do not contribute to global warming or ozone depletion, unlike many conventional systems.

The systems can be designed to be eco-friendly and sustainable, minimizing environmental impact.

3. Simplified Design and Operation:

Elastocaloric cooling systems can be simpler to design and operate than conventional refrigeration systems, as they rely on mechanical stress rather than complex fluids and compressors.

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IT BULLETIN **Date: 20.09.2024**

ROVING ROBOTIC AC SYSTEMS

This robot air conditioner concept is the design work of Miray Ozlem ER as a solution for the modern home to keep inhabitants comfortable in the space. The robotic solution consists of a round body that makes use of a 360-degree rotating wheel system to automatically make its way through a home.

A thermal camera will automatically detect the conditions of a space and the inhabitant to provide heating or cooling accordingly. The robot air conditioner concept has a built-in display for showcasing the temperature it's dispersing and can also be used with aromatics to freshen up a space. The system also features an authentic charging functionality to turn itself off and return to its home base when it isn't needed or power is running low.

Trend Themes

1. Robotic HVAC Systems.
2. 360-degree Robotic Mobility
3. Smart Home Aromatics

Industry Implications

1. Home Appliances - Home appliance companies can integrate thermal matrix sensors, AI algorithms, and robotic mobility to create automated, seamlessly controlled, and smart home devices.

2. Robotics - Robotics companies can develop and implement 360-degree robotic mobility with programmable thermal cameras and customized aromatics to offer a robotic HVAC solution.

3. Smart Home Automation - The growing smart home automation industry can expand its product line with automated HVAC solutions that are fully controllable via mobile applications.

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IT BULLETIN **Date: 21.09.2024**

TRANSPARENT ALUMINUM SMARTPHONES

This Nothing Phone (2) concept has been designed by 4RMD as a rendering of what smartphone users could be in store for when the brand's follow-up handset hits the market. The smartphone maintains a stylish construction achieved with aluminum for the chassis, while the rear of the device has a transparent finish to allow the components and Glyph light interface to be visible.

Featuring a triple-lens camera system, the smartphone has a 6.65-inch AMOLED display on the front with slimmer bezels compared to the first model, a 120Hz refresh rate and a peak brightness of 1,200-nits.

Industry Implications

1. Smartphone Manufacturing - Smartphone manufacturers can take advantage of the transparent smartphone trend by exploring new materials and design features for their products.

2. Electronics Manufacturing - The trend of visible components presents an opportunity for electronics manufacturers to create more aesthetically-pleasing, technologically-advanced products that showcase internal components.

3. Display Manufacturing - Display manufacturers can explore new technologies and advancements in high-resolution displays to provide users with an improved visual experience.

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IT BULLETIN **Date: 23.09.2024**

PORTABLE METHANE DETECTION AI

Portable AI-powered methane detection systems utilize various technologies, including Optical Gas Imaging (OGI), tunable diode laser absorption spectroscopy (TDLAS), and machine learning, to identify methane leaks in real-time. These systems offer real-time monitoring, quick response, and data logging capabilities, making them valuable for industries like oil and gas, mining, and wastewater treatment.

Detection Technologies:

Optical Gas Imaging (OGI):

Systems like FLIR ADGiLE use infrared cameras to detect methane leaks by identifying subtle temperature differences associated with gas leaks.

Tunable Diode Laser Absorption Spectroscopy (TDLAS):

ICI's TDL 220 and other TDLAS-based systems utilize lasers to detect methane by measuring the absorption of light at specific wavelengths, according to ScienceDirect.com.

Infrared Sensors:

These sensors detect methane by measuring the amount of infrared light absorbed by the gas at specific wavelengths, according to CK12 Foundation.

Machine Learning:

AI algorithms, like MethaNet, are being used to analyze data from various sensors to predict methane plumes and emissions, according to ScienceDirect.com.

Benefits of Portable Methane Detection AI:

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IT BULLETIN **Date: 24.09.2024**

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.

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IT BULLETIN **Date: 25.09.2024**

DIGITAL PRODUCTIVITY DESK DEVICES

The 'Note' desk accessory concept has been designed by Harshit Sahu as a multifunctional addition to the modern desktop that would provide professionals with an intuitive way to manage their schedule.The device functions as a way to balance the analog world with the digital one by featuring a whiteboard section for jotting notes along with a built-in display on the left-hand side. Professionals can thus jot down notes or sketch out ideas, while keeping an eye on the time and date, listen to their favorite music and more.

Trend Themes

1. Digital-desk Hybrid Devices - The 'Note' Desk Accessory Concept blends the convenience of digital devices with the traditional touch of desks.

2. Multifunctional Desk Accessories - The 'Note' Desk Accessory Concept offers functionalities beyond just taking notes.

3. Analog-digital Integration - The 'Note' Desk Accessory Concept brings together the best of both worlds of analog and digital in a single device.

Industry Implications

1. Office Supplies - The 'Note' Desk Accessory Concept is a unique innovation that could revolutionize the office supplies industry.

2. Productivity Tools - The 'Note' Desk Accessory Concept is a productivity tool that could be incorporated in various industries such as education, health, and design.

3. Technology and Home Decor - The 'Note' Desk Accessory Concept opens up opportunities for technology and home decor to merge into a cohesive product.

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IT BULLETIN **Date: 26.09.2024**

DIGITAL SCENT TECHNOLOGY

Digital scent technology, also known as digital olfaction, is a field that focuses on digitally representing, transmitting, and reproducing scents. It uses electronic noses and olfactometers to detect scent molecules, then digitizes and transmits them for re-creation at the receiving end using scent synthesizers. This technology has potential applications in various fields, including entertainment, education, and e-commerce.

How it Works:

1. Sensing:

Electronic noses (also called e-noses) or lactometers detect and analyze scent molecules.

2. Indexing and Digitization:

The detected scent is indexed based on its chemical composition and digitized into a small file.

3. Transmission:

The digitized scent file is then transmitted online or via other digital media.

4. Recreation:

At the receiving end, a personal scent synthesizer uses cartridges containing various chemicals to recreate the original scent.

Applications:

Entertainment:

Scent-enabled videos, games, and virtual reality experiences can enhance immersion and realism.

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IT BULLETIN **Date: 27.09.2024**

GOGGLE-FREE IMMERSION

Brelyon's Ultra Reality desktop monitor projects an immersive 122-inch image that provides a 110-degree field of view similar to virtual reality, but without the goggles. The eye-popping system works by changing the optical depth of an image and rearranging the angle of light from each pixel, using strong computing power to blend everything seamlessly. Footage is presented in 4K resolution, which its makers call "IMAX-like." The company says it has made more than $2 million in sales, mostly in the defense and automotive sectors.

Immersive Technology communicates with users through visual and auditory information. Users often wear headsets over their eyes and ears to create a virtual environment or enhance the physical environment.

Virtual Reality (VR) and Augmented Reality (AR) are the primary immersive technologies. VR creates a new space by cutting off physical senses and replacing them with digital information showing one`s eyes a screen, for example. AR merges digital information with the physical environment projecting a heads-up display into view, for example.

Another form of immersive technology is Mixed Reality (MR), which combines features of VR and AR. Unlike AR, synthetic content in MR is linked to the physical environment and interacts accordingly.

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