RESONATE 2.0

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Diwali

The victory of good over evil, of light over darkness and of knowledge over ignorance, the auspicious festival of Diwali marks the return of Lord Rama to his kingdom, Ayodhya after defeating the demon king, Ravana. Also known as the Festival of Lights, Diwali is widely associated with the Goddess of wealth, Lakshmi. The festivities span over 5 days.

Dhanteras, derived from Dhan (wealth) and teras (thirteenth), marks the thirteenth day of the dark fortnight of Kartik.

Naraka Chaturdashi (Chhoti Diwali), is the day people pray that their ancestors are relived from the evil cycle of afterlife.

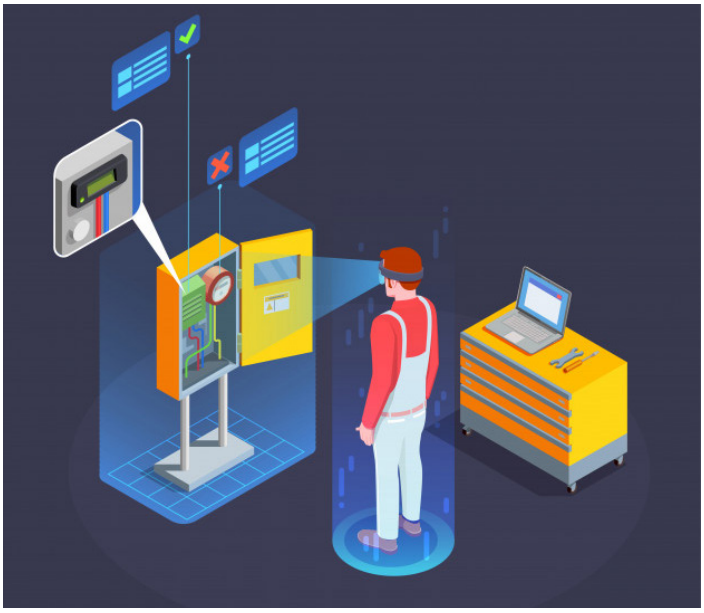
Lakshmi/Kali Puja coincides with the last day of the dark fortnight of the lunar month. This is the peak of the 5 day festival and is also called Deepawali (the festival of deep, light).

Padwa/ Govardhan Puja marks the 1st day of the bright fortnight of the lunar month. This day holds different cultural significance across all religions.

Bhai Dooj is the last day and highlights the bond between a brother and sister.

AUGMENTED REALITY

Augmented reality (AR) is currently one of the emerging technologies and has huge potential. It overlays digital content and information in the form of text, graphics, audio, and other virtual enhancements onto the physical world in real-time to make it seem as if they are there with you. The most widely known usage is in explaining concepts with a better pedagogy, as you may have seen in various online videos at your disposal. It is also being used in medical training, by allowing students to delve into the human body in an interactive 3D format as well as in retail, where customers can personalize any product in the color, size, and customize it using the app. It is also used in repairing, maintaining, designing, modeling, tourism, and various other areas.



Some of the notable breakthroughs in AR are:

- Bruce Thomas developing an outdoor mobile AR game called “ARQuake” in 2000.
- ARToolkit (a design tool) being made available in Adobe Flash in 2009.
- Google announced its open beta of Google Glass (a project with mixed successes) in 2013.
- Microsoft announcing augmented reality support and their augmented reality headset “HoloLens” in 2015.

What is Cloud Computing ?

Cloud computing is the on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The main providers of cloud computing are Microsoft Azure, Google Cloud and Amazon Web Services.

There are five characteristics of cloud computing, they are as follows:

1. On demand Self Service
2. Broad network Access
3. Resource pooling
4. Rapid elasticity
5. Measured Service

Basically cloud computing provides us with various services but I am going to tell you about the three main services provided .The three main services are :

- IaaS = Infrastructure as a Service
- PaaS = Platform as a Service
- Saas = Software as s Service

IaaS:

In this form of service, CPU,storage and memory is provided. The user needs to manage the OS and the application. An example for IaaS is Google Compute Engine or AWS EC2. In this service you pay for what you allocate.

PaaS:

In this form of service the platform will be managed,the user needs to provide the application. An example of PaaS is the Google App Engine or AWS Elastic Beanstalk. In this service you pay for what you use.

SaaS:

In this form of service the platform and application both will be managed, the user only has to supply data. An example of SaaS is Google Gmail , Office 365, etc.

Basically cloud or cloud computing refers to softwares and services that run on the internet instead of locally on your computer.

References

Cloud Computing Definition : https://bit.ly/2HJln8T

SMART CITIES

An urban area that undergoes several developments in the region of Information & Communication Technology to improve its efficiency and make communication bonds between government services and citizen welfare is known as a Smart City.

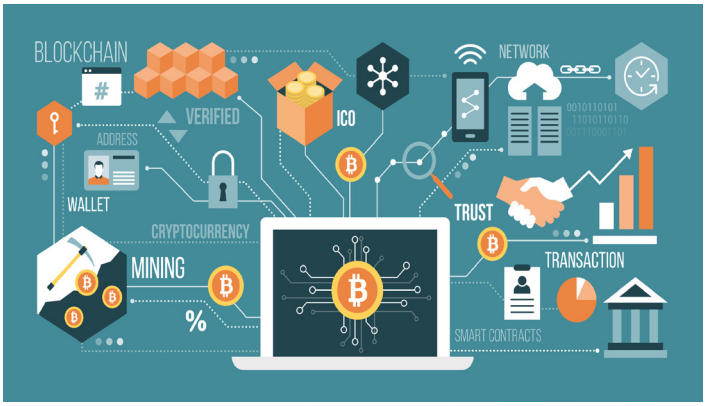
Artificial Intelligence, Machine Learning, and Information of Technology play a major role in developing a smart city.

AI for the most part takes the information produced by a few applications, for example, Health MD applications, web empowered vehicles, and so forth, and use it to distinguish designs and figure out how to streamline the given arrangement of administrations. Its devices can customize the keen city experience by conglomerating data about the most utilized streets in a city and afterward apply it to a transportation framework.

AI instruments for personalization are as of now utilized in advertising. The equivalent should likewise be possible for brilliant urban areas in somewhat unique execution. For instance, one can total data about the most utilized streets in a city and afterward actualize a transportation framework that expects to redirect surplus traffic from the bustling streets during times of heavy traffic. In this and other comparable manners, IoT, enormous information, and ML can have extraordinary potential in the execution of brilliant cities everywhere in the world.

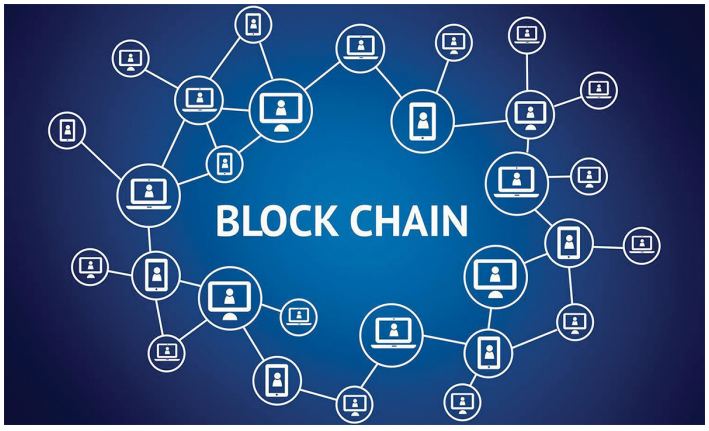
BLOCKCHAIN

Blockchain A.K.A a "Digital Ledger" is the new form of public data storage system. A blockchain is a structure that stores records, known as blocks. One network, called a Chain consists of multiple blocks of information. The information contained in a block is unalterable and the database is decentralized i.e the power to make any change does not rest with a single person, but with every person on the network.



A simple analogy that explains the technology of blockchain is a Google Doc, where a file is distributed in a group of persons and all the changes made are transparent, leaving little to no room for hoax or fraud. Every user of the group can make changes, which is what decentralization means.

Of course, blockchain is more complicated than a Google doc, but the analogy is appropriate.



Blockchain was created in 2008 and the creators of this technology are unknown till date. It was invented by a person (or group of persons) under the name Satoshi Nakamoto. It's purpose was to serve as the Public transaction ledger for the famous cryptocurrency Bitcoin.

When we talk about Blockchain, its almost impossible to miss out Bitcoin. The most famous form of cryptocurrency in the world, its arrival brought many changes in the world of digital currencies. Much better user autonomy and discretion helped in the rise of it.

Banking fees, one of the greatest problems with traditional transactions can be avoided with the use of bitcoin. Of course, just like there's two sides to one coin, bitcoin also has some cons. But still, it is one of the most used cryptocurrency, trusted by millions worldwide.

DID YOU KNOW :

1. The smallest unit of a bitcoin is 1 Satoshi, which is 0.00000001 Bitcoin!
2. As of 30th October 2020, 1 bitcoin is worth 10 Lakh rupees or 13 thousand dollars!

IOT IN SUPPLY CHAIN MANAGEMENT

As modern technology continues to grow at astonishing speed,various companies have started developing interconnected intelligent products and services. Bringing these products to the marketplace requires one thing in common - supply chain management system. Having an efficient supply chain influences the companies time to reach out to the market which also has a deep impact over the asset velocity as it is linked to inventories.

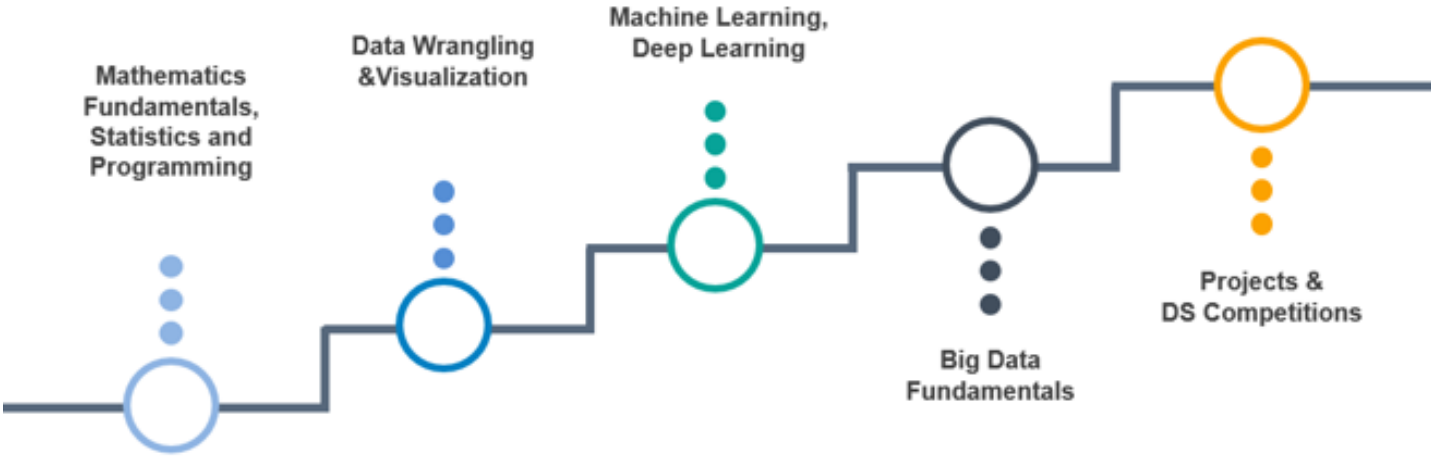
From retail to transportation, there's a lot of writing over the Internet of Things (IoT) and how it will affect every other global industry. Before IoT was introduced to the supply chain, the challenges faced by the companies were lack of visibility, lack of resources (people + time), lack of real time feedback, etc. Iot has revolutionized the supply chain, both in terms of its operational efficiencies and revenue opportunities by making it transparent. Digitized intelligence will not only make it transparent but also save costs, increase asset velocity, real-time monitoring of goods which improves traceability. With the increase in data flow, using data science and machine learning, quality of the products and manufacturing can be predicted with ease and can be very useful for the companies to prevent any losses or defective models.

Few companies like Cargotec and DHL use IoT enabled devices in logistics to monitor their operations, which in turn increases visibility and saves costs. Even IBM has taken some effort with the help of IBM Watson, it offers a cognitive system that learns from and infuses intelligence into the supply chain world to ensure product reliability and provides insights. These insights predict, improve and track performances of the machine and sensors which in the end benefits the company and gives better user and customer experience.

It can be really difficult to adapt to changes, but to ensure the health of the product with ease, which will save time and money benefiting the company and the customer, implementation of IoT in supply chain management becomes a vital factor.

- Ashutosh Pyannavar

Data Science Roadmap



Ultimate Data Science Projects

Beginner

- Iris Data
- Loan Prediction Data
- Wine Quality Data
- Heights and Weights Data
- Time Series Analysis Data

Intermediate

- Black Friday Data
- Siam Competition Data
- Census Data
- Movie Lens Data
- Twitter Classification Data

Advanced

- Urban Sound Classification
- Visual QA Data
- Recommendation Engine
- ImageNet Data
- Chicago Crime Data & Prediction

Research Paper

Citation: Cömert, Z., A. F. Kocamaz, 2017. Comparison of machine learning techniques for fatal heart rate classification. Acta Phys. Pol. A 132.3 (2017): 451-454.
A comparative study along with performance characteristics were performed by Comert Kocamz and A. F. Kocamaz (2017) for fatal rate classification. Artificial neural networks provided best accuracy as compared to SVM, Random forest as well as radial basis function. However the training time of ANN was more as compared to other algorithms.

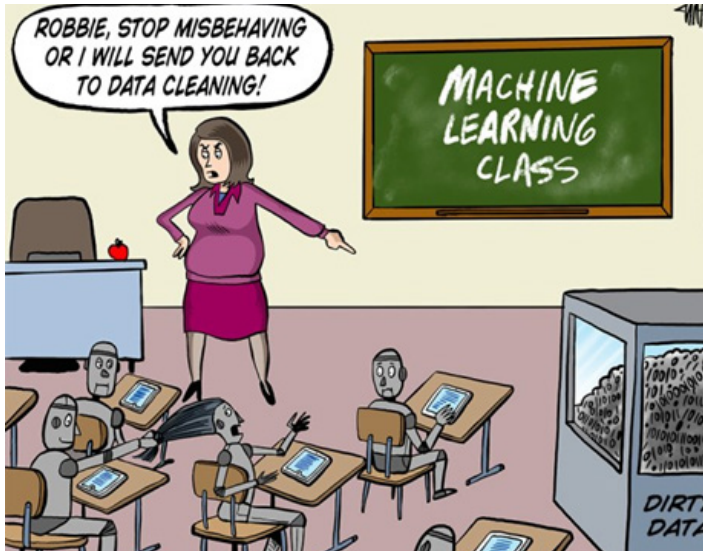
Citation: Huh, Seyoung, Sangrae Cho, and Soohyung Kim. "Managing IoT devices using blockchain platform." 2017 19th international conference on advanced communication technology (ICACT). IEEE, 2017.
Seyong Huh, Sangrae Cho, and Soohyung Kim proposed using blockchain to build IoT systems. They stated that they could easily manage configuration of IoT devices and build key management system. They proved their concept by using a few IoT devices instead of a full system of IoT system, which consists of thousands of IoT devices. They plan to build a full scaled IoT system using block chain.

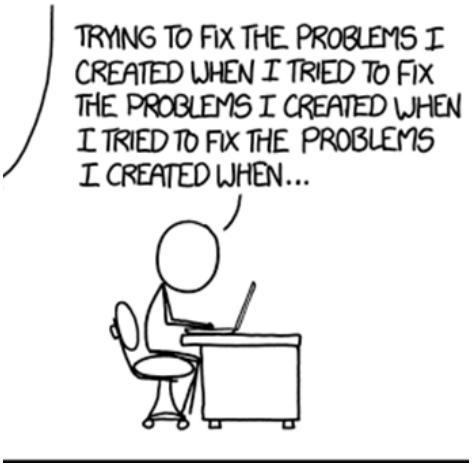
Citation: Kesim, Mehmet, and Yasin Ozarslan. "Augmented reality in education: current technologies and the potential for education." Procedia-social and behavioral sciences 47 (2012): 297-302.
Mehmet Kesim and Yasin Ozarslan provided an introduction to the technology of augmented reality and its possibilities for education. They also discussed key technologies and methods in the field of education like head mounted displays, handheld displays, and pinch gloves.

FUN ZONE

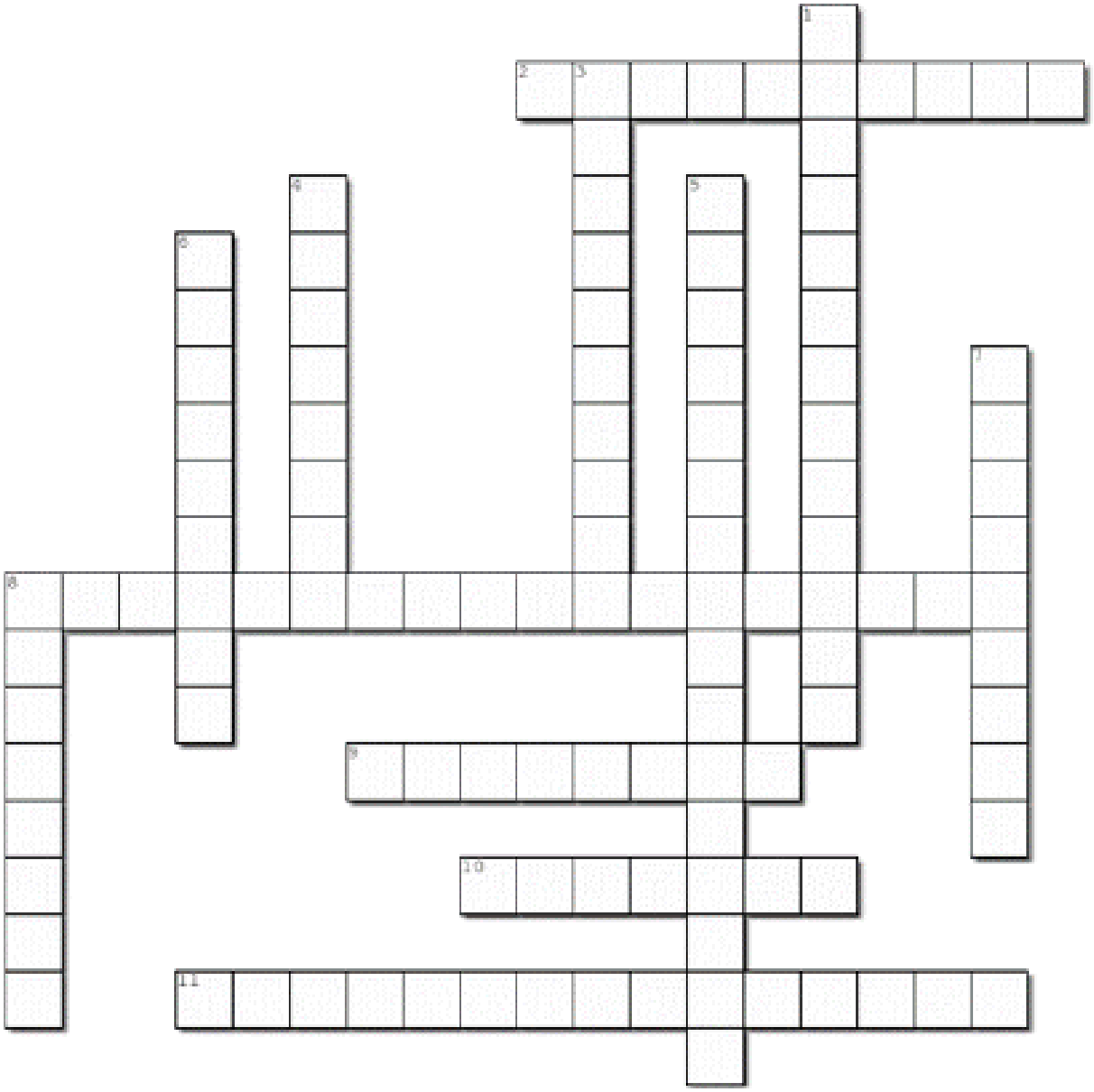
AI camera mistakes linesman's bald head for ball and follows it through match.

During a football match in Scotland, an artificial intelligence (AI) camera continuously tracked a linesman's bald head mistaking it for the ball. A video of the gaffe has gone viral on social media. The commentator had to repeatedly apologise as the camera kept on mistaking the linesman's head for the ball.





Complete the Crossword Puzzle Below



Across

2. A process used, as part of training, to evaluate the quality of a machine learning model using the validation set.
8. Applying a constraint to an algorithm to ensure one or more definitions of fairness are satisfied
9. IoT devices are vulnerable to ___ threats.
10. In machine learning, a mechanism for bucketing categorical data
11. The primary algorithm for performing gradient descent on neural networks

Down

1. The more common label in a class-imbalanced dataset
3. Technology by which procedure is performed with minimal human assistance
4. The S in SaaS
5. What requires edge analytics?
6. Designed to detect and destroy computer viruses
7. A networking standard for very short-range wireless connections
8. A part of a computer system or network that is designed to block unauthorized access while permitting outward communication

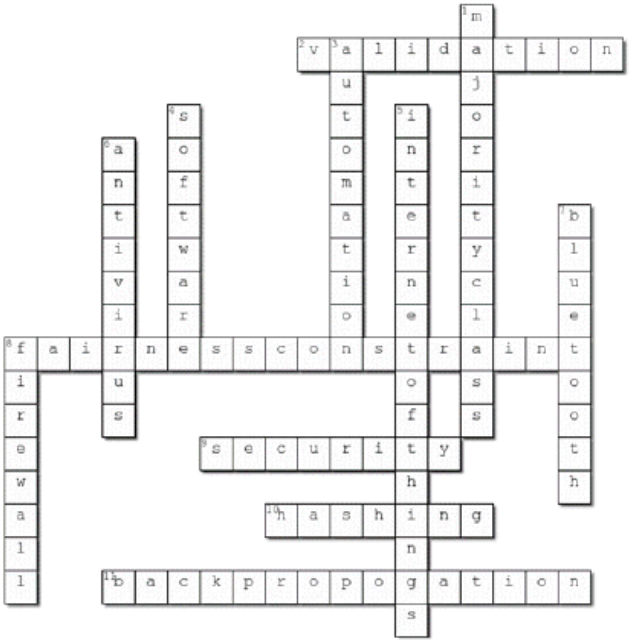
Riddles

I have keys but no locks.
I have a space but no room.
You can enter, but can't go outside.
What am I ?

Jokes

How many computer programmers does it take to change a light bulb?
None, that's a hardware problem.
Why do programmers always mix up Halloween and Christmas?

SOLUTIONS:



Across

2. A process used, as part of training, to evaluate the quality of a machine learning model using the validation set. (**validation**)
8. Applying a constraint to an algorithm to ensure one or more definitions of fairness are satisfied (**fairnessconstraint**)
9. IoT devices are vulnerable to ___ threats. (**security**)
10. In machine learning, a mechanism for bucketing categorical data (**hashing**)
11. The primary algorithm for performing gradient descent on neural networks (**backpropogation**)

Down

1. The more common label in a class-imbalanced dataset (**majorityclass**)
3. Technology by which procedure is performed with minimal human assistance (**automation**)
4. The S in SaaS (**software**)
5. What requires edge analytics? (**internetofthings**)
6. Designed to detect and destroy computer viruses (**antivirus**)
7. A networking standard for very short-range wireless connections (**bluetooth**)
8. A part of a computer system or network that is designed to block unauthorized access while permitting outward communication (**firewall**)

Riddles:

A keyboard

Jokes:

Because Oct 31 equals Dec 25