GL BAJAJ
Institute of Technology & Management
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All the bits in one byte

TECHNICAL MAGAZINE

SESSION
2019-2020

TECHNISHAD

DEPARTMENT OF COMPUTER SCIENCE
& ENGINEERING

Our Inspiration

Late Shri Ganeshi Lal ji Bajaj was indeed a multifarious personality. A freedom fighter, a philanthropist and a dedicated social worker, Ganeshi Lal ji was revered for his benevolence and penchant for hard work. No matter how busy he would remain, he would always find time to not only educate the children of the underprivileged, but also provide them with food, shelter and articulate to help them come up in life."Education leads to enlightenment", he firmly believed.

We at R.K. Group have endeavored to imbibe our mentor's spirit and mission to not only grow in our respective fields of interest, but to keep aspiring, praying and working towards the cause of the youth and nation building.

Vision

To build strong teaching environment that responds to the needs of industry and challenges of the society.

Mission

M1: Developing strong mathematical & computing skill set among the students.

M2: Extending the role of computer science and engineering in diverse areas like Internet of Things (IoT), Artificial Intelligence & Machine Learning and Data Analytics.

M3: Imbibing the students with a deep understanding of professional ethics and high integrity to serve the Nation.

M4: Providing an environment to the students for their growth both as individuals and as globally competent Computer Science professional wit encouragement for innovation & start-up culture.

Chairman's Message

Scientists dream of doing great things and Technocrats shape them. Congratulations for choosing the path leading to magnificent career-from the patriarch...
GL Bajaj Institute of Technology & Management Institute has been brought into being solely for spawning the legion of farsighted professionals and astute technocrats, remaining always ahead to contribute meaningfully to the nation.
GL BAJAJ has emerged as a leading world class educational group that creates and disseminates knowledge, integrating advance technology.

Our college aim at becoming a pacesetter in developing the next generation teaching and learning methods to foster individual brilliance. We strongly believe in academic excellence, high teaching standards and discipline. At GL BAJAJ campuss, we equip our students with first -rate education and necessary practical skills as well as strong interface with the corporate world to ensure that they stand out the best in today's world.

We have carved out a distinct niche for R K Education Hub in Mathura and Greater Noida with nine colleges and one International School covering all streams. GLBITM Institute is not a mere addition of a feather in R K Education Hub's crown, but a logical extension of our experience and expertise over the years of sheer hard work and meteoric growth. I welcome and congratulate you for beginning this great journey leading to the shimmering career.

Our mission is to expand development opportunities for student and faculty. We wish you a rewarding experience at GL BAJAJ.

Dr. Ram Kishore Agarwal
Chairman

Vice Chairman's Message

"We strive, we believe and attain success"
The advent of globalization and rapid advancement in economy, enormous opportunities have been thrown open at the doors of Indians. The Indian government also realized that there is going to be big demand for well qualified and highly component professional in the nation as well as in other advanced countries of the world.
We hope earnestly in that the aspirants of business administration will find here opportunities and after graduation would be the leaders in their respective field. As a premier institution working to achieve excellence in professional education, since 2012, we are working extensively in the area of education as an affiliated institution of Dr. A. P. J. Abdul Kalam Technical University (AKTU), Lucknow. We are endeavoring to develop a talent profile among our students, having sufficient width and required depth in their area of study, with exemplary faculty members and excellent state-of-the-art facilities.

We believe in giving permanent systematic innovative teaching, making our students capable of earning their rightful place in this world with innovation, entrepreneurship, creativity, health, environment, technology, and trade. GL Bajaj Institute of Technology Management Institute is one of the established Institutions of Rajeev Memorial Academic Welfare Society, GL Bajaj was founded with a mission to promote excellence in the field of management education.
The Institute not only extends good campus and state of the art facilities to the students but we also encourage teamwork, personal initiative, and accountability among the students. At GL Bajaj, we aim at grooming professionals who can effectively manage unanticipated challenges and have an urge in them to excel. We take the responsibility of developing and nurturing the world-class skilled & dedicated managers who are competent enough to meet the global challenges, which is a need of the hour. We focus on our intellectual capital to become valued assets in the industries and diverse professional fields and achieve pinnacle of success.
With the world, becoming a global village and globalization coupled with stiff competition is making its presence felt, the need of the hour is to successfully meet such tests and challenges.

Mr. Pankaj Agarwal
Vice Chairman

Director's Message

It gives me great pleasure to share with you this message for the first edition of the technical magazine of computer science department. I am honoured to be a part of this dynamic community of passionate individuals who are committed to advancing the field of computer science through education and research.

At our institute, we strive to provide our students with a world-class education that equips them with the skills and knowledge they need to succeed in the rapidly evolving field of computer science. Our faculty members are experts in their respective areas of expertise, and they are committed to providing our students with the best possible learning experience.

Our institute is also actively engaged in cutting-edge research, and we are proud of the contributions we have made to the field of computer science. Through our research, we are tackling some of the most challenging problems facing our world today, and we are developing innovative solutions that have the potential to make a real difference in people's lives.

Finally, I want to acknowledge the hard work and dedication of the staff, who work tirelessly to ensure that the department runs smoothly and efficiently. Without their tireless efforts, we would not be able to achieve the level of excellence that we have come to expect from the department.

In conclusion, I am honoured to be a part of this vibrant and dynamic community, and I am excited about the future of the department of computer science & engineering. I look forward to working together with all of you to continue to push the boundaries of computer science and to create a better world through our work.

All the best!

Dr. Rajeev Agrawal

Director

GLBITM

Head's Message

Dear Students,
It is my pleasure to welcome you to the first edition of our magazine. It is really great to see the hard work and dedication that our students and faculty members have put into this publication. I am confident that you will find the articles, research papers, and technical reports contained within to be informative, thought-provoking, and insightful.

The field of Computer Science is constantly evolving, and it is imperative that we stay up to date with the latest trends, tools, and techniques. Our magazine is a platform for our students and faculty members to share their research and insights on a wide range of topics, including Artificial Intelligence, Cyber security, Big Data, and many more. It is my hope that you will find the content to be both informative and relevant to your studies or professional pursuits.

I would like to take this opportunity to thank the contributors to our magazine, whose hard work and dedication have made this publication possible. I would also like to encourage our readers to share their feedback and suggestions for future content. If there are any topics you would like us to cover, or if you have any comments on our current offerings, please don't hesitate to get in touch.

Once again, thank you for your continued support of our Computer Science program and our magazine. I look forward to seeing the continued growth and success of our students and faculty members in the years to come.

Best regards!

Dr. Sanjeev Pippal
Head of the Department
Computer Science & Engineering
GLBITM

Training & Placement

Dear students,
Being on the threshold of becoming a professional, it is time to look forward to the challenges & opportunities that lie in your professional journey ahead.

The Following 3C' philosophy can help:

1) Choice & Clarity

Choose the areas of your interest. Have clarity on your long term objectives; In career/Enterpreneurship between Aspiration and passion are very important for achieving & sustaining both Success and happiness in life. Work-life balance is the mantra.

2) Chance

Grab chances & opportunities that come your way, in line with your career choices. **Destiny is nothing but-"Preparation meeting opportunities", So, Being prepared is the key.**

3) Change

"In this world, nothing is permanent, except Changes".

This is an era of fast changing technology Agility, the ability to learn, unlearn & relearn is on top of the agenda For most of the organisations. So, along with relevant quality stills, be agile, innovative and embrace changes. It is said, **"Winning is not everything but wanting to win is"** Together, let us continue to form a Winning combination and continue proving

"GLBitians are born to Fly"

Prof. Manju Khatri
Director
Training & Placement
GLBITM

Message From Editorial Desk

We warmly welcome everyone to the first edition of the GLBITM's Department of CSE Technical Magazine.

True to its spirit, this Technical Magazine is a snapshot of all our achievements and activities. It is a reflection of our variety of efforts to lead the institute in its all round development. We are very proud to represent majestic accomplishments of our endowed students. We boast a very dynamic diaspora, ranging from top coders to the melodies making even nightingale go shy and it's their vibrant mix of intellectual progress that makes this newsletter a fascinating and motivating journey to traverse.

We look forward into this Technical Magazine becoming an "institution into itself"and as a medium for disseminating news, progress reports, breakthrough stories, as well as an information tool for students to share among themselves.

The editorial team has put quite some effort into this Technical Magazine and hope reading this Technical Magazine is as enjoyable for you as it is for us bringing it to you..

The editorial team remains grateful to the faculty members, staff and students for providing content and photographs for the newsletter and counts on their support always for shaping this Technical Magazine

Happy Reading!!!

Contributed By

Faculty Coordinator
Dr. Sachin Yadav, Ms. Bhairvee Singh

Student Coordinator
Ms. Suchita Johari, Mr. Navaratan Vats

Content

CASE STUDY

- Netflix
- Youtube

CURRENT TECH

ARTICLES

LIST OF PUBLICATIONS/PATENTS

STUDENT PROJECTS

SOURCES OF LEARNING

MYTHS ABOUT TECH

Case Study

NETFLIX

Requirements

Let's look in to some of the functional and non-functional requirements before we start to design the system.

Functional Requirements

1. Users should be able to create and account and subscribe for a plan.
2. Users should be able to manage multiple profiles.
3. Users should be able to search for a video title.
4. Users should be able to watch a video.
5. Netflix employees should be able to upload a video from backend to make it available on Netflix platform.

Non-functional requirements

1. System should be highly reliable. Any video uploaded should not be lost.
2. System should be highly available.
3. Users should be able to stream videos in realtime without any lag.

Out of scope

1. Video recommendations
2. Most popular videos
3. Subtitles
4. Grouping of videos (e.g. TV Series, treat each video as independent)

Capacity Estimation

Let's do some back-of-the-envelope calculations to estimate the bandwidth and storage required.

Assumptions

1. Total number of daily active users = 100 million
2. Average number of videos watched by each user per day = 5
3. Average size of one video = 500 MB
4. Average number of video uploaded per day from backend = 1,000

Bandwidth Estimations

Total number of videos watched per day = 100 million * 5 = 500 million

Total egress per day = 500 million * 500 MB = 250 PB (Peta Byte)

Egress bandwidth = 29.1 GB/sec

Total ingress per day = 1,000 * 500 MB = 500 GB

Ingress bandwidth = 5.8 MB/sec

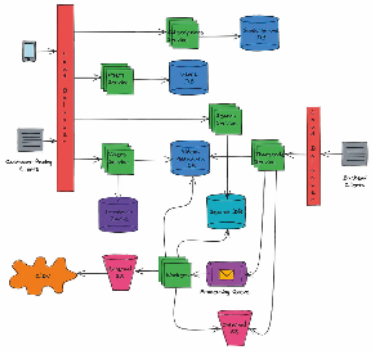
Storage Estimations

Total storage required in 5 years = 500 GB * 5 * 365 = 912.5 TB

Note that Netflix creates multiple formats and resolutions for each video optimized for different device types. Above storage estimation ignores this factor and hence this number can change based on number of variants Netflix stores for each video.

Detailed Component Design

As evident from calculations above, the system is read heavy. Hence our focus should be on building a system which can retrieve videos quickly.



Let's look in to each service in detail.

Users Service

Users Service would be mainly responsible for user authentication and profiles. This service would persist the data in a relational database like MySQL or PostgreSQL. We need strong ACID properties for the set of data we have and hence RDBMS is a suitable choice.

Videos Service

Videos Service would be responsible for surfacing videos to end users. This service will store videos metadata in a RDBMS like MySQL or PostgreSQL. However for quick response time, this service would implement a write-around cache. This can be implemented using a in-memory cache like Redis or Memcached.

Transcoder Service

Transcoder Service is one of the key backend service. This service would be responsible for following:

- Checking the quality of uploaded videos (frame drops etc.)
- Compressing the video with different codecs
- Creating different resolutions of the video

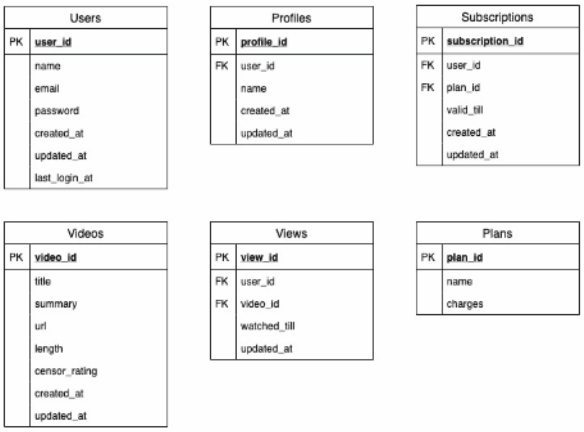
Once a video is uploaded to Transcoder Service from backend, it will upload the same to a internal distributed storage like a S3 bucket and add entry to database.

Search Service

Search Service would enable end users to search for a video using metadata like title, summary etc. This service would be backed by a database supporting full text search. Elasticsearch or Solr can be used for for the same as both these support full text searching. This service can also rank the results based on recency and popularity for better user experience.

Database Schema

The database schema containing most important tables is illustrated below:



Database schema is pretty straight forward and self explanatory.

Performance

We have incorporated couple of elements in our design which help immensely in improving the performance of our application. Let's look in to both of them.

Caching

We would be using an in-memory caching to reduce the number of hits to database. In-memory caches like Redis and Memcached cache the data from database in key-value pair.

CDN

Content Delivery Network is a geographically distributed network of servers which deliver content to users from geographically closest server. This reduces the latency and number of network hops thereby improving the performance of content delivery.

Conclusion

Netflix's success is built on a highly sophisticated technology infrastructure that enables the company to deliver a seamless streaming experience to its users. By investing in areas such as CDN, data analytics, video encoding, machine learning, and security, Netflix has been able to stay ahead of the competition and maintain its position as a global leader in streaming video content. The company's content acquisition strategy, which includes producing original content and acquiring content from other studios, has also been a key driver of its success

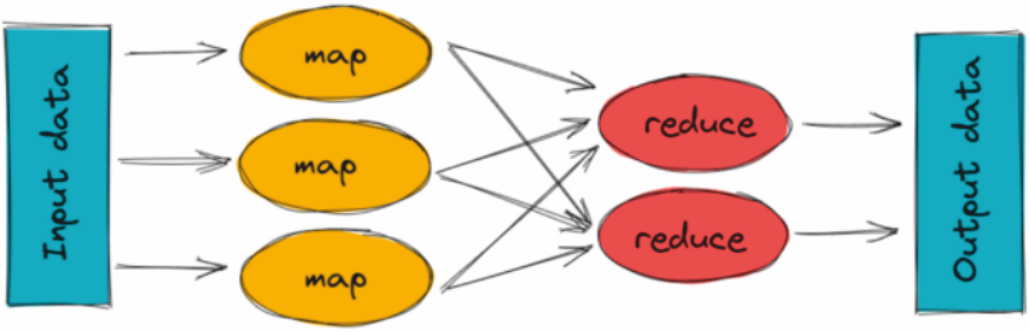
Case Study

YOUTUBE

YouTube is a video streaming and sharing website where users can —

1. Upload the videos
2. Watch the videos
3. Share, Like, Comment on the videos
4. Report the videos
5. See the video analytics i.e how video is performing
6. Create the playlists and channels of the videos
7. Search the videos
8. Watch the videos later by queueing them
9. Mark videos as favorites
10. Delete the comments/videos/unlike.

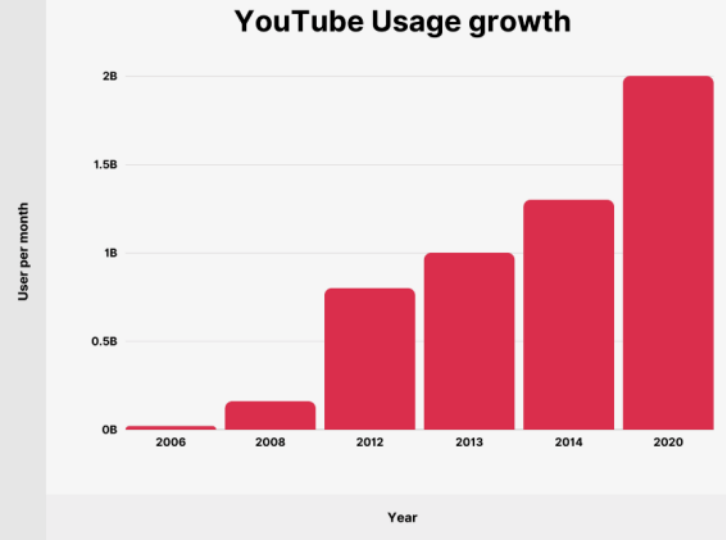
Before we take a deep dive in the design, understand HDFS. In system design map reduce (HDFS systems) is a batch processing technique in which the engine takes huge amounts of data, processes (map and reduce) and gives the output.



To track the progress of each job — task tracker and job tracker are used. Job tracker manages all the resources and jobs and schedules across the cluster.

The task tracker are called slaves that work on the directives of job trackers and deployed on each node in the cluster.

Scaling Requirements — Capacity Estimation



Let's say, we have -
No of users per day (DAU) : 3 Million
Percentage of users who upload videos everyday : 5%
No of video uploads per day : 2
Average Video Size : 200 MB
Total Storage needed per day —
3 Million * 5% * 200 MB = 30 TB per day
Storage Required for next 10 years :
30 TB * 365 * 10 = 110 PB

CDN cost —

Let's say we are using CloudFront CDN so the cost estimation be —
Average cost per GB of data = $0.01
So video streaming cost per day is -
3 Million * 2 videos * 0.2 GB* $0.01 = $120K per day

Bandwidth Estimate —

No of hours of video uploads per minute: 300 hours
Assume bandwidth for each video upload takes : 12MB/min
So total uploads bandwidth every minute: 300 hours * 60 mins * 12 MB = 216 GB/min
For the sake of simplicity, I'll make a small scale simulation to show capacity estimations. In reality according to Statista' 22, over 2.6 billion people worldwide use YouTube once a month.

High Level Design

Assumptions/Considerations

- Availability vs Consistency : System should be highly available whereas consistency can take a hit.
- System should be highly reliable and can have low latency
- Read to write ratio will be heavy
- Uploads should be fast and video streaming should be smooth
- The infra cost should be low — existing cloud infra from Amazon/Google could be used.
- Databases will be replicated and sharded.
- System will be scaled horizontally.
- Users can watch the videos live/real-time and should not experience any time lags.
- Videos can be buffered in advance.

Wrap up

In this chapter, we presented the architecture design for video streaming services like YouTube. If there is extra time at the end of the interview, here are a few additional points:

- Scale the API tier: Because API servers are stateless, it is easy to scale API tier horizontally.
- Scale the database: You can talk about database replication and sharding.
- Live streaming: It refers to the process of how a video is recorded and broadcasted in real time. Although our system is not designed specifically for live streaming, live streaming and non-live streaming have some similarities: both require uploading, encoding, and streaming. The notable differences are:
- Live streaming has a higher latency requirement, so it might need a different streaming protocol.
- Live streaming has a lower requirement for parallelism because small chunks of data are already processed in real-time.
- Live streaming requires different sets of error handling. Any error handling that takes too much time is not acceptable.
- Video takedowns: Videos that violate copyrights, pornography, or other illegal acts shall be removed. Some can be discovered by the system during the upload process, while others might be discovered through user flagging

Current Technologies

1. UI/UX Development

UI/UX development refers to the process of designing and developing the user interface (UI) and user experience (UX) of digital products, such as websites, mobile applications, and software programs. UI/UX development is a critical component of the software development process, as it directly impacts how users interact with and perceive a product.

UI refers to the visual elements of a digital product, such as layout, typography, colour schemes, and graphics. UX refers to the overall user experience of a digital product, including its ease of use, functionality, and overall satisfaction. A good UI/UX design will balance aesthetics and usability, resulting in a product that is both visually appealing and easy to use. With the rapid change in the design and technical field, following areas can be benefitted by the UI/UX advancements.

One trend in UI/UX development is the increasing use of AI and machine learning to create personalized and adaptive interfaces. With AI, designers can analyze user behavior and adapt the interface in real-time to meet individual user needs. This leads to a more personalized and engaging user experience.

Another trend is the use of voice interfaces and chatbots in UI/UX design. As more users interact with digital products using voice commands and messaging platforms, designers are developing interfaces that can understand and respond to natural language.

UI/UX designers are also increasingly focusing on accessibility and inclusivity in their designs. This means designing products that are easy to use for people with disabilities or limited mobility, as well as for users from diverse cultural backgrounds.

Finally, the importance of good UI/UX design in e-commerce and m-commerce is becoming more and more important. With the rise of online shopping, companies are investing in user-friendly and engaging interfaces that make it easy for customers to browse and purchase products.

Current Technologies

2. CRM Solutions

CRM stands for Customer Relationship Management. It refers to the strategy, processes, and technology that companies use to manage and analyse interactions with customers and potential customers. The main goal of CRM is to improve customer retention and loyalty, enhance customer experience, and ultimately increase sales and revenue. It involves collecting and analyzing customer data to gain insights into their behaviour, preferences, and needs, which can then be used to create personalized and targeted marketing campaigns, improve customer service, and develop more effective sales strategies.
Following are the big names of industry who majorly rely on CRM for their sales, management and customer satisfaction:

1. Amazon: Amazon uses a CRM system to collect customer data and use it to personalize product recommendations and customer service interactions.

2. Coca-Cola: Coca-Cola uses a CRM system to manage its sales pipeline and track customer interactions. The system also provides data analytics to help the company make data-driven decisions.

3. American Express: American Express uses a CRM system to track customer spending and offer personalized rewards and promotions to its cardholders.

4. Airbnb: Airbnb uses a CRM system to manage its customer relationships, from the initial booking to the post-stay follow-up. The system also helps the company to provide personalized recommendations and improve customer satisfaction.

5. Microsoft: Microsoft uses a CRM system to manage its sales pipeline and track customer interactions across multiple channels, including social media, email, and phone.

6. The Home Depot: The Home Depot uses a CRM system to manage its customer relationships and provide personalized product recommendations and promotions to its customers.

7. Spotify: Spotify uses a CRM system to collect customer data and use it to provide personalized music recommendations and marketing campaigns.

Current Technologies

3. Product Development

Product development is the process of bringing a new product to the market or improving an existing product. It is an essential process for businesses that want to stay competitive and meet the changing needs of their customers. The product development process typically involves several stages, including idea generation, concept development, design and engineering, prototyping, testing and validation, production, launch, and post-launch evaluation.

Product development failures can be costly and damaging to a company's reputation. Here are a few examples of high-profile product development failures:

- Microsoft Zune: In 2006, Microsoft launched the Zune, a portable media player that was intended to compete with Apple's & iPod. Despite heavy investment in marketing and product development, the Zune failed to gain significant market share and was eventually discontinued in 2011.

- Google Glass: In 2013, Google launched its wearable computer, Google Glass, which featured a head-mounted display and hands-free voice activation. However, the device faced privacy concerns and was seen as socially awkward, leading to poor sales and eventual discontinuation in 2015.

- Samsung Galaxy Note 7: In 2016, Samsung released the Galaxy Note 7, a high-end smartphone that was intended to compete with Apple's iPhone. However, a battery defect caused the phones to overheat and catch fire, leading to a recall and eventual discontinuation of the product.

These examples demonstrate the importance of thorough product testing, market research, and user feedback in the product development process. Companies that fail to identify and address potential issues in their products risk significant financial and reputational damage.

Current Technologies

4. Data Visualization

Data visualization is the graphical representation of data and information. It is a visual means of exploring, analyzing, and presenting complex data sets, and helps to communicate insights and findings to a wide audience. Data visualization allows people to see patterns, trends, and relationships that may not be immediately apparent from looking at a spreadsheet or a table of data.

There are several types of data visualizations, including charts, graphs, maps, and infographics. These visualizations can be created using various tools, including software such as Microsoft Excel, Tableau, and Python libraries like Matplotlib, Seaborn, and Plotly. Data visualization has several benefits, including:

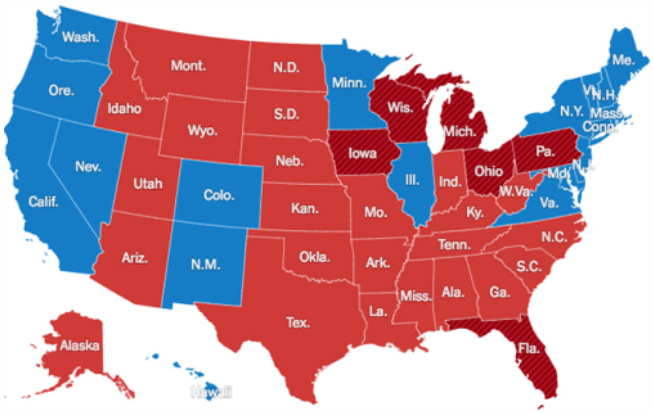
- Improved understanding: Data visualization allows people to understand complex data more easily, and helps to identify trends and patterns that may not be immediately apparent.

- Better decision-making: Data visualization can help decision-makers make better-informed decisions by presenting data in a clear and concise way.

- Increased efficiency: Data visualization can help to streamline processes and make data more accessible to those who need it.

In summary, data visualization is an essential tool for exploring, analyzing, and presenting data. It allows people to understand complex data more easily, make better-informed decisions, and communicate insights to a wider audience.

One notable data visualization case study is the New York Time's visualization of the 2016 US Presidential Election. The visualization used a choropleth map, which is a map that uses color to represent data values in different regions. The map was color-coded to show which states were won by each candidate, with red representing Republican states and blue representing Democratic states.



Articles

Evolution of Computer Viruses

Computer viruses have evolved significantly since the first virus, called the "Creeper virus" was created in the early 1970s. The Creeper virus was created as an experimental program that could move between computers on the ARPANET, the predecessor to the modern internet. It displayed the message "I'm the creeper: catch me if you can" on infected computers.

In the decades since the Creeper virus, computer viruses have become much more sophisticated and much more widespread. The early viruses were typically spread through physical media such as floppy disks, and they were relatively simple in their operation. They were designed to replicate themselves and cause damage to the infected computer.

As the internet became more widely used, viruses began to spread more rapidly and become more destructive. In the 1990s, the "macro virus" became a popular form of virus, which infected Microsoft Office documents and spread through email attachments. These viruses were particularly effective because they could spread through a trusted network of contacts.

The early 2000s saw the rise of the "worm" virus, which spread through network vulnerabilities rather than relying on user interaction. The "Blaster" worm, for example, was able to infect hundreds of thousands of computers within a matter of days.

Today, viruses are much more sophisticated and varied in their operation. They are often spread through phishing emails, social engineering tactics, and other means of exploiting human vulnerabilities. They are designed to steal sensitive data, spy on users, and disrupt computer systems. Some of the most recent and high-profile computer viruses include the "WannaCry" ransomware virus, which caused significant disruption to businesses and organizations around the world.

In response to these evolving threats, computer security measures have also become more advanced. Anti-virus software and firewalls are now common tools used to protect against viruses, and cybersecurity professionals are in high demand to help protect against these evolving threats.

Articles

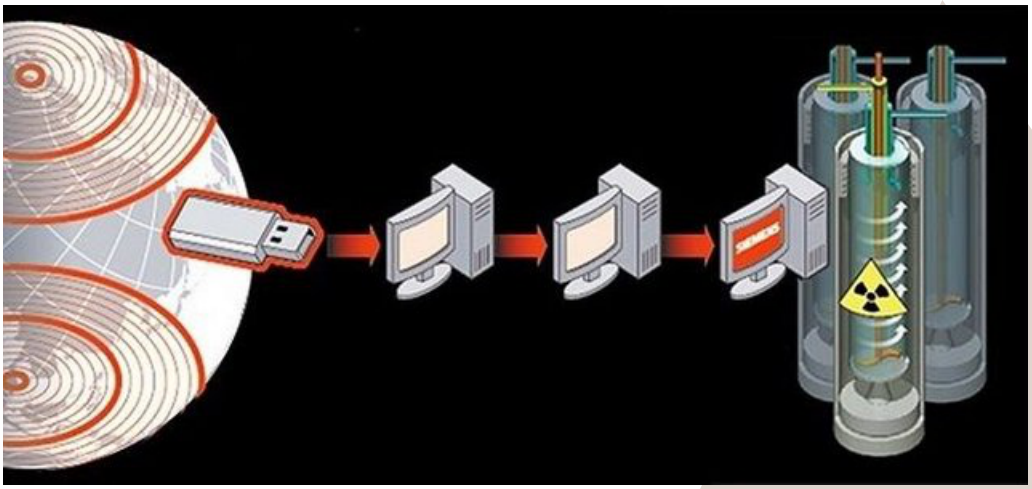
The worm that changed the world

One notable case of virus sabotage occurred in 2010, when a virus known as Stuxnet was discovered in Iran's nuclear program. Stuxnet was a highly sophisticated computer virus that targeted industrial control systems, specifically those used in the centrifuges used to enrich uranium. The virus was designed to cause the centrifuges to malfunction, thereby disrupting Iran's nuclear program.

The Stuxnet virus was particularly unusual in that it was specifically designed to target a particular system, rather than simply causing widespread damage. It was able to do this by exploiting multiple zero-day vulnerabilities, or vulnerabilities that were previously unknown and for which no patches or updates were available. The virus was also designed to spread rapidly and remain undetected for as long as possible.

The exact origin of the Stuxnet virus is unknown, but it is widely believed to have been developed by the US and Israeli intelligence agencies as part of a covert operation to disrupt Iran's nuclear program. The virus is believed to have been spread via USB drives that were used by employees of the Iranian nuclear program to transfer data between systems.

The Stuxnet virus was a highly successful example of virus sabotage, as it caused significant disruption to Iran's nuclear program and delayed its progress for several years. However, it also had wider implications for the field of cybersecurity, as it demonstrated the potential for viruses to be used for political or military purposes. It also highlighted the importance of securing industrial control systems, which are increasingly connected to the internet and therefore vulnerable to cyber-attacks.



Research Paper

List of Publications/Patents

Year: 2019-20

- Manyu Dhyani and Rajiv Kumar, "An intelligent Chatbot using deep learning with Bidirectional RNN and attention model", Materials today: proceedings 34 (2021):817-824.

Student Projects

Year: 2019-20

1.Intelligent Waste Management System
The sensor based dustbin will judge the level of waste in it and send the message directly to the municipal corporation. According to the level, the vehicles can be dispatched.

2. Medic Hero
Medic Hero is NLP processing with AI based chatbot which can be used for medical consultancy, nearby hospitals and doctors search, quick home remedies.

3. AI Assistant With Recommendation System An Artificial Intelligence
Assistant with ability to do basic navigation through the system as user required. It also provides food order recommendations based on user history and preferences.

4. Automated Traffic Control System
The project helps in automating the traffic signal system which will result in reducing the problems associated with the traffic jams at junctions. It will help in tackling a real life problem by dynamically predicting the required time of clearing a side of the junction at a traffic light and thus help in optimization of the counter.

5. Automated Parking
The project is an IOT based applications which affectively utilize the available parking as well as automates it.

Sources of Learning

Programing with Mosh

@programmingwithmosh•3.03M4

Topics Covered:

- Java
- C++
- System Design
- New Technologies

Telusko

@Telusko•1.9M subscribers

Topics Covered:

- Java Crash Course
- Python
- Low Level Designs

Hitesh Chodhary

@HiteshChoudharydotcom•766K

Topics Covered:

- Android Development
- Web Development
- AWS

Clever Programmer

@CleverProgrammer•1.21M subscribers

Topics Covered:

- MERN Stack
- Angular
- Node.js
- Deployment

FreeCodeCamp

@freecodecamp•7.05M subscribers

Topics Covered:

- System Design
- Bootcamps
- Free Crash Courses
- Unreal Engine
- System Design

NeetCode

@NeetCode•316K subscribers

Topics Covered:

- Latest Tech
- DSA
- Shell Scripting
- Python

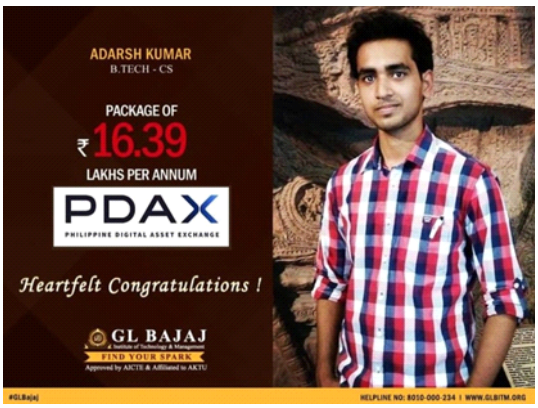
Myths About Tech

1. More megapixels mean better picture quality.
2. More RAM means better performance.
3. Bigger battery means better battery backup.
4. Turning Bluetooth and Wi-Fi off when not in use can save power.
5. More bars mean better network quality.
6. No one can track you if you use Incognito mode while browsing.
7. Radiation from cell phone causes cancer.
8. Charging your phone on Airplane mode leads to faster- charging speeds.

Highest Placements 2019-20

HARISH BHAKUNI

SAGAR TYAGI



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