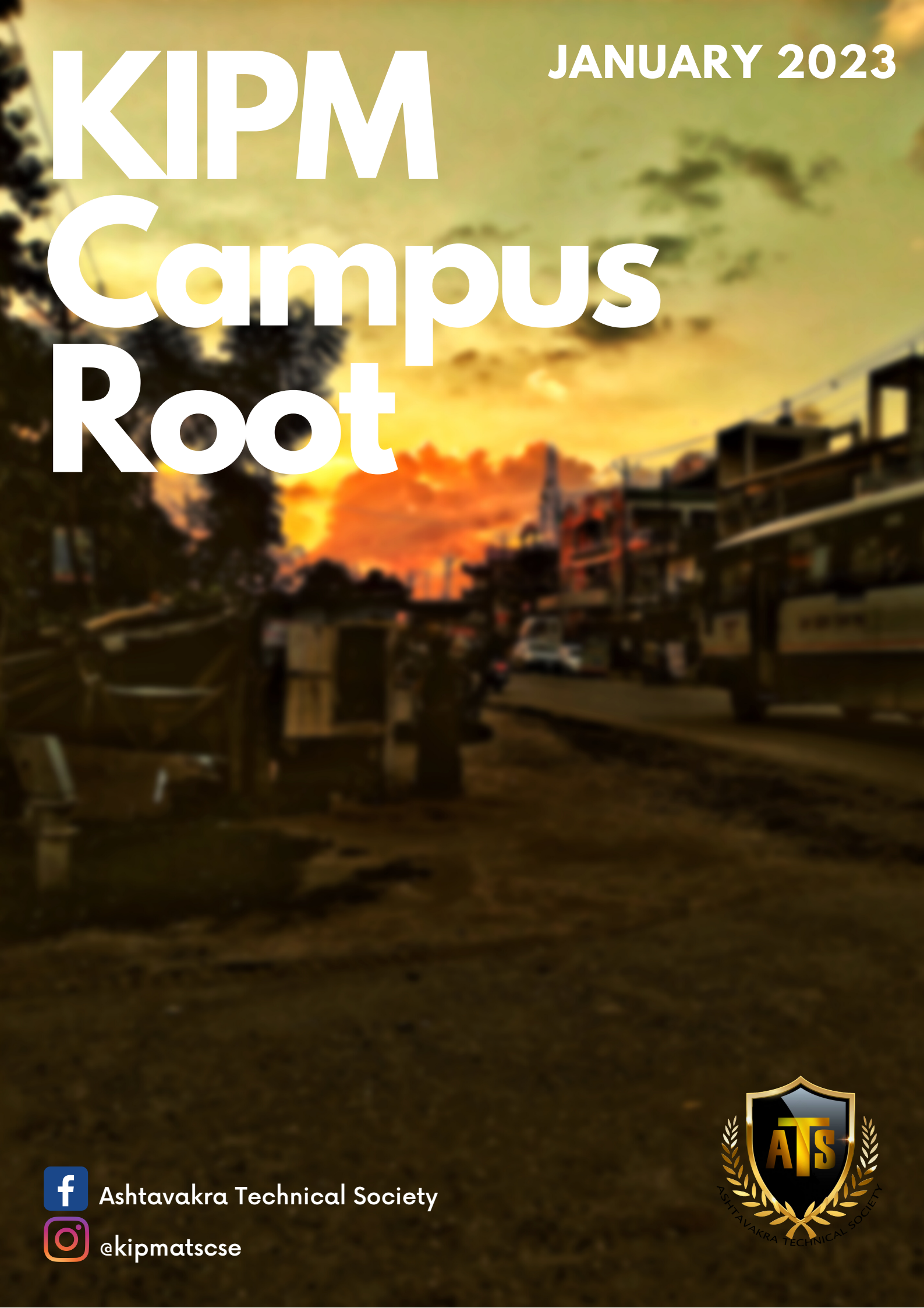
KIPM Campus Root

JANUARY 2023



Ashtavakra Technical Society

@kipmatscse

Message From The Editor's Desk

With a perfect blend of ingenuity and contraption, we the editorial board of ATS, the association of CSE brings to lime-light, the CAMPUS ROOT, an embodiment of cutting-edge technologies and astounding facts, flashing some light on the innovative minds of our blooming engineers. Computer science is an ever expanding field and the power of what technology holds today is definitely beyond one's imagination, rendering dazzling set of ideas and therefore, "CAMPUS ROOT" is themed as "Idea is dawn. Dawn is an inception".

We use this opportunity to express our fervent gratitude and recognize the stead fast dedication of our Placement Coordinators who paved way for talent to meet opportunity. We express our sincere thanks to all association facilitators for their eminent efforts in organizing and indulging students in activities conducted by our association. At the outset, we thank our beloved faculty members for their perpetual brace and supervision in all our endeavors. We hope, you, the readers, will enjoy reading as much as we loved creating CAMPUS ROOT.

Happy reading buddies!!!

Message From Our Chairman

ER. R. D. Singh
Chairman KIPM Technical Campus
GIDA, Gorakhpur

Dear students, these four years are very important in your life. The choices that you make and the effort you put in, will be a major determinant for success in your professional and personal lives.

Our Features

- An Institute that has a good reputation, and where the best faculty. students and recruiters come.
- An institute that gives you personalized attention so that you don't remain just a face in the crowd.
- A program that is so rigorous and continuously evolving that it places you ahead of your peers.
- Faculty who are dedicated, hard-working and passionate towards your success, and who can be role models for you.
- A Hi-Tech environment that constantly exposes you to the latest technology and utilizes the latest techniques.
- An environment which encourages your all-round development besides focusing on academic excellence.
- An intitute that lays strong emphasis on traditional values so that tomorrow you not only become a successful professional but also a responsible human being
- An institute that works hand-in-hand with the corporate world so that tomorrow you are fully equipped to handle any challenges in the real life corporate situations.

Message From Our Managing Director

Mr. Vinod Kumar Singh
Managing Director KIPM Technical Campus
GIDA, Gorakhpur

'Shaping young minds with skill-oriented and value-based education'- these words acceptably symbolize the mission and execution of KIPM Technical Campus. KIPM aspires to advance knowledge and educate students in various disciplines of Engineering, Management, Computer Applications and Pharmacy.

My dear students, KIPM is not elitist in its approach. While we do try to select brilliant students, we also accept those who are potentially sound. KIPM rather than restricting itself to the quality of students coming in, emphasizes on the quality of students going out from the Institution. A strong academic orientation lays the foundation for life-long learning. Thus, all activities at KIPM are oriented towards creating opportunities for students to discover, explore and learn not just within the confines of their curriculum but also outside the boundaries of classroom.

I welcome you all at KIPM which is not only an institute, but also a place of culture that strives at producing the new breeds of professionals.

Message From Our Director

Professor(Dr.) Suryakant Pathak
Director KIPM -College of Engineering & Technology
GIDA, Gorakhpur

Dear Students,
My every endeavor for this college will be dedicated towards advancement of knowledge and educate our students in Science, Technology, and other distinguished areas of scholarship that will best serve the community, society, Nation and the world in the 21st century at large.

I hope to serve my students with all my might for as long as I could and provide them every assistance, be it in academics, or in co-curricular field, which is possible from our side. I wish that every student that enters this institution is of some worth after leaving this institution and we will ensure that this does happen.

Message From Our Assistant Director

Professor P C Srivastava
Assistant Director KIPM -College of Engineering & Technology
GIDA, Gorakhpur

Dear Students,
A strong academic foundation supports most of the pillars of life and so, we, at KIPM ensure that the students here are served with the best knowledge that is possible at our level. I assume that you all might have some expectations from a college and thus we always strive to live up to your expectations.

The faculty here are well experienced and will be helpful in providing all sorts of information, knowledge and wisdom.

Message From Our Dean

Dr. Rakesh Kumar Pandey
Dean Academics
KIPM - CET
GIDA, Gorakhpur

It is with tremendous pride that I am serving as the Dean Academics of KIPM-College of Engineering & Technology during this time of continued growth and opportunities for the college and for our students. It feels great to see the iniatives of our CSE department, including all the faculties as well the students that come up with innovative ideas to stand apart from the crowd and achieve new heights.

MESSAGE FROM OUR MENTORS

Nurturing creativity and inspiring innovation are two of the key elements of a successful education, and this technical magazine CAMPUS ROOT 2021, is the flawless amalgamation of both. No doubt this creative endeavor will bring out an assortment of technical, artistic and scientific articles with distinct individual autographs of CSE students. It harnesses the creative energies of the students' community and distils the essence of their inspired imagination in the most brilliant way possible.

Er. Anurag Singh
Assistant Professor

Er. Alok Kumar Srivastava
Assistant Professor

"Knowing and believing in our own potential is the primary requisite for being successful in all our endeavors". Believing in our own potentials more, motivates to prove ourselves. "Strive for progress, Move towards perfection" is the slogan behind ATS. It works with the motto of try, progress, never give up even if you make mistakes and improve continuously until perfection is reached. ATS has been functioning, successfully in full swing throughout the academic year 2021-2022. ATS secretary is the backbone behind all the activities of ATS. Office bearers and facilitators as the pillars of ATS have raised the students' association to the elegant level. We take this opportunity to appreciate all the ATS members for their magnificent efforts.

Er. R. K. Singh
Assistant Professor

The association members of CSE are rapidly progressing towards zenith of Computer Science knowledge. It helps to depart from the existing academic world and to explore the new trends in technologies and development.

I wish to extend my deep appreciation to all those who have so generously volunteered their time and talents for publication of the ATS Magazine. Special thanks goes to our Publications Team and Editor who have shared their valuable effort in shaping the magazine and bringing out with a nice collection of articles.

Er Vivek kumar patel
Assistant Professor

The President's Message

Pratyaksh Gupta
CSE - III YEAR

As the President of ATS 2022-23, I feel dazed with the splendid experience I've procured by working with concurring peers and networking with juniors. Looking back, this quarter has been a very special for the Department of Computer Science and Engineering. We have had many events in this quarter of the year. It was filled with training sessions, competitions and events. While we operated both in online and offline mode, what remained common irrespective of the mode of events was the enthusiastic participation of the department members. I am extremely delighted to be working with my team. As we come towards the end of our term. ATS is all about team spirit and there is no place for trivialities. We are not a team because we work together.. we are a team because we respect, trust and shoulder each other. I would like to extend my sincere gratitude to our faculty for their constant support and guidance as well as each student of our department for leaving no stoke unturned to add their sparkle and contribute enthusiastically.

The Vice - President's Message

Ankita Mall
CSE - III Year

Being one of the office bearers of ATS 2022-23, I, personally had a lot of experience in managing events and people. We planned various events for the academic year 2021-22 including Mock Interview and Syllogism The whole team of ATS 2021-22 had a lot of fun while working together as a team. ATS gave us a platform to interact with our juniors, helping them understand the industrial requirements, recruitment process and other technical aspects. I wish to thank the ATS Staff-in-charges for having trust in my skills and abilities. I would like to advise my juniors to never stop progressing in the process of learning

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What is DevOps?

DevOps is a set of practices that combines software development (Dev) and IT operations (Ops). It aims to shorten the systems development life cycle and provide continuous delivery with high software quality. DevOps is complementary with Agile software development; several DevOps aspects came from the Agile way of working.

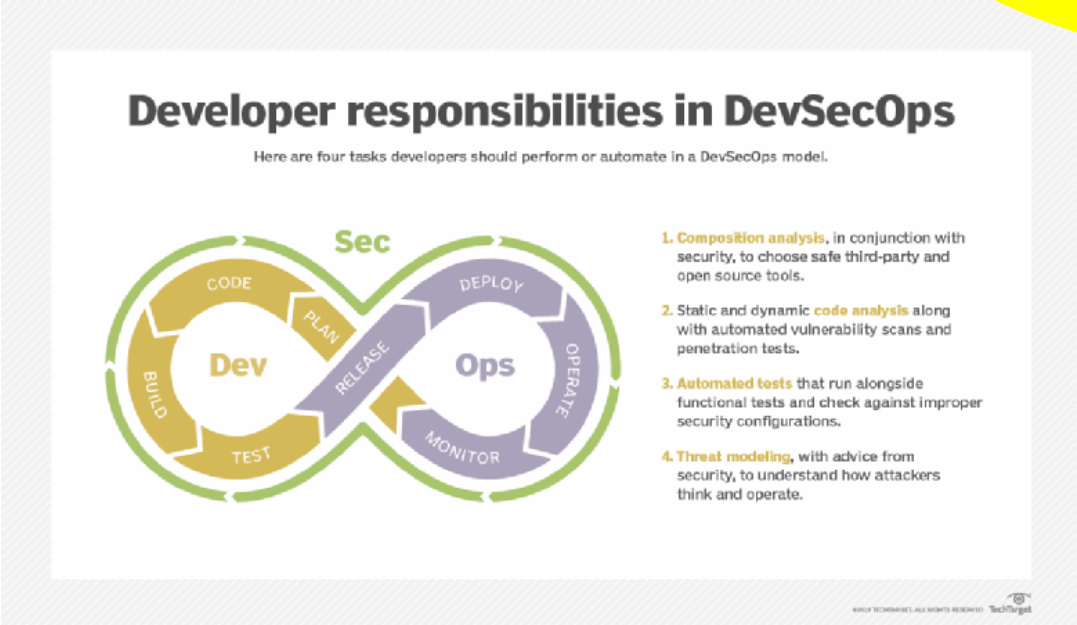
The word DevOps is a combination of the terms development and operations, meant to represent a collaborative or shared approach to the tasks performed by a company's application development and IT operations teams.

How does DevOps work?
DevOps is a methodology meant to improve work throughout the software development lifecycle. You can visualize a DevOps process as an infinite loop, comprising these steps: plan, code, build, test, release, deploy, operate, monitor and -- through feedback -- plan, which resets the loop.

What problems does DevOps solve?
Each company faces its own challenges, but common problems include releases that take too long, software that doesn't meet expectations and IT that limits business growth.

Without wait times, manual processes and lengthy reviews, a DevOps project moves faster from requirements to live software. Shorter cycle times can keep requirements from shifting so that the product delivers what customers want.

The evolution of DevOps
Patrick Debois, a software development consultant, is credited with creating the term DevOps in 2009 by naming a conference DevOps Days. DevOps addressed a shortcoming of the Agile software development methodology: Iterative, rapid code development did not necessarily lead to iterative, rapid code deployment.



DevOps benefits and challenges

DevOps benefits include the following:

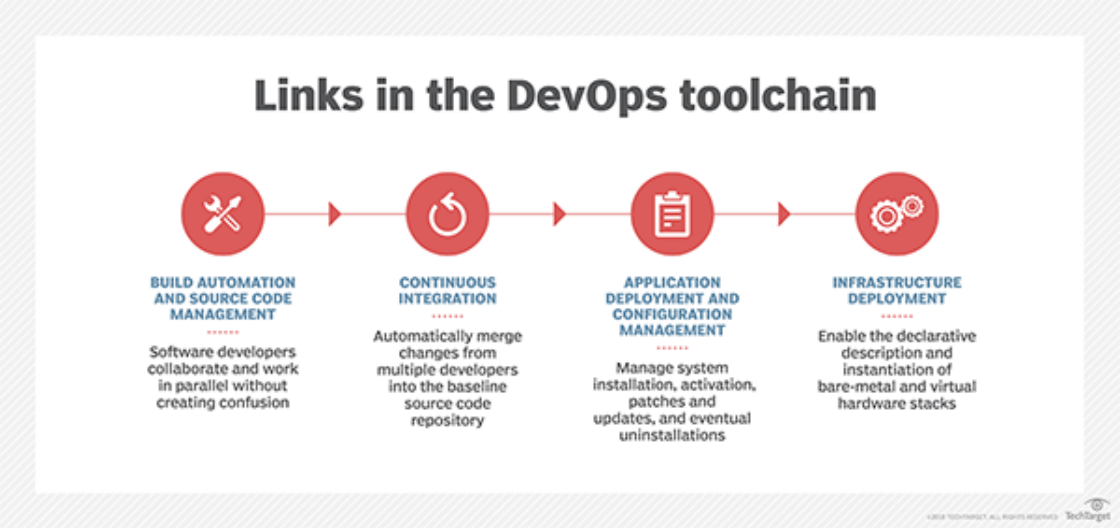
- fewer silos and increased communications between IT groups;
- faster time to market for software;
- rapid improvement based on feedback;
- less downtime;
- improvement to the entire software delivery pipeline through builds, validations and deployment;
- less menial work, thanks to automation;
- streamlined development processes through increased responsibility and code ownership in development; and
- broader roles and skills.

However, DevOps challenges abound:

- organizational and IT departmental changes, including new skills and job roles;
- expensive tools and platforms, including training and support to use them effectively;
- development and IT tool proliferation;
- unnecessary, fragile or unsafe automation;
- scaling DevOps across multiple projects and teams;
- riskier deployment due to a fail-fast mentality and job
- generalization vs. specialization;

DevOps tools

DevOps is a mindset, not a tool set. But it's hard to do anything in an IT team without the right tools. In general, DevOps practitioners rely on a CI/CD pipeline, containers and cloud hosting. Tools can be open source, proprietary or supported distributions of open source technology.



Benefits of DevOps

- **Speed**: DevOps practices let you move at the velocity you need to innovate faster, adapt to changing markets better, and become more efficient at driving business results.
- **Rapid delivery**: When you increase the pace of releases, you can improve your product faster and build competitive advantage.
- **Reliability**: DevOps practices like continuous integration and continuous delivery can ensure the quality of application updates and infrastructure changes so you can reliably deliver at a more rapid pace while maintaining an optimum experience for end users.
- **Improved collaboration**: Under a DevOps model, developers and operations teams collaborate closely, share responsibilities, and combine their workflows. This reduces inefficiencies and saves time.

Girajesh Maurya
CSE 2nd Year

What is Virtual Reality

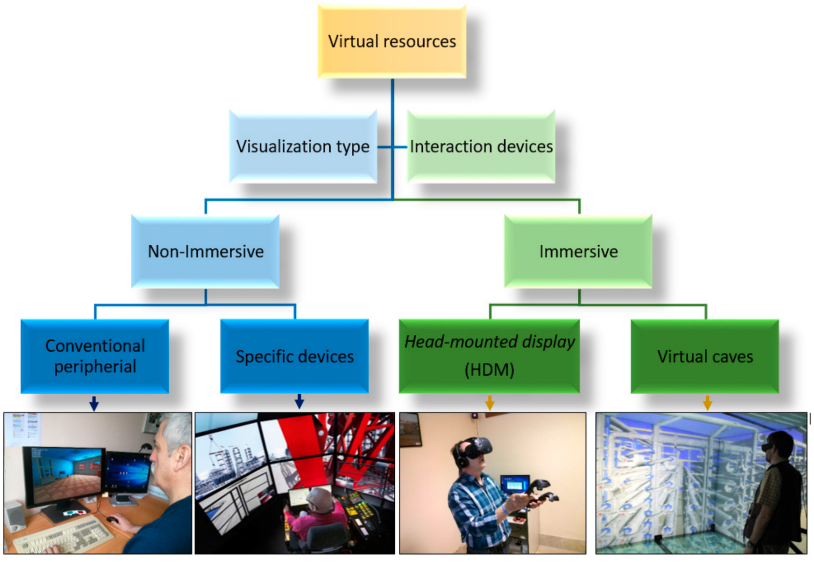
Virtual reality is the use of computer technology to create simulated environments. Virtual reality places the user inside a three-dimensional experience. Instead of viewing a screen in front of them, users are immersed in and interact with 3D worlds.

Virtual reality (VR) is a simulated experience that employs pose tracking and 3D near-eye displays to give the user an immersive feel of a virtual world. Applications of virtual reality include entertainment (particularly video games), education (such as medical or military training) and business (such as virtual meetings). Other distinct types of VR-style technology include augmented reality and mixed reality, sometimes referred to as extended reality or XR, although definitions are currently changing due to the nascence of the industry.

The Three Types of Virtual Reality

The three main VR categories are the following:

- **Non-Immersive Virtual Reality:** This category is often overlooked as VR simply because it's so common. Non-immersive VR technology features a computer-generated virtual environment where the user simultaneously remains aware and controlled by their physical environment. Video games are a prime example of non-immersive VR.
- **Semi-Immersive Virtual Reality:** This type of VR provides an experience partially based in a virtual environment. This type of VR makes sense for educational and training purposes with graphical computing and large projector systems, such as flight simulators for pilot trainees.
- **Fully Immersive Virtual Reality:** Right now, there are no completely immersive VR technologies, but advances are so swift that they may be right around the corner. This type of VR generates the most realistic simulation experience, from sight to sound to sometimes even olfactory sensations. Car racing games are an example of immersive virtual reality that gives the user the sensation of speed and driving skills. Developed for gaming and other entertainment purposes, VR use in other sectors is increasing.



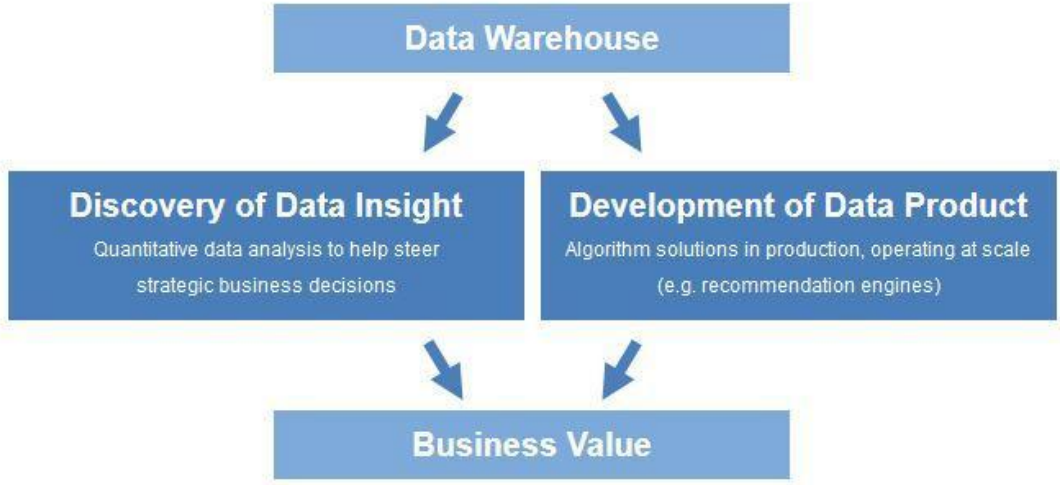
Virtual Reality Applications:

- Healthcare.
- Entertainment
- Automotive
- Education
- Space & Military
- Architecture
- Digital Marketing
- Occupational Safety
- Social Science and Psychology
- Tourism

Chanchal Sharma
CSE 2nd year

Data Science

Data science is a multidisciplinary blend of data inference, algorithm development, and technology to solve analytically complex problems. At the core is data. Troves of raw information, streaming in and stored in enterprise data warehouses. Much to learn by mining it. Advanced capabilities we can build with it. Data science is ultimately about using this data in creative ways to generate business value:



This aspect of data science is all about uncovering findings from data. Diving in at a granular level to mine and understand complex behavior's, trends, and inferences. It's about surfacing hidden insight that can help enable companies to make smarter business decisions.

For example:
• Netflix data mines movie viewing patterns to understand what drives user interest, and uses that to make decisions on which Netflix original series to produce.
• Target identifies what are major customer segments within its base and the unique shopping behaviors within those segments, which helps to guide messaging to different market audiences.

• Proctor & Gamble utilizes time series models to more clearly understand future demand, which helps plan for production levels more optimally.

How do data scientists mine out insights? It starts with data exploration. When given a challenging question, data scientists become detectives. They investigate leads and try to understand patterns or characteristics within the data. This requires a big dose of analytical creativity. Then as needed, data scientists may apply a quantitative technique to get a level deeper – e.g. inferential models, segmentation analysis, time series forecasting, synthetic control experiments, etc.

Aditya Singh
3rd Year CSE

What is Cyber Security?

Cyber security is the practice of defending computers, servers, mobile devices, electronic systems, networks, and data from malicious attacks. It's also known as information technology security or electronic information security. The term applies in a variety of contexts, from business to mobile computing, and can be divided into a few common categories.

Network Security is the practice of securing a computer network from intruders, whether targeted attackers or opportunistic malware. Application security focuses on keeping software and devices free of threats. A compromised application could provide access to the data its designed to protect. Successful security begins in the design stage, well before a program or device is deployed.

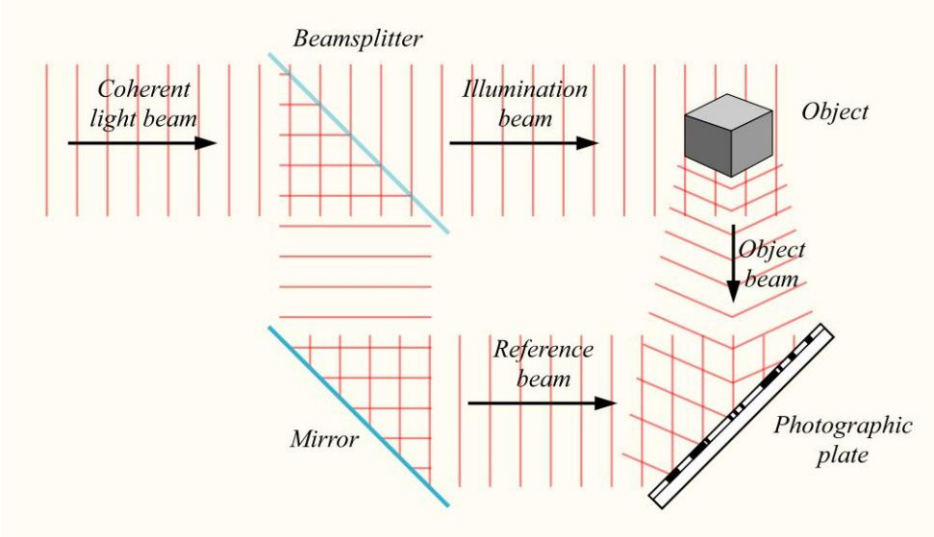
Information security protects the integrity and privacy of data, both in storage and in transit. Network Security includes the processes and decisions for handling and protecting data assets. The permissions users have when accessing a network and the procedures that determine how and where data may be to red or shared all fall under this umbrella.

Chandan Pandey
CSE 2nd Year

What is a Hologram?

Holography is a photographic technique that records the light scattered from an object, and then presents it in a way that appears three-dimensional. Holograms pop up in movies such as "Star Wars" and "Iron Man," but the technology has not quite caught up to movie magic — yet.

Various types of holograms have been made over the years, including transmission holograms, which allow light to be shined through them and the image to be viewed from the side; and rainbow holograms, which are used for security purposes — on credit cards and driver's licenses, for example.



How holography works

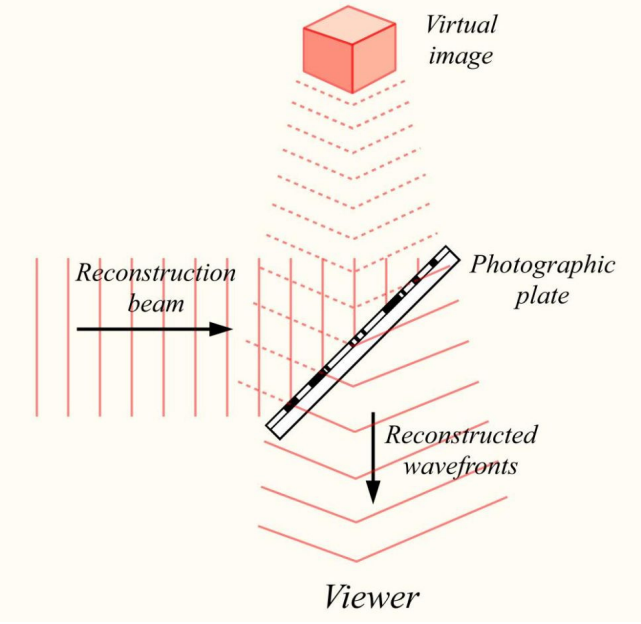
To create a hologram, you need an object (or person) that you want to record; a laser beam to be shined upon the object and the recording medium; a recording medium with the proper materials needed to help clarify the image; and a clear environment to enable the light beams to intersect.

A laser beam is split into two identical beams and redirected by the use of mirrors. One of the split beams, the illumination beam or object beam, is directed at the object. Some of the light is reflected
off the object onto the recording medium.

The second beam, known as the reference beam, is directed onto the recording medium. This way, it doesn't conflict with any imagery that comes from the object beam, and coordinates with it to create a more precise image in the hologram location.

The two beams intersect and interfere with each other. The interference pattern is what is imprinted on the recording medium to recreate a virtual image for our eyes to see.

The recording medium, where the lights converge, can be made up of various materials. One of the most common used with hologram creation is photographic film, with an added amount of light-reactive grains. This enables the resolution to be higher for the two beams, making the image look much more realistic than using the silver halide material from the 1960s.



History of holography

The development of hologram technology started in 1962, when Yuri Denisyuk, in the Soviet Union, and Emmett Leith and Juris Upatnieks at the University of Michigan developed laser technology that recorded 3D objects. Silver halide photographic emulsions were used for the recording medium, though the clarity of said objects wasn't perfect at the time. But new methods involving the conversion of transmission with the refractive index allowed holograms to be improved over time.

Future of Holography

For now, holograms are static. Recent presentations, such as CNN's special effect of a reporter appearing live from another location, and the late Tupac Shakur "appearing live" at a music festival, are not "true" holograms.

However, new holographic technology is being developed that projects 3D images from another location in real time. The images are also static, but they are refreshed every two seconds, creating a strobe-like effect of movement. The researchers hope to improve the technology over the next few years to bring higher resolution and faster image streaming.

And in March 2013, it was announced that a group of researchers from Hewlett Packard Laboratories has developed glasses-free, multi-perspective, 3D display technology for mobile devices.

Shikha Singh
CSE 2nd Year

What is 5G Technology?

5G technology has a theoretical peak speed of 20 Gbps, while the peak speed of 4G is only 1 Gbps. 5G also promises lower latency, which can improve the performance of business applications as well as other digital experiences (such as online gaming, videoconferencing, and self-driving cars).
While earlier generations of cellular technology (such as 4G LTE) focused on ensuring connectivity, 5G takes connectivity to the next level by delivering connected experiences from the cloud to clients. 5G networks are virtualized and software-driven, and they exploit cloud technologies.

The 5G network will also simplify mobility, with seamless open roaming capabilities between cellular and Wi-Fi access. Mobile users can stay connected as they move between outdoor wireless connections and wireless networks inside
buildings without user intervention or the need for users to reauthenticate.
The new Wi-Fi 6 wireless standard (also known as 802.11ax) shares traits with 5G, including improved performance. Wi-Fi 6 radios can be placed where users need them to provide better geographical coverage and lower cost. Underlying these Wi-Fi 6 radios is a software-bassed network with advanced automation.
5G technology should improve connectivity in underserved rural areas and in cities where demand can outstrip today's capacity with 4G technology. New 5G networks will also have a dense, distributed-access architecture and move data processing closer to the edge and the users to enable faster data processing.

How does 5G technology work?

5G technology will introduce advances throughout network architecture. 5G New Radio, the global standard for a more capable 5G wireless air interface, will cover spectrums not used in 4G. New antennas will incorporate technology known as massive MIMO (multiple input, multiple output), which enables multiple transmitters and receivers to transfer more data at the same time. But 5G technology is not limited to the new radio spectrum. It is designed to support a converged, heterogeneous network combining licensed and unlicensed wireless technologies. This will add bandwidth available for users.

5G architectures will be software-defined platforms, in which networking functionality is managed through software rather than hardware. Advancements in virtualization, cloud-based technologies, and IT and business process automation enable 5G architecture to be agile and flexible and to provide anytime, anywhere user access. 5G networks can create software-defined subnetwork constructs known as network slices. These slices enable network administrators to dictate network functionality based on users and devices.

5G also enhances digital experiences through machine-learning (ML)-enabled automation. Demand for response times within fractions of a second (such as those for self-driving cars) require 5G networks to enlist automation with ML and, eventually, deep learning and artificial intelligence (AI). Automated provisioning and proactive management of traffic and services will reduce infrastructure cost and enhance the connected experience.

Shubham Gupta
CSE 2nd year

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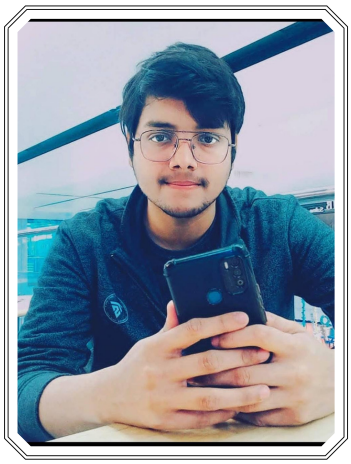

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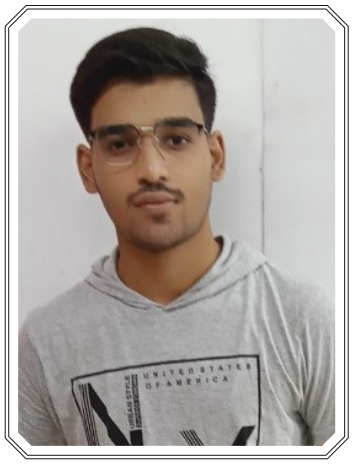

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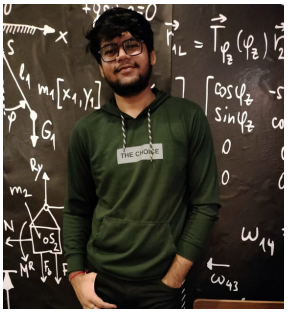

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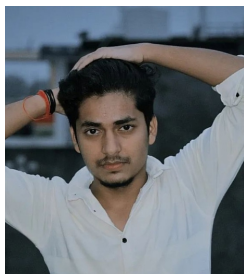

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