ALGORITHMICA

Living into the Heart of Algorithmic Thinking

**DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING**

A Glimpse into the CSE Department

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Asmita (HOD)

> Education is the passport to the future, for tomorrow belongs to those who prepare for it today.

FROM DESK OF HOD

"Hearty greetings from the Department of Computer Science and Engineering (CSE). It's a great zeal for me that the CSE has reached the height of success universally as an imperative source and technique for the betterment of every human being today and forever. India being the fastest growing economies, job creation and skill development seems to be natural blueprint for enduring prosperity. The Department has significantly mastered for the development of the nation and also riveted on Information Technology by conveying quality education to the students to be world wise competent in the field of Computer Science, Engineering, innovators and researchers. Students are encouraged to take ICT projects such as Smart City, Robotics, Graphics, Future Networks, Artificial Intelligence, Machine Learning, Green Technology and Grid Computing, etc. Entrepreneurial-minded students should use this opportunity to become successful entrepreneurs.

Let me conclude my thoughts with a saying "Education is the passport to the future, for tomorrow belongs to those who prepare for it today."

Wishing all the very best to the faculty fraternity and students of our department to reach the height of success and glory by overcoming the forthcoming challenges. "

Best Wishes
Asmita (HOD)

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Goal & Vision

Welcome to the NSIT College Bihta, a thriving hub of technological innovation, where the Computer Science & Engineering (CSE) department sets out on an enthralling adventure. Our main objective is to equip the next generation of tech leaders with a comprehensive awareness of the digital frontier. We are dedicated to giving our students the technical know-how needed to successfully navigate the rapidly changing tech landscape, as well as the problem-solving skills, collaborative spirit, and entrepreneurial mindset that are all essential for success in the fast-paced world of technology.

Our perspective goes much beyond what is typical. We picture the CSE department as a leader in cutting-edge technologies that are only starting to emerge, including artificial intelligence, machine learning, data science, cybersecurity, and quantum computing. We are committed to providing students with a well-rounded educational experience that stresses the acquisition of critical life skills in addition to academic performance. In addition to succeeding in their employment, we want our graduates to have a positive impact on society.

Additionally, we are dedicated to diversity and inclusivity since we understand that in the constantly connected digital world, diversity is our strength. We want to develop an atmosphere where students from various backgrounds and occupations can interact, producing a vibrant tapestry of viewpoints and ideas. Our dedication to diversity is essential to realizing our dream of a unified, progressive CSE department.

As we embark on this thrilling journey, we cordially invite you to share in our vision. Whether you are an educator committed to forming young minds, a teacher wanting to start an engaging educational journey, or a tech enthusiast.

Hall of Achievements

Hall of Fame

MANISHA JAISHWAL

7th sem - 9.00 SGPA

"All our dreams can come true; if we have the courage to pursue them."

" Success is No Accident…. "

How was your NSIT experience?

Entered college with big dreams, made great friends like Sejal and Shivani, and cherished memories. Harjeet Sir was the best teacher in the first year. Corona lockdown from 2nd to 5th semester, online classes, and memorable celebrations, especially with Sonam Mam's OS teaching. Finally, college reopened in the 5th semester. Bus journeys were fun, even with scoldings. Semester exams were challenging but note-sharing was a highlight. 7th sem focused on project completion, with moments of fun. Met Asmita Mam in 8th sem, and college life ended, but with a new beginning.

Harsh Kumar

Himanshu Kumar

What was the role of college throughout the GATE journey?

During the lockdown, I began preparing for the GATE exam, focusing on the OS subject taught by Sonam Mam. Balancing college and preparation was challenging, but I used bus and lab hours for GATE problem-solving, saving 2-3 hours daily. My college teachers, Nitish Sir and Pradeep Sir, supported and motivated me throughout. Their trust in me was a significant motivator. My genuine interest in GATE CSE subjects also played a crucial role in my success.

What do you want to suggest aspring students who want to achieve like you?

Message to juniors: "Never give up, stay disciplined, and be consistent in your preparation. Have faith in yourself, even when demotivated, and keep working hard for your goals."

TEAM SEVEN

In a remarkable display of talent, a group of students from our very own college, known as Team Seven, not only participated but also emerged victorious at the prestigious IIT Patna (Bihta) Hackathon, aptly named "Hack-it-out." Their outstanding performance left everyone in awe.

2021-2025

Sagar Kumar
Ashutosh Anand
Anand Madhusudan
Rahul Anand

"Team Seven shared that participating in the hackathon was a standout decision, providing them with invaluable experience of making critical decisions under pressure and refining their team management skills. Their united focus on victory streamlined their journey. Team Seven has set a shining example for all aspiring hackers, showcasing the power of talent, determination, and teamwork. Their win at the Hack-it-out Hackathon is a testament to their dedication and passion for innovation."
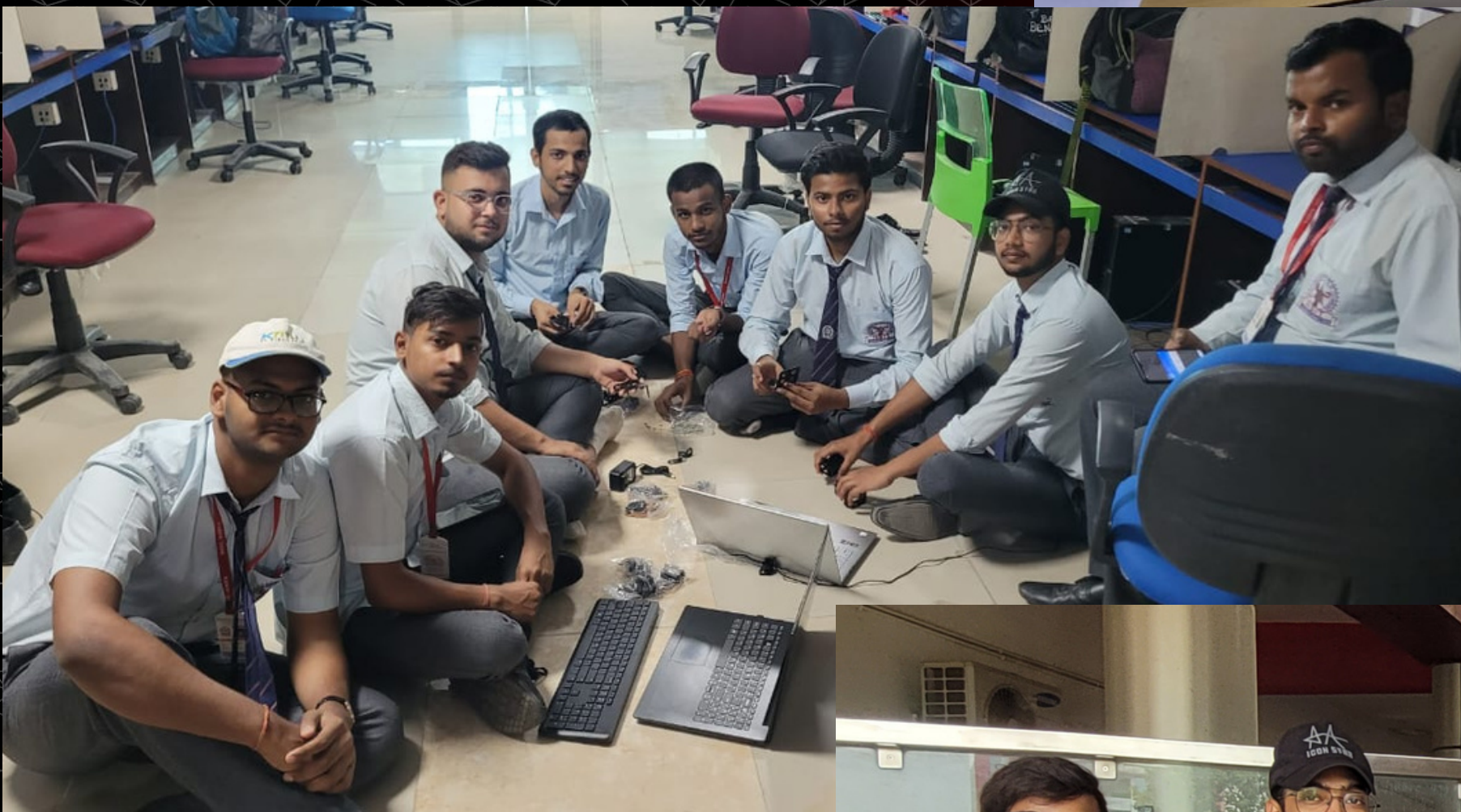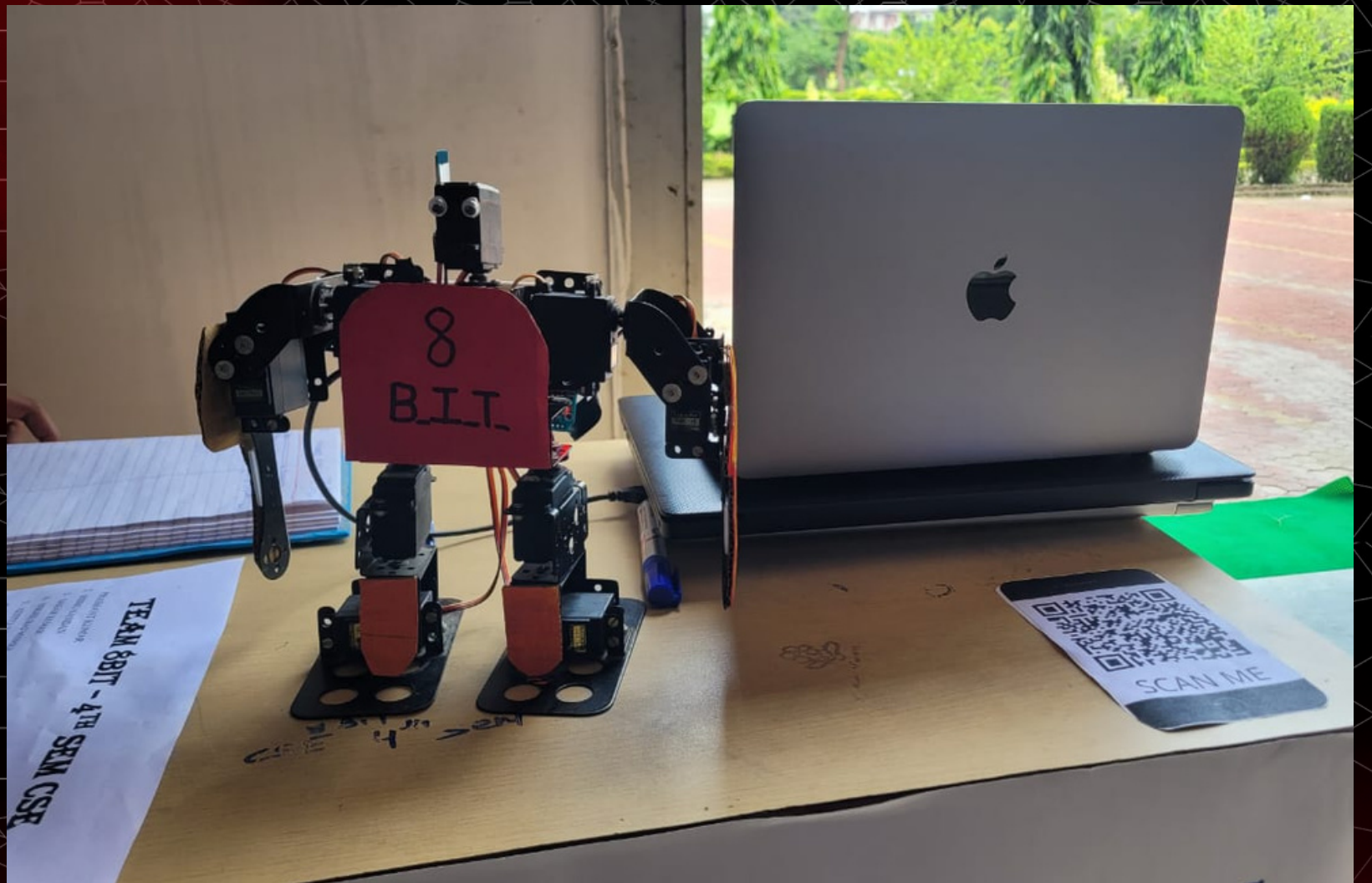
Future Tech Unleashed:

ROBOTICS SEMINAR

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NSIT X D'ROBOZONE
GALLERY

TEAM : 8BIT

HUMANOID ROBOT

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NSIT
X
D'ROBOZONE

A seminar hosted by D'robo Zone was a transformative experience for our college community. Experts from robotics field , offering students to interact and get knowledge about robotics.

However, what truly set this event apart was the introduction of hands-on projects or DIY projects. D'robo Zone presented a range of different projects, like a humanoid robot or drone and other different projects which students have to assemble and make work themselves.

It was further presented in front of college professors and guests who had to decide the winners.

Overall, it was a really amazing experience for students as they get to know about robotics and how to assemble and program them.

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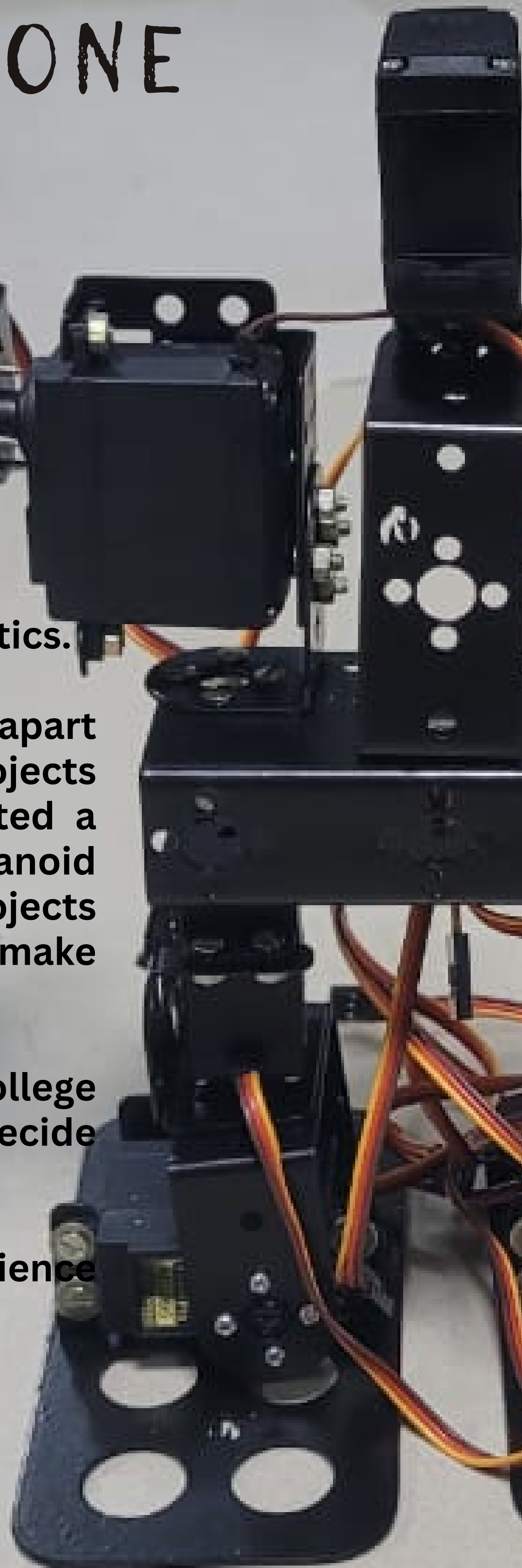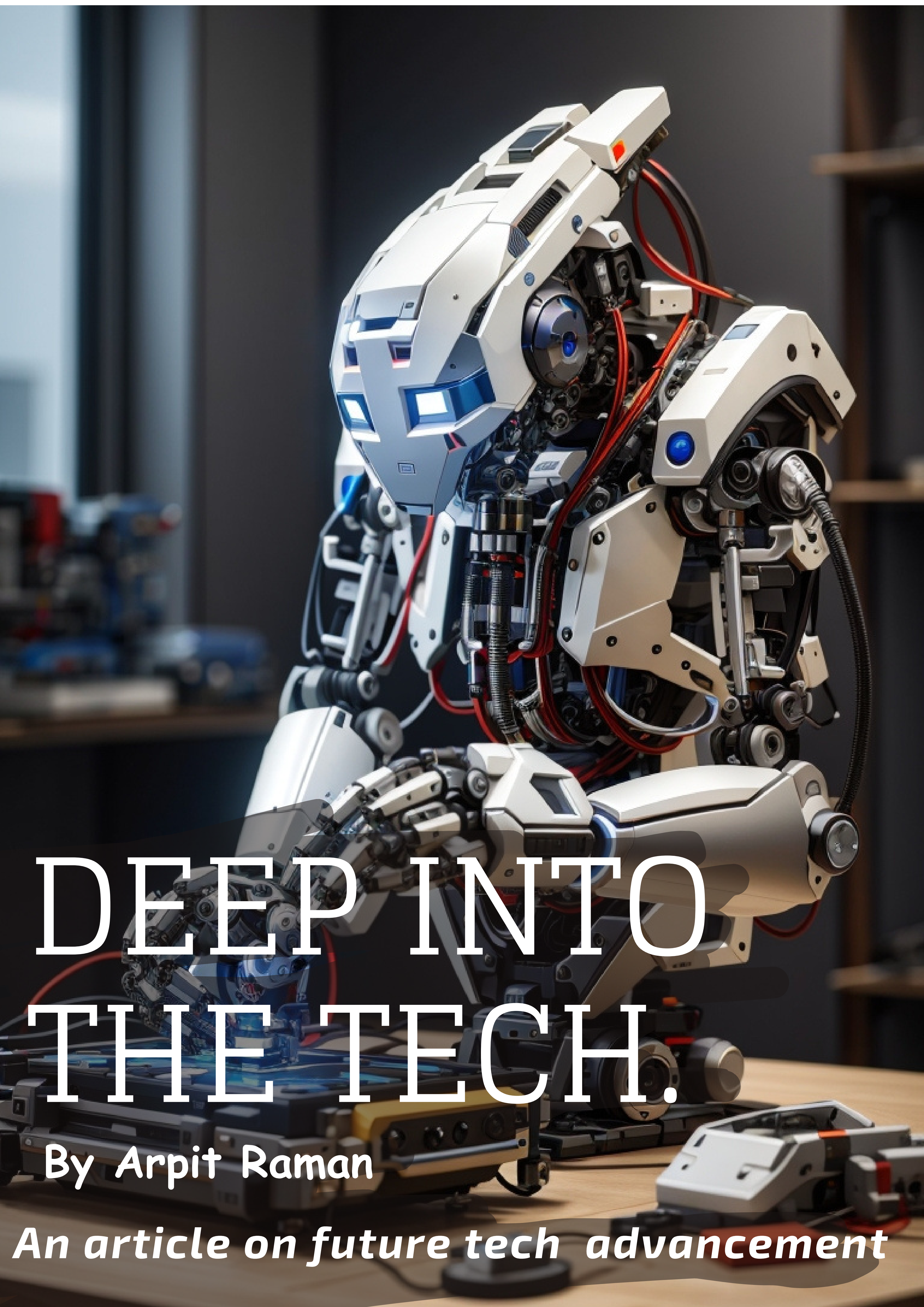
DEEP INTO THE TECH.

By Arpit Raman

An article on future tech advancement

I n the ever evolving field of computer science engineering, keeping up with the latest trends and technologies is not only an option, but an important one. This field supports the digital world we live in today, pushes the boundaries of innovation and shapes our future. In this article, we will touch on the most exciting trends and technologies that are moving computer science engineering forward.

1. Artificial Intelligence and Machine Learning (AI/ML):

Artificial intelligence and machine learning have been at the forefront of computer science for some time and it has all over impact of our life. Today, artificial intelligence/ machine learning algorithms are transforming industries from healthcare to finance. The integration of artificial intelligence into everyday applications such as driverless cars and virtual assistants has the potential to transform our lives.

2. Quantum Computing:

Quantum computing represents a revolution in computing power. Although quantum computers are still in their infancy, their applications are promising. These systems can solve complex problems exponentially faster than traditional computers, opening new avenues in cryptography, drug discovery and optimization.

3. Edge Computing:

Edge computing decentralizes data processing and brings computing closer to where it is needed. This model is especially important in the Internet of Things (IoT) era, where low latency and real-time performance are important. Edge computing reduces data transfer times and increases the performance and performance of connected systems.

4. Progress in Cyber Security:

As technology advances, the threats associated with it also increase. Cybersecurity is still a priority, and computer science experts are actively developing new solutions. From AI-powered threat detection to quantumresistant encryption, this field focuses on staying one step ahead of cyber adversaries.

5. Blockchain Technology:

Historically associated with cryptocurrencies such as Bitcoin, blockchain has been transformed into a multifunctional technology

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that can be used for chain management, secure data sharing and voting. Its ability to provide transparency and stability makes it a hot topic in computer science engineering.

6. Augmented Reality (AR) and Virtual Reality (VR):

AR and VR are making a splash not only in games but also in various sectors from education to healthcare. Such technologies have improved user experience and created new opportunities for communication and visualization.

7. 5G and beyond:

The rollout of 5G networks is accelerating the development of new applications and services. This high-speed, low-latency connection is the path to innovations such as driverless cars, remote surgeries, and smart cities.

8. Sustainable Computing:

Sustainability is a growing concern in the technology industry. Computer science experts are working on energy-saving algorithms, environmentally friendly data centers, and green computing practices to reduce the environmental impact of technology.

9. Convergence of Biotechnology and informatics:

The convergence of biotechnology and informatics is a fascinating trend. Bioinformatics, computational biology, and genetic data analysis are combining with traditional computational disciplines to make an impact in clinical and genetic research.

10. Human-centered design:

User experience through technology development. Humane design principles have become integral to creating technology that is not only functional but also efficient and inclusive.

In short, computer science engineering is in a constant state of change. The models and technologies above are just a glimpse into the future. The role of computer science engineers in shaping the future is significant, and as they continue to innovate, we can expect to see many advances that will reshape our world in unprecedented ways. Modernization and flexibility are not the only options; This is essential for anyone working in this dynamic field.

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THE VIDEO ASSISTANT REFEREE (VAR) REVOLUTION IN FOOTBALL

The world of football has always been a dynamic and constantly evolving sport. Various changes have been made over the years to improve the fairness, accuracy and fun of the game. One of the most significant developments in recent times has been the introduction of the Video Assistant Referee (VAR), a technology-driven system designed to assist referees on the pitch in making crucial decisions. In this article we will delve into the impact of VAR on football and how it has changed the way the game is played.

The birth of VAR

VAR was officially introduced to competitive football in 2016 when it was used in an international friendly between Italy and France. However, it wasn't until the 2018 FIFA World Cup that VAR entered the world stage. It has since been implemented in various domestic leagues and tournaments around the world.

How VAR works

VAR is a technology-driven system that uses video replay and a team of officials in the control room to review and assess key incidents that may have been overlooked or misjudged by the referee on the pitch. These incidents usually involve goals, penalties, red card decisions and cases of mistaken identity.
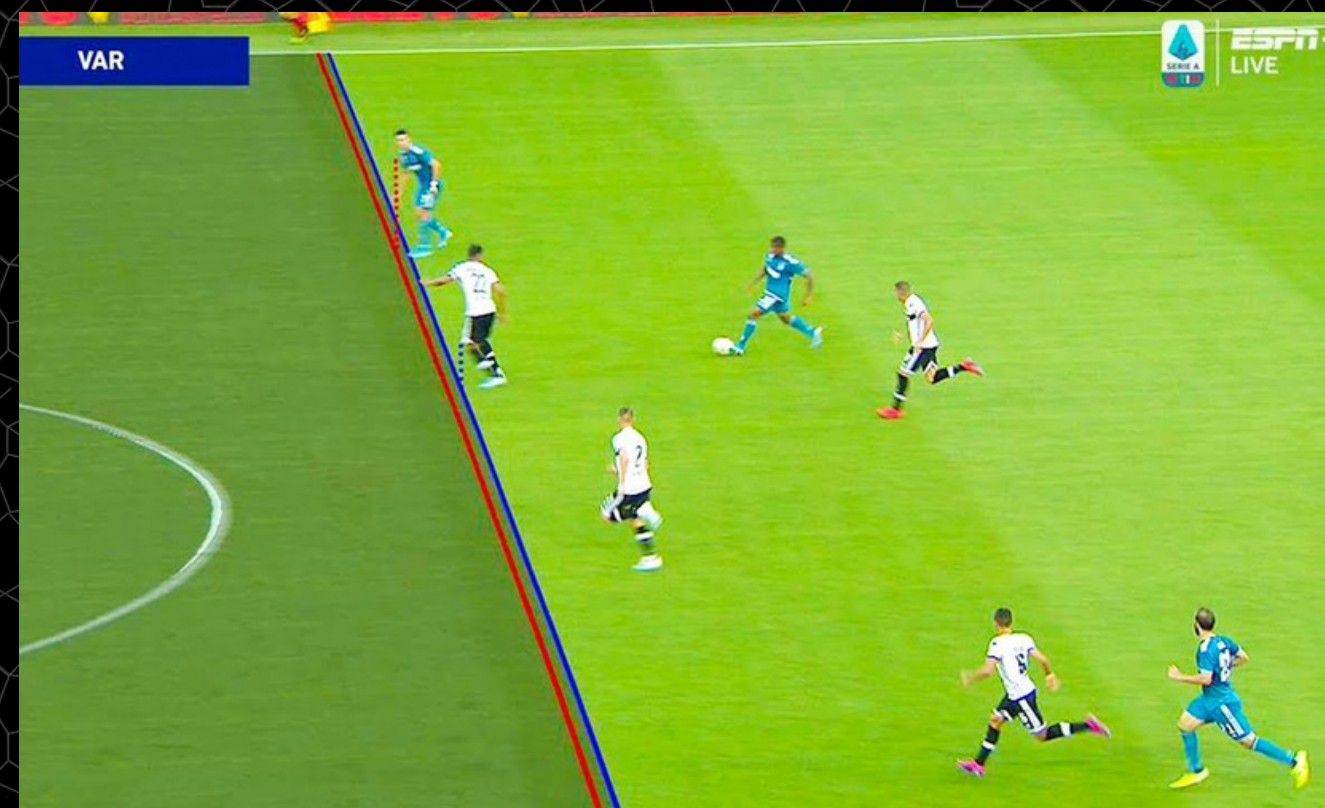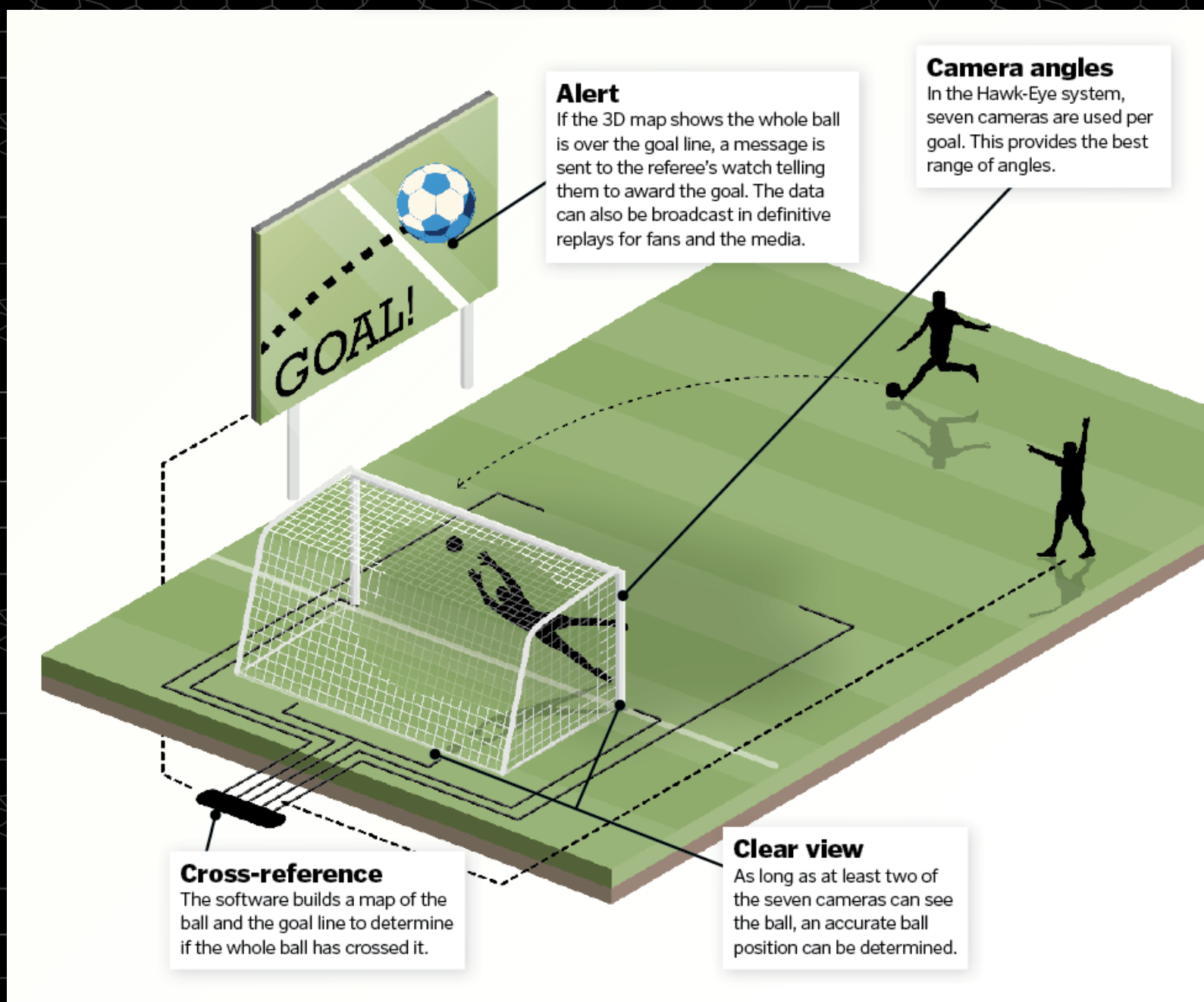

Image of a disallowed goal from a football match in Serie A match

Image of a refree checking for a VAR request

Alert
If the 3D map shows the whole ball is over the goal line, a message is sent to the referee's watch telling them to award the goal. The data can also be broadcast in definitive replays for fans and the media.

Camera angles
In the Hawk-Eye system, seven cameras are used per goal. This provides the best range of angles.

Cross-reference
The software builds a map of the ball and the goal line to determine if the whole ball has crossed it.

Clear view
As long as at least two of the seven cameras can see the ball, an accurate ball position can be determined.

cc: https://www.howitworksdaily.com

When an incident occurs, the VAR team reviews the footage and communicates with the referee on the pitch via headset to provide additional information or suggest a review. The final decision is always made by the on-field referee, but VAR serves as an extra set of eyes to ensure the call is correct.

Advantages of VAR

Increased accuracy: VAR has significantly reduced the number of incorrect decisions, resulting in fairer results in matches. Critical moments such as offside calls and handball offenses are now scrutinized.

Fair Play: Players are less likely to get away with diving, simulation or other forms of cheating due to VAR's ability to detect such actions. This promotes fair play and sportsmanship.

Reduced Controversy: VAR has helped reduce the controversy surrounding refereeing decisions. Fans, players and coaches now have a higher level of confidence that the right decisions are being made.

Added drama: While some may argue that VAR disrupts the flow of the game, it adds an element of drama and anticipation as fans await the outcome of VAR reviews, making football even more exciting.

Challenges and controversies

Despite its many advantages, VAR has not been without its challenges and controversies. Critics say it disrupts the natural flow of the game, leads to long lags, and can sometimes cause confusion regarding the interpretation of certain rules. Furthermore, the implementation of VAR is not uniform across all leagues and competitions, leading to inconsistencies in its application.

The future of VAR

As VAR continues to evolve and improve, it is likely to become an integral part of the football landscape. Technology can be more efficient, with faster decision-

making processes and better communication between on-field referees and VAR officials. In addition, VAR can be used for a wider range of decisions, such as judging potential fouls and improving player behaviour.

Conclusion

The introduction of Video Assistant Referees (VAR) marked a significant milestone in football history. Although not without its problems and controversies, VAR has undeniably improved the accuracy and fairness of refereeing. As technology continues to move forward, we can expect VAR to become even more integrated into the sport, ensuring that the beautiful game of football remains fair and just for all. Whether you are a fan or a player, VAR has become an essential part of the modern football experience and its impact is here to stay.

ARPIT RAMAN
CSE(2021-25)

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This magazine is presented by students of NSIT CSE department expressing about all the achievements, activities and glory happened in the department till this month. This magazine also have interesting articles on different topics. Hope you have fun reading this magazine from Department of Computer Science and Engineering.

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