



Hindusthan

College of Engineering and Technology

An Autonomous Institution



DEPARTMENT OF CIVIL ENGINEERING

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Magazine
May 23

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VISION OF THE DEPARTMENT

To be recognized globally for pre-eminence in Civil Engineering education, research and service.

MISSION OF THE DEPARTMENT

- **To impart scientific and technical knowledge for professional practice, advanced study and research in Civil Engineering.**
- **To equip the students with ingenious leadership and organizational skills for a successful professional career.**
- **To inculcate professional and ethical responsibilities related to industry, society and environment.**

PROGRAM EDUCATIONAL OBJECTIVES (PEO).

To produce graduates with the ability to

- **Excel as practicing engineers, academicians and researchers with a comprehensive knowledge in Civil Engineering.**
- **Play a significant role as team players and leaders in challenging environments for nation's infrastructure development, environmental protection and sustainability.**
- **Uphold professional and ethical responsibilities as engineers, consultants and entrepreneurs while addressing the demands of the society.**

PROGRAMME SPECIFIC OUTCOMES (PSO).

The graduates will be able to:

- **Apply their engineering knowledge, communication skills, professional and ethical principles to solve problems in civil engineering and contribute to the infrastructure development in a sustainable way.**
- **Use their engineering background to excel in competitive exams for advanced study, research and professional career.**

RECENT TECHNOLOGY

VR IN CONSTRUCTION

Although the construction industry has improved significantly, it's still in desperate need of transformation and optimization. Most work is extremely dangerous, unattractive, and ineffective for construction workers. Today, many construction companies are looking for an effective solution to solve these problems. The solution is Virtual Reality technology.

Nowadays, VR is truly gaining momentum. According to the Fortune Business Insights report, the global virtual reality market is expected to grow from \$6.30 billion in 2021 to \$84.09 billion by 2028. Moreover, the survey of 33 top UK construction organizations found that 36% of them are planning to implement VR technology in their processes.

The demand for the use of Virtual Reality in the construction industry is so high for a number of reasons. There are a number of substantial advantages VR solutions can bring to the construction industry.

VR makes the customer experience more comfortable, effective, and pleasant. Using this technology, you can bring your clients closer to their buildings. VR technology in construction lets people make virtual visits to see how the project is going and always stay up-to-date.

Moreover, clients can virtually model buildings, rooms, and furniture to make sure it is right for them before investing in it.

Better construction management

Using Virtual Reality in construction management can bring significant improvements and advantages. VR technology allows for the building of 3D models that will contain information about the future building and provide an immersive walking around that building.

Thus, clients have an opportunity to view a clear picture of their projects instead of uninformative drawings. They can see every corner of future constructions and spot any problems before starting to build. This allows better management of the construction project, avoiding rework, overpaying, and staying on the same page with all stakeholders.

High level of training safety

One of the most important advantages of using AR and VR in civil engineering it's improving the level of training safety. Since the construction industry works in high-risk zones, even experienced professionals must train from time to time, not to mention interns. VR-based training solutions allow trainees to simulate real-life situations in a fully immersive risk-free environment.

Using a VR construction training simulator, trainees learn how to manage heavy machinery or use their tools and get valuable hands-on experience safely. Virtual reality in construction training is a great way to reduce risks, enhance safety, and increase general training level.

RECENT TECHNOLOGY

VR IN CONSTRUCTION

Lower development costs and time

Preview of the future outcomes can significantly reduce reworks, development time, and costs. Luckily, VR allows doing it. Clients can view a 3D prototype with all needed details from every angle before starting project development.

This opportunity enables detecting misconceptions in the initial stage and providing quick feedback. Thanks to this flexibility, clients can avoid any reworks and complete projects on a time and within budget.

Enhanced communication and collaboration

All construction projects involve different numbers of people who have to collaborate to complete tasks properly. However, this collaboration can be complicated for international partnerships, or construction workers can work at different times or remotely.

Implementation of AR and VR in construction helps avoid communication issues. VR technology allows participants worldwide to meet virtually, coordinate projects, check for updates, spot issues, and make changes. The sharing of a global VR experience assures a more transparent project development process and highly productive cooperation.



RECENT TECHNOLOGY

EXOSKELETONS: A PROMISING DEVELOPMENT FOR CONSTRUCTION SITE SAFETY

The construction industry has consistently ranked as one of the most hazardous career fields, with its heavy lifting and reliance on large machinery creating heightened risk for sometimes permanently debilitating accidents. However, construction engineers and occupational safety and health experts are working to mitigate risks and reduce on-the-job incidents by developing and improving a promising workplace safety device: the exoskeleton. The exoskeleton, sometimes called an exosuit, is a wearable suit with motorized joints designed to give the average construction worker enhanced strength and protection, equipping their arms, legs and back with a reinforced external shell that saves their limbs from strain, shields their body, and helps to improve posture. Workers wear the suit while performing strenuous tasks in order to add an increased level of protection and productivity to their jobs.

Functions of exoskeletons

- The mounted arm exosuit is a “Tool-holding exoskeleton composed of a spring-loaded arm that holds a heavy tool on one end and is connected to a lower-body exoskeleton and a counterweigh. The exoskeleton helps workers use heavy hand-tools quickly so they can complete jobs faster, with less fatigue, and better workmanship.”
- An overhead exosuit "offers arm, neck, and shoulder support to aid workers as they perform overhead installation work such as installing ductwork or sprinklers. They reduce the load on the arm and neck muscles while cutting down on repetitive-stress injuries.”
- Crouching and standing support suits are known as “Chairless chairs or lightweight exoskeletons that lock in place and support users as they crouch or stand in the same position for long periods of time reducing the pressure on the knee and the rest of the leg”.

These exoskeletons, along with several other designs with varying functionalities, are helping to revolutionize the construction safety industry. As this technology continues to evolve, construction firms will be able to boast far fewer incident numbers and improved worker morale and efficiency.

Power gloves;

Power gloves are fitted around the hand to improve dexterity for persons who have difficulty handling tools and materials due to weakness or other difficulties. When handling heavy hand tools or picking up goods, the enhanced grip comes in handy.

RECENT TECHNOLOGY

EXOSKELETONS: A PROMISING DEVELOPMENT FOR CONSTRUCTION SITE SAFETY

Bio servo's Iron hand is a soft power glove with sensors that detect the user's natural movement. When the glove detects that the user is ready to grasp an object, it boosts power in proportion to the weight of the object. It also gathers information to assess gripping circumstances that may be hazardous to the user's health.

Arm and Shoulder Support

Workers who move heavy tools and materials above the waist can benefit from these exosuits. For overhead jobs like drilling, cutting, and grinding, exosuits with arm and shoulder support are perfect. They provide support for both shoulders and arms, reducing the strain of holding heavy tools for long periods of time.

Back Support

Exosuits with back support are often worn across the shoulders, back, and waist to relieve back strain caused by carrying large objects. Depending on the manufacturer, certain back support exoskeletons can also correct your posture when bending or lifting.

Standing and Crouching Support

Exosuits that lock in place redistribute weight to the ground and relieve pressure on the knees and legs. When standing or squatting for lengthy periods of time, reduces the strain on joints and muscles. These technologies also allow users to "sit" when chairs aren't accessible or might otherwise jeopardize worker safety or productivity. This is a useful feature for construction workers who spend much of their day standing.

Whole-Body Suit

Exosuits that cover the entire body give support to reduce strain, increase productivity, and improve strength.

Exoskeletons make construction workers safer by decreasing the pressure that repeated labor and protracted jobs place on joints and muscles. This is due to the fact that the skeleton makes large equipment and objects easier to move, aids in carrying and lifting, and decreases the impact of holding heavy machines for extended periods of time.

Musculoskeletal Disorders are injuries caused by repetitive movement and exposure to continual stress, vibration, and awkward placement and movement.

RECENT TECHNOLOGY

EXOSKELETONS: A PROMISING DEVELOPMENT FOR CONSTRUCTION SITE SAFETY



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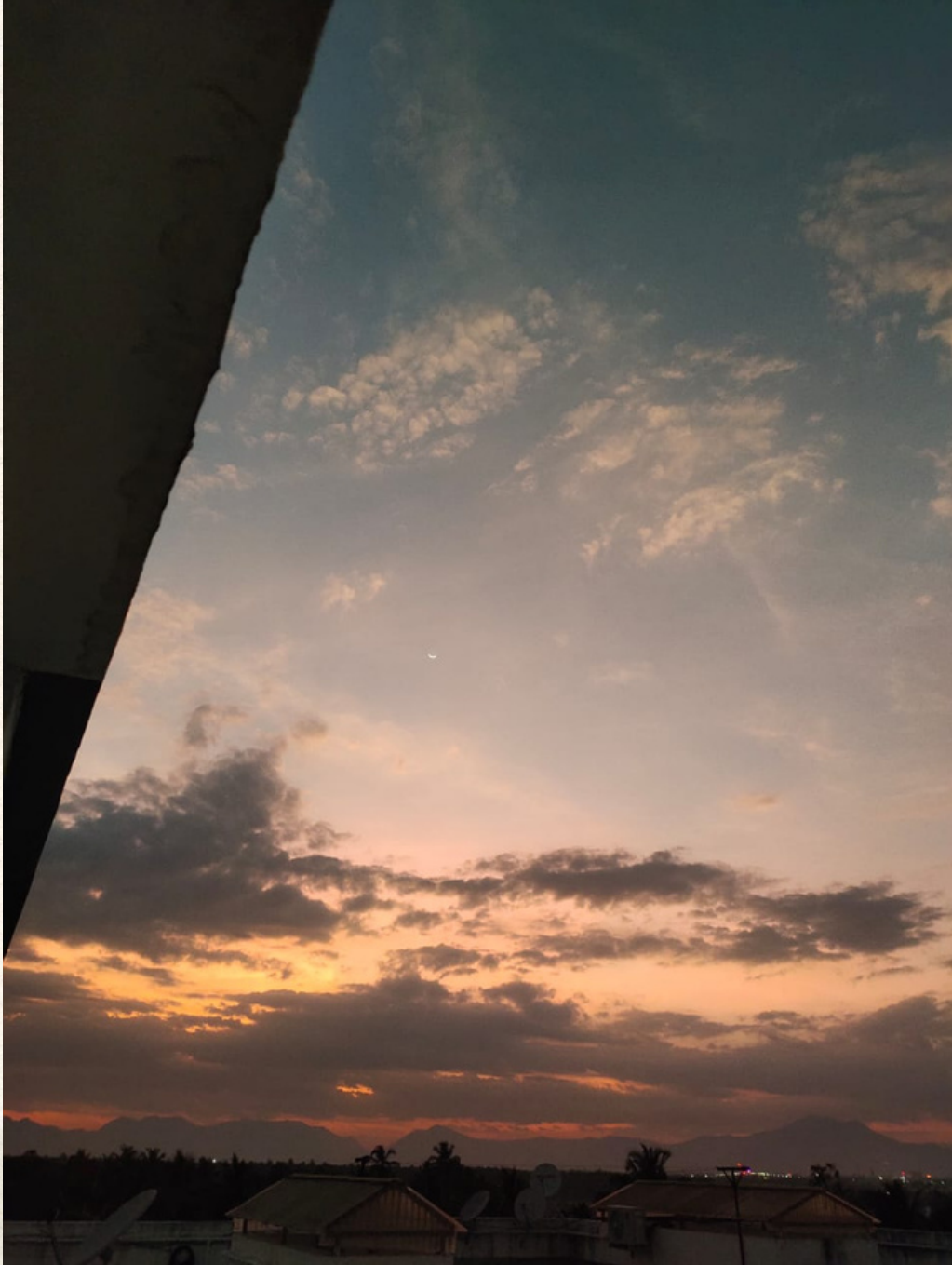
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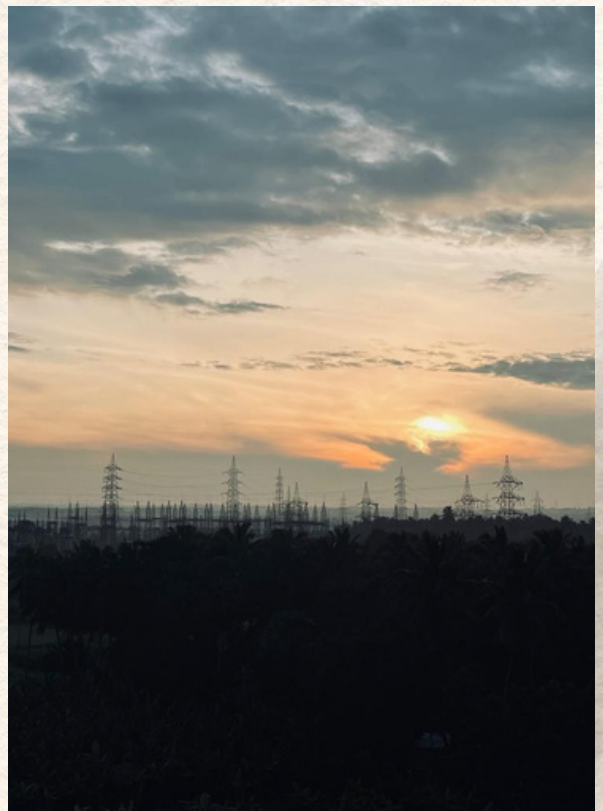
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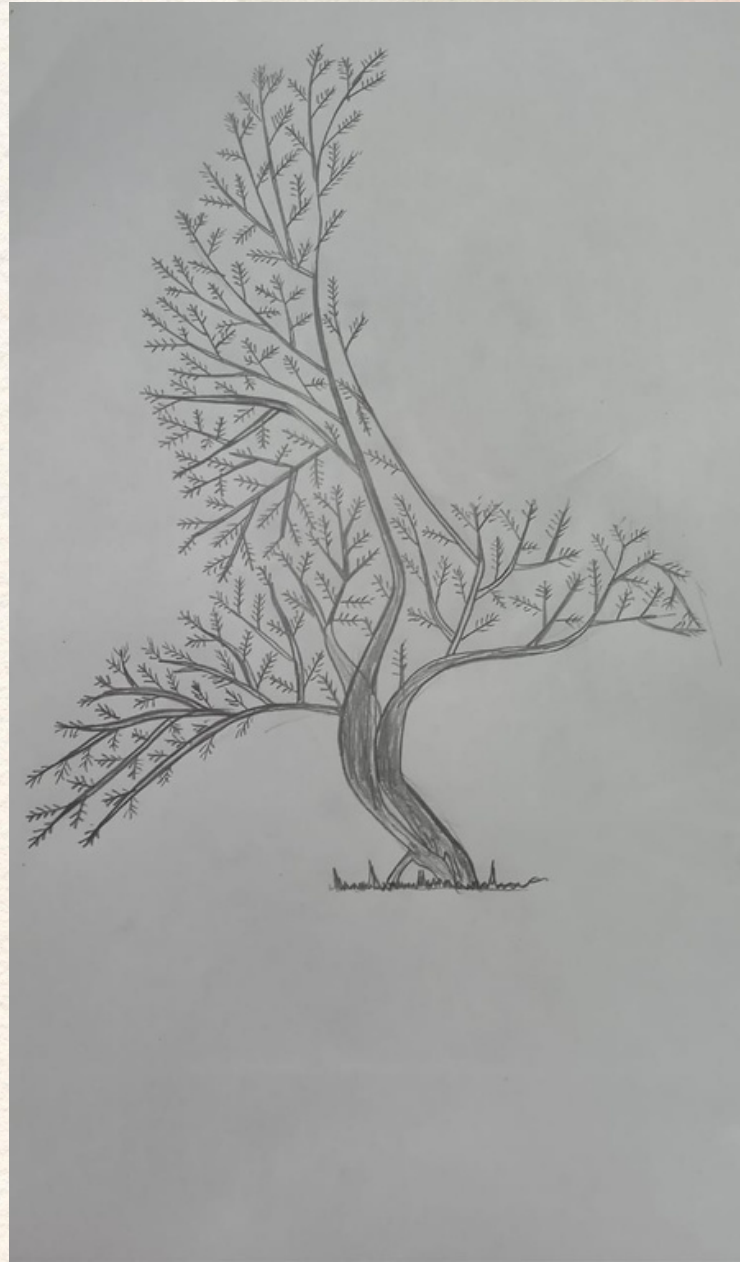
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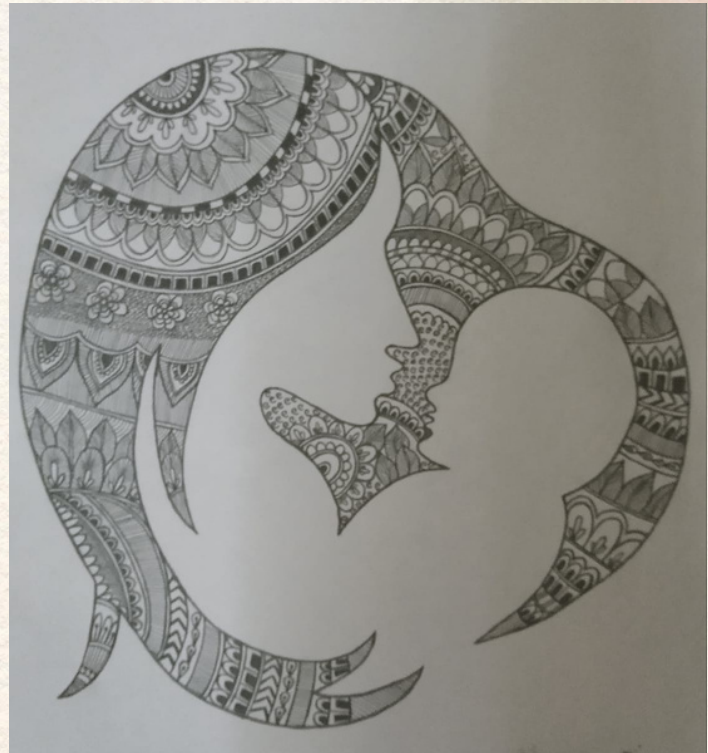
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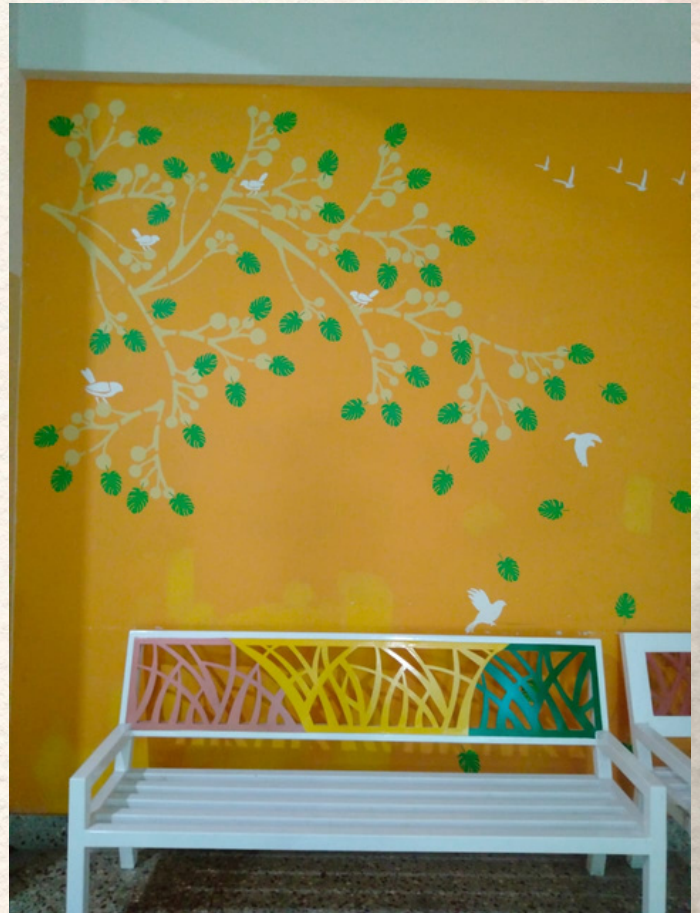
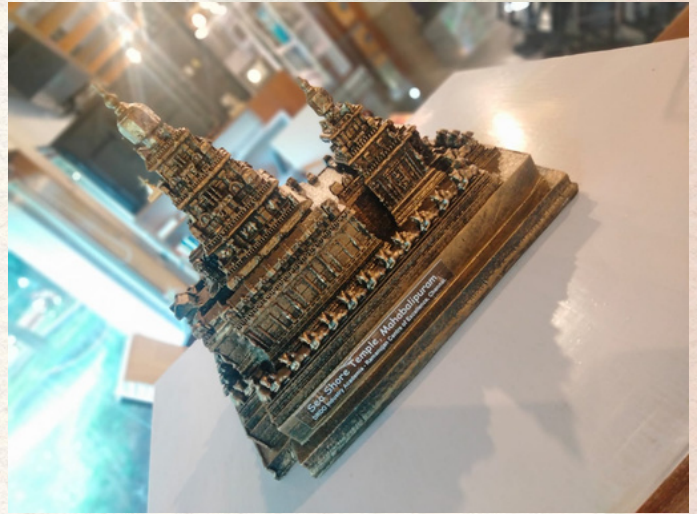
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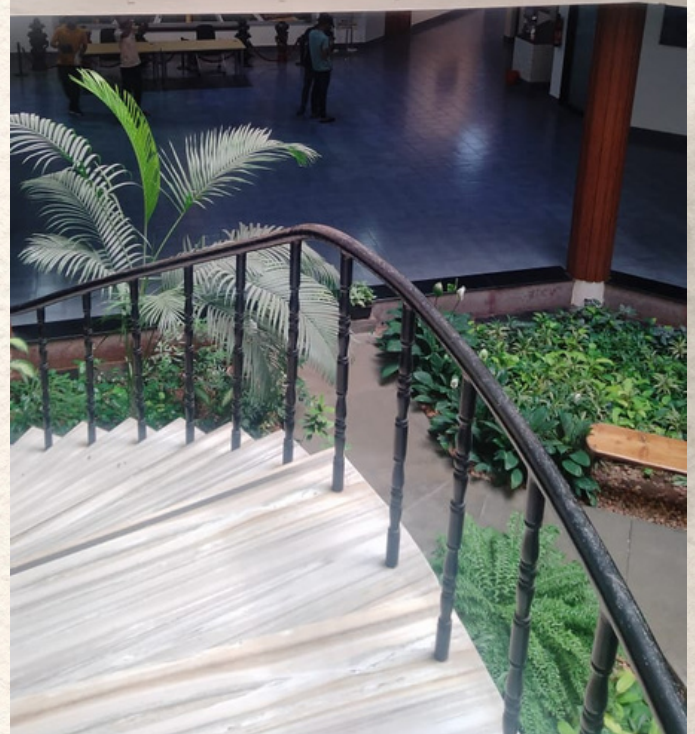
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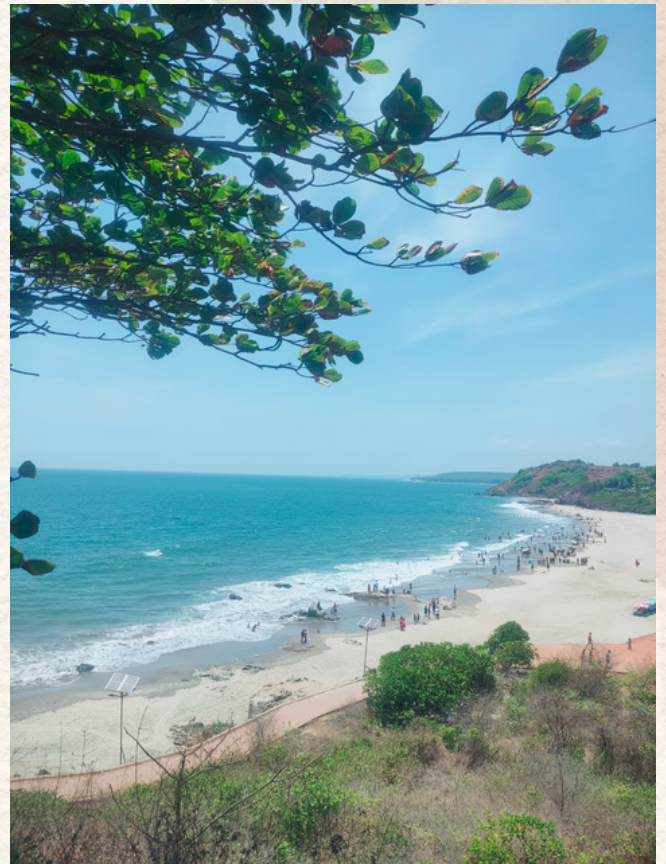
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THANK YOU !!!