



Hindusthan

College of Engineering and Technology

An Autonomous Institution



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DEPARTMENT OF CIVIL ENGINEERING

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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.**
-

Applications for Augmented Reality in Construction

INTRODUCTION

Although the construction industry is one of the oldest and most important industries in the world, new tools for the job often struggle to catch on. At the same time, innovation is a critical asset in the construction industry. Augmented Reality in construction is another forward-thinking step, as well as an invaluable tool for every part of this industry. It uses advanced camera and sensor technologies that combine digital elements, sounds and sensory stimuli. They all help present the data in real time. The following application areas lend themselves to the use of Augmented Reality in construction.



Applications for Augmented Reality in Construction

Project planning and presentation:

Augmented Reality in construction can be used to display details and elements on the construction plan. By visualizing working models, all parties involved succeed in creating a deep understanding of the project. With Augmented Reality in construction, it is also possible to take virtual tours before construction begins.

Visualizing project information in real time:

The key advantage of Augmented Reality in construction is the combination of documentation and digital information. It enables employees, architects, engineers and customers alike to regularly monitor the process on the construction site. Another option is to perform construction measurements and gauge project efficiency.

Encouraging teamwork:

In a highly collaborative sector like construction, effective teamwork is especially important. With the help of Augmented Reality, it is ensured that all team members are utilized in the best possible way. By constantly focusing on an ideal outcome, problem solving, and error correction can be implemented at an early stage. It is no longer necessary for every team member to be physically present.

The benefits of Augmented Reality in construction industry are manifold.

Although the costs for this forward-looking technology are still high, they are becoming increasingly lower. Therefore, it is foreseeable that small to medium-sized companies will soon also be able to invest in this way of working. In the process, precisely such companies will benefit from the most important advantages of Augmented Reality in construction.

Applications for Augmented Reality in Construction

In the construction industry, completing projects on time is especially important to ensure that budgets are met. While BMI models have proven valuable, Augmented Reality in construction makes this endeavor much easier. With the combination of both tools, construction plans can be adjusted, and the logistics of the coming weeks can be planned as desired.

Additionally, it's easier for workers to spot potential overlaps. This eliminates the need for rework, while Virtual Reality in construction promotes employee safety.

Augmented Reality in construction makes it possible to present the results even before the work is complete. Misunderstandings can be identified more easily. Paper schedules and delays in communication are also eliminated as AR Overlays help identify issues faster. This also makes it easier to conduct inspections as they arise.



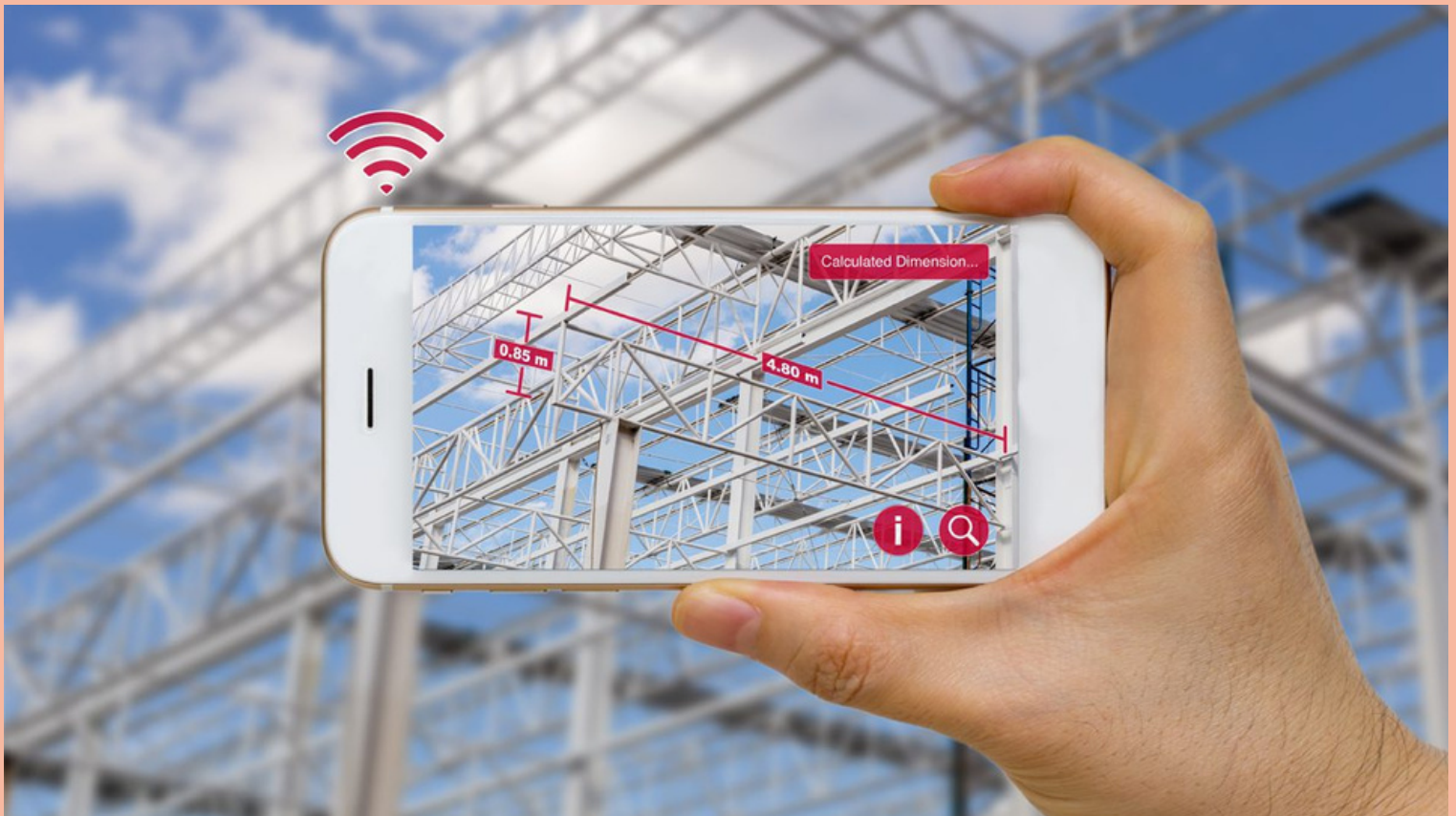
Applications for Augmented Reality in Construction

AR can accompany construction projects through their entire lifecycle. This means that accuracy increases, and rework can be avoided, ultimately reducing construction costs. These advantages of Augmented Reality in construction clearly speak for the use of the new technology. Nevertheless, there are also limits to the possibilities at hand.

- The acceptance of Augmented Reality in construction is restrained. This is especially due to the fact that AR is still considered an immature technology with insufficient testing.
- The high level of efficiency, accuracy and consistency is up for debate. However, these points are essential for construction and engineering applications. Currently, complex 3D information models are not fully covered.
- Another barrier is the novelty of this technology. At the same time, the financial implications are not clearly foreseeable, which is why many companies are reluctant to invest in this technology.
- Augmented Reality in construction requires a learning curve that must first be overcome.
- During Augmented Reality building construction, a strong WLAN and Internet connection must be ensured. In an unstable environment, there is no guarantee that the gadgets will work reliably.

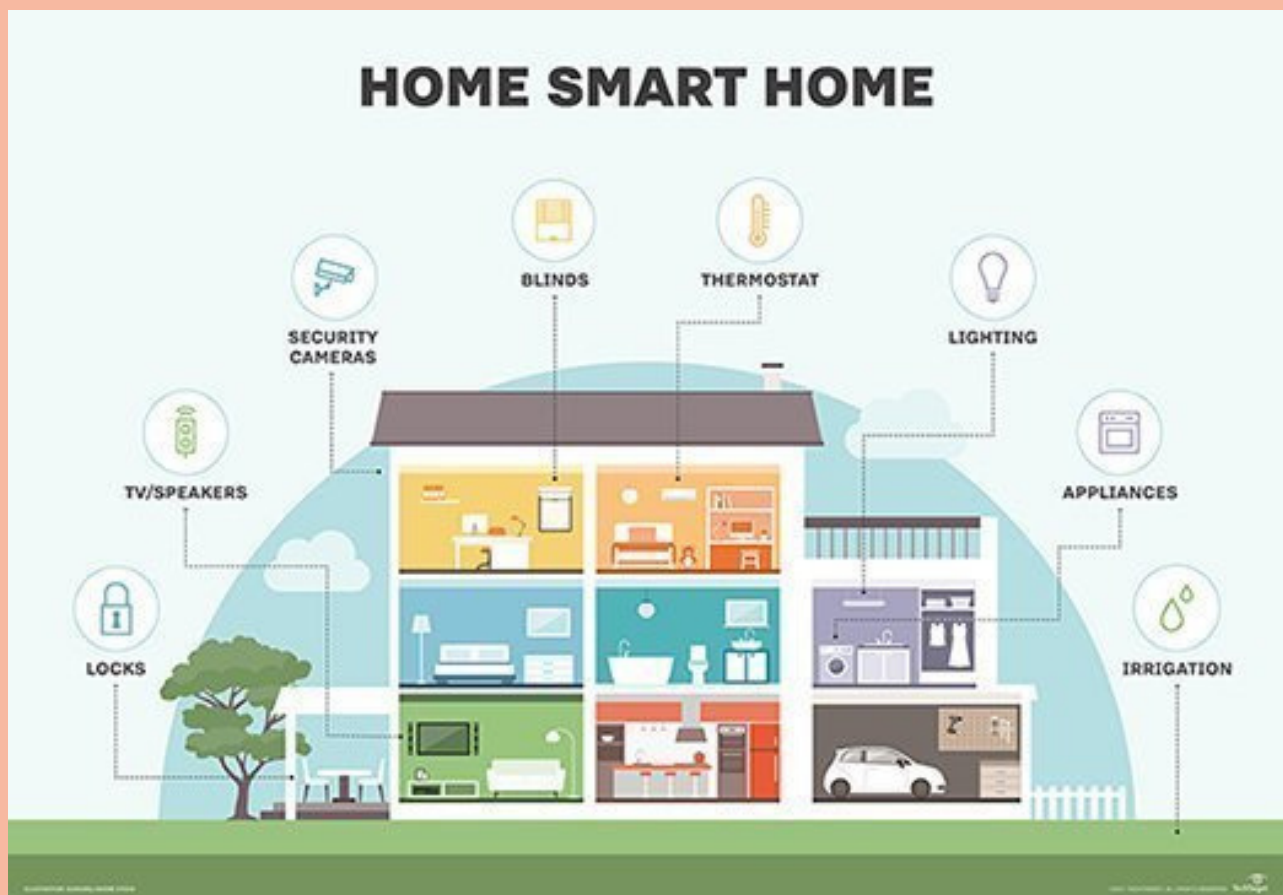
Applications for Augmented Reality in Construction

Augmented Reality in construction is a forward-looking technology that is set to drive the construction industry forward. Thanks to the numerous advantages of an Augmented Reality introduction, processes can be optimized and made more efficient. As a result, future construction projects can be realized faster and safer. In fact, Augmented Reality engineering applications could bring immense benefits to the construction industry: After all, this technology offers numerous opportunities to exploit one's potential and improves on a daily basis.



Smart Homes

- A smart home refers to a convenient home setup where appliances and devices can be automatically controlled remotely from anywhere with an internet connection using a mobile or other networked device. Devices in a smart home are interconnected through the internet, allowing the user to control functions such as security access to the home, temperature, lighting, and a home theater remotely. A smart home allows homeowners to control appliances, thermostats, lights, and other devices remotely using a smartphone or tablet through an internet connection.
- Smart homes can be set up through wireless or hardwired systems.
- Smart home technology provides homeowners with convenience and cost savings.



Smart Homes

A smart home's devices are connected with each other and can be accessed through one central point—a smartphone, tablet, laptop, or game console. Door locks, televisions, thermostats, home monitors, cameras, lights, and even appliances such as the refrigerator can be controlled through one home automation system. The system is installed on a mobile or other networked device, and the user can create time schedules for certain changes to take effect. Smart home appliances come with self-learning skills so they can learn the homeowner's schedules and make adjustments as needed. Smart homes enabled with lighting control allow homeowners to reduce electricity use and benefit from energy-related cost savings. Some home automation systems alert the homeowner if any motion is detected in the home when they're away, while others can call the authorities—police or the fire department—in case of imminent situations.

Once connected, services such as a smart doorbell, smart security system, and smart appliances are all part of the internet of things (IoT) technology, a network of physical objects that can gather and share electronic information. Smart homes can feature either wireless or hardwired systems—or both. Wireless systems are easier to install. Putting in a wireless home automation system with features such as smart lighting, climate control, and security can cost several thousand dollars, making it very cost-friendly.

The downside to wireless systems is you likely need strong Wi-Fi coverage and broadband service throughout your entire house. This may require you to invest in range extenders or hardwired wireless access points. Wireless smart home systems are generally more appropriate for smaller existing homes or rental properties due to their smaller size.

Smart Homes

Hardwired systems, on the other hand, are considered more reliable and are typically more difficult to hack. A hardwired system can increase the resale value of a home. In addition, hardwired smart home systems can easily be scaled; therefore, it is often the default method when designing a new build or performing a major renovation.

There is a drawback—it's fairly expensive. Installing a luxury and hardwired smart system can cost homeowners tens of thousands of dollars. In addition, you must have space for network hardware equipment including ethernet cables.

How to Create a Smart Home

Heating

Smart home products now allow for greater control over heating devices including when products are turned on, turned off, and controlled. Smart products may be armed with temperature or humidity sensors to automatically turn on or off if certain criteria are met. This line of smart home innovations also extends to air conditioners.

Lighting

Often with the use of a mobile phone, table, or custom remote specific to a product, lighting products now enhance the capabilities of homeowners. Lights can be switched on and off, placed on a schedule, or set to change based on sunrise or sunset times. Like some more traditional products, lights can often set to change based on motion. Smart bulbs can communicate over Wi-Fi and display statistics or metrics to your phone. This lighting category may also contain smart home products that control or prevent light. Automatic blinds may be installed and set to close based on sunrise schedules. Alternatively, electronic curtains allow users to manage their blinds using a handheld device.

Smart Homes

Audio/Visual

One of the more fun aspects of smart homes, many entertainment products are now heavily connected to each other and can be controlled with a single remote. Television and speakers now have greater capabilities to be played on command using applications, including being maintained on a schedule or being voice-controllable.

Security

One of the most reasonable aspects of a smart home is the enhanced security capabilities. Many products now have camera capabilities that track motion, capture video, or allow for live video feeds. This may be installed to sync with a ringing doorbell or set to display on certain areas of your property. These videos may allow for video-calling with the individual at your door, including audio capabilities.

Pros

Installing a smart home technology system provides homeowners with convenience. Rather than controlling appliances, thermostats, lighting, and other features using different devices, homeowners can control them all using one device—usually a smartphone or tablet.

Since they're connected to a portable device, users can get notifications and updates on issues in their homes. For instance, smart doorbells allow homeowners to see and communicate with people who come to their doors even when they're not at home. Users can set and control the internal temperature, lighting, and appliances as well.

For the cost of setting up the smart system, homeowners can benefit from significant cost savings. Appliances and electronics can be used more efficiently, lowering energy costs.

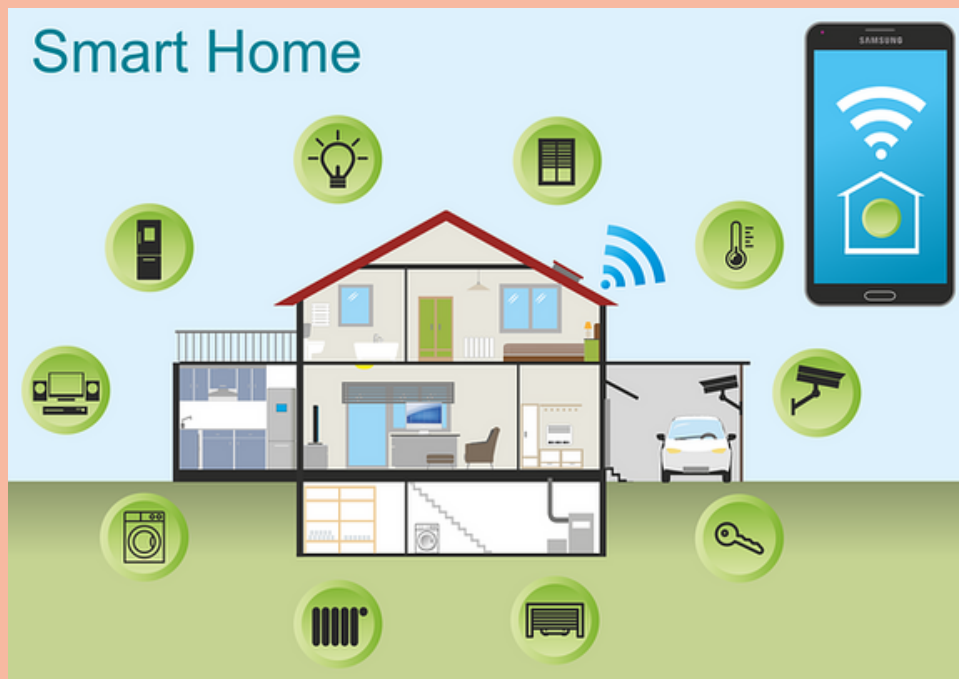
Smart Homes

Cons

While the smart home offers convenience and cost savings, there are still challenges. Security risks and bugs continue to plague makers and users of the technology. Adept hackers, for example, can gain access to a smart home's internet-enabled appliances. In October 2016, a botnet called Mirai infiltrated interconnected devices of DVRs, cameras, and routers to bring down a host of major websites through a denial of service attack, also known as a DDoS attack.

Measures to mitigate the risks of such attacks include protecting smart appliances and devices with a strong password, using encryption when available, and only connecting trusted devices to one's network.

Leveraging innovation and technology, smart homes make it easier to do things. Whether it is controlling applications using your phone or scheduling products to perform tasks at certain times, smart homes have revolutionized the way individuals do things, consume energy, and interact with their home products.



Iconic Structures

SAINT BASIL'S CATHEDRAL, MOSCOW:

The Cathedral of Saint Basil the Blessed: St. Basil's Cathedral, located on Red Square beside the Moscow Kremlin, is the most recognizable church in Russia. St. Basil's Cathedral was built in the 16th century by the order of Ivan the Terrible. Since then it has enthralled travellers coming to Moscow; while some find it uncanny, others are spellbound by its magnificence. It is a group of buildings, including a central church encircled by nine secondary churches, eight of which are devoted to Tsar Ivan IV's (the first tsar of all Russia) eight victories over the Tatars, and a smaller church sanctified to Saint Basil. St. Basil's was built as an offering for Ivan's military triumphs over the khanates of Kazan and Astrakhan.



Iconic Structures

In the mid-1550s, the cathedral was commissioned with the name ‘the Cathedral of the Intercession of the Virgin’, as a dedication to the protection and intercession of the Virgin. However, it was renamed ‘St. Basil’s Church’ after a worker, who was one of the few men to openly chastise the tsar for his tyrannical actions. St. Basil was buried around 1557 in the church vaults during the reign (1584–98) of Tsar Fyodor I and was canonised in 1588.

Construction:

According to a theory, the church was designed by two Russian architects, Posnik and Barma. It has been further speculated that these two men may have in fact been just one person. The second theory is that it was built by an Italian architect, and Ivan the Terrible had the architect’s eyes put out after the cathedral was completed so that the architect would not be able to build an equally beautiful structure anywhere else. It is not just one church inside; Saint Basil’s Cathedral is composed of nine separate chapels. Initially, there were only eight chapels surrounding the central church, and the expansion of the Cathedral of the Intercession began at the end of 16th century, with the addition of the Basil the Blessed Chapel and the onion domes. The iconic onion-shaped domes were not part of the original structure and were only added to the chapels following a fire in 1595. In 1680, the large self-supporting bell tower was rebuilt in a 17th century ornamental style at the southeast corner of the cathedral, with polychromatic decoration and a tent roof of ceramic tile. In addition, the painted ornamentation on the exterior walls, particularly of the new gallery, was added. The cupolas were brightly painted in a renovation of the cathedral. This process reached its conclusion in the 17th century with the inclusion of the terrace. One of the most familiar symbols and architectural treasure of Moscow and to an extent even Russia, St. Basil’s Cathedral represents Russia from the standpoint of the West. The architectural design of the church is unique without any known precursor. It incorporates many East-meets-West elements.

Iconic Structures

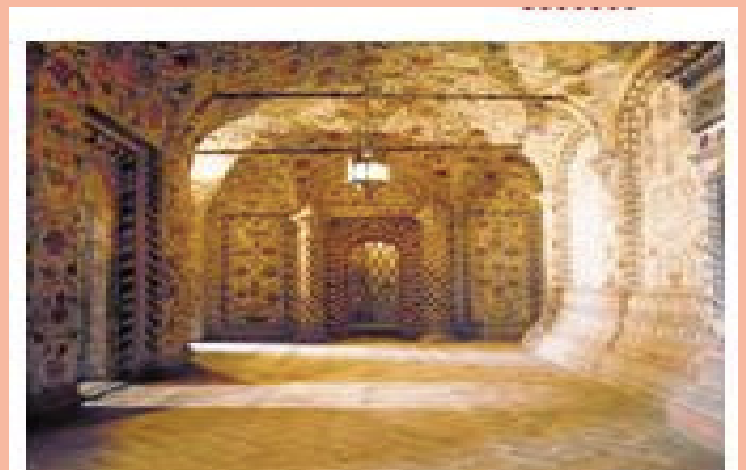
Byzantine as well as Asian architecture and used open brickwork, which was a new technology at the time; this brick and wood church, and its onion-like vibrant domes and spires have endured centuries of war, fire and rebellion.

The restoration of the interior also revealed a geometric decorative pattern. Most of the

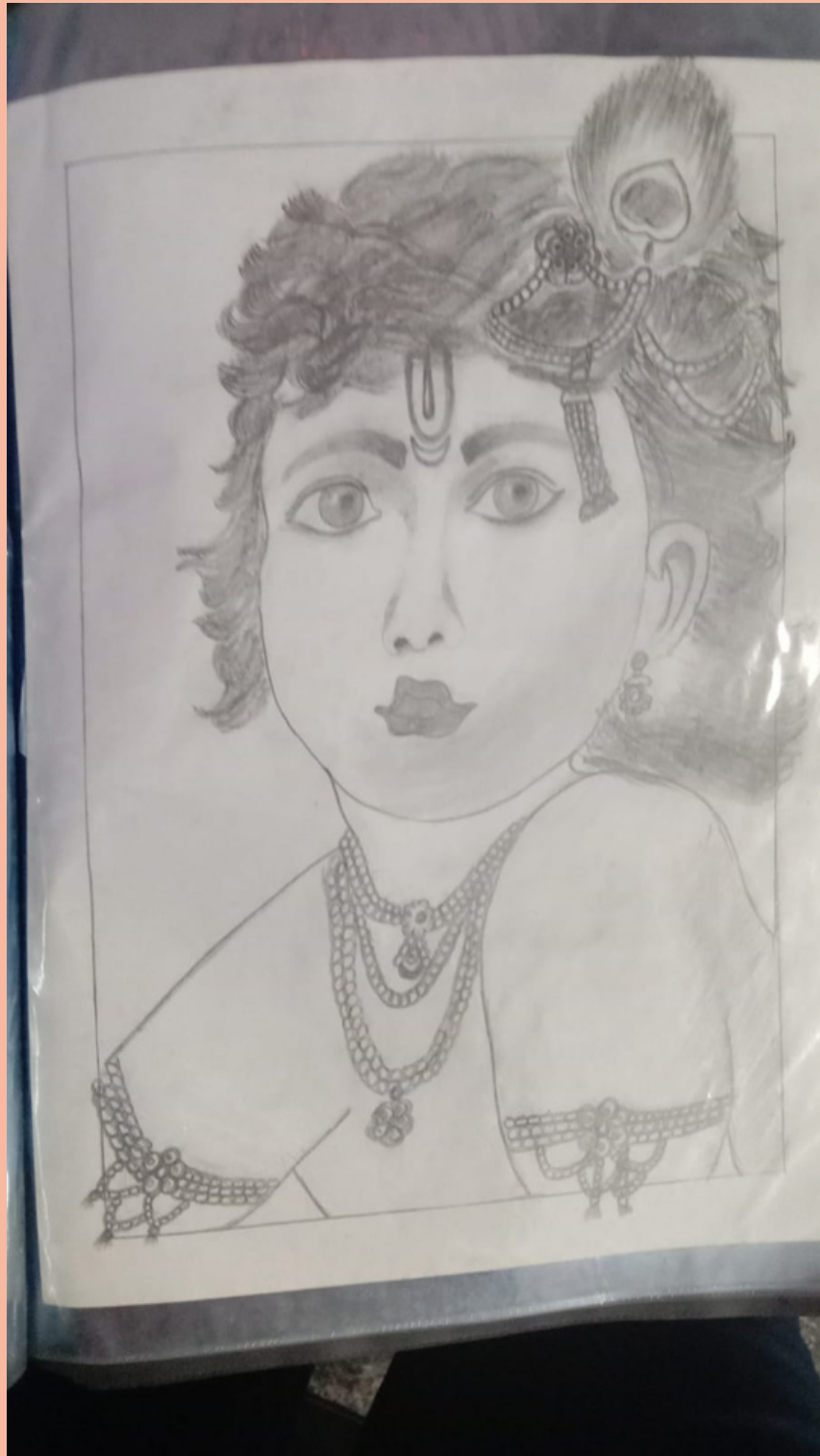
interiors of the component churches of the cathedral were painted brick red, with white seams limned to mirror the mortar, a technique known as ‘pod kirpich’, or ‘like brick’.

The design of the church in some ways mirrors the nearby Kremlin. The exterior of the

church is very complex but at the same time it is devoid of any sculptures and adornment taken from the living nature. The astounding ornamentation is achieved by solely architectural techniques accomplished with brick. The fundament of the building is made of white stone, while the churches themselves are built of red brick, which was laid around a complicated wooden structure, a spatial pattern of the future church.



Glimpse of Student Talent



Done by
Akshaya A, II Civil

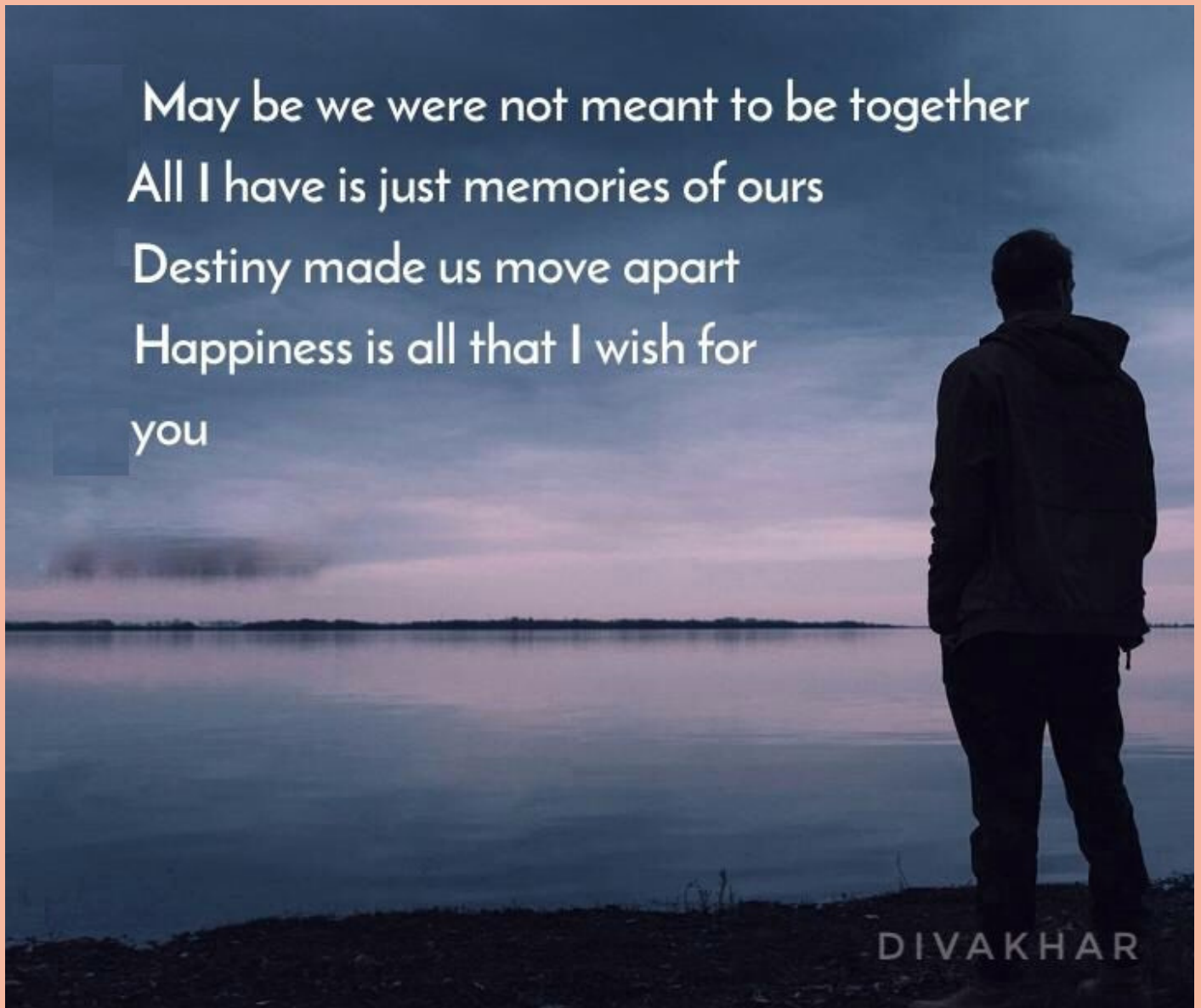
Glimpse of Student Talent



Done by
Divakar P , IV Civil

Glimpse of Student Talent

May be we were not meant to be together
All I have is just memories of ours
Destiny made us move apart
Happiness is all that I wish for
you



DIVAKHAR

Done by
Divakar P , IV Civil

Glimpse of Student Talent



Done by
Kavipreethi M , IV Civil

Glimpse of Student Talent



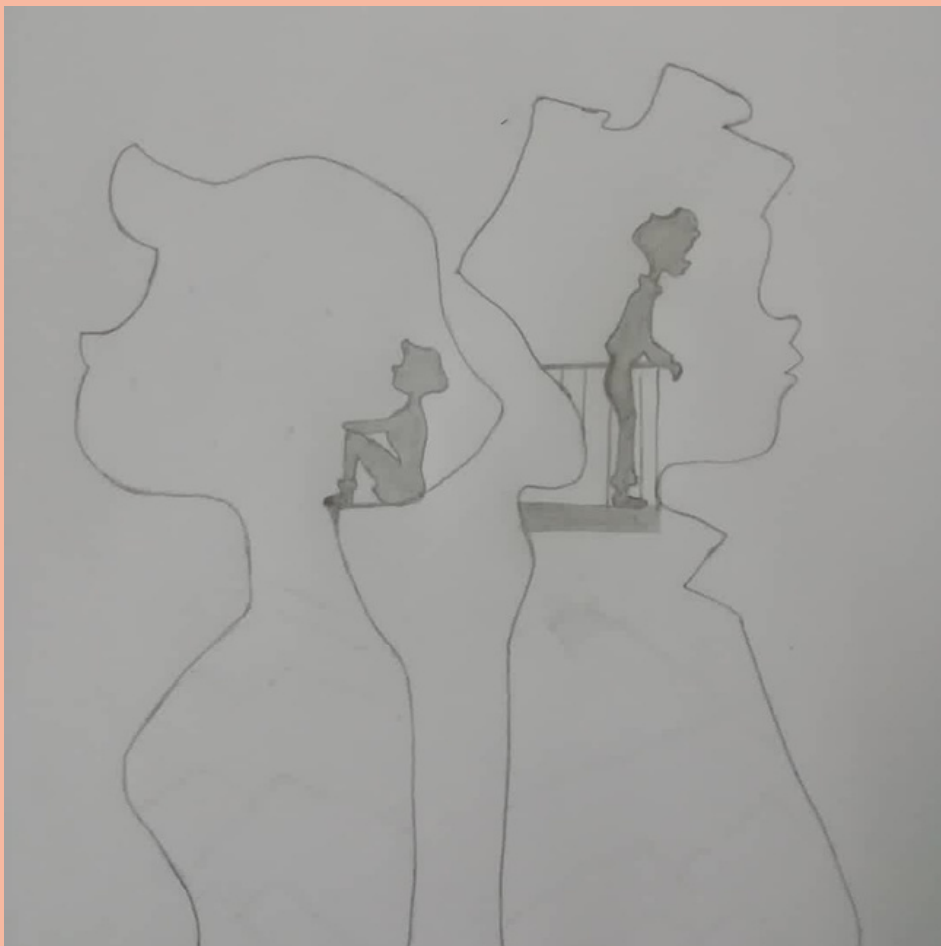
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Glimpse of Student Talent



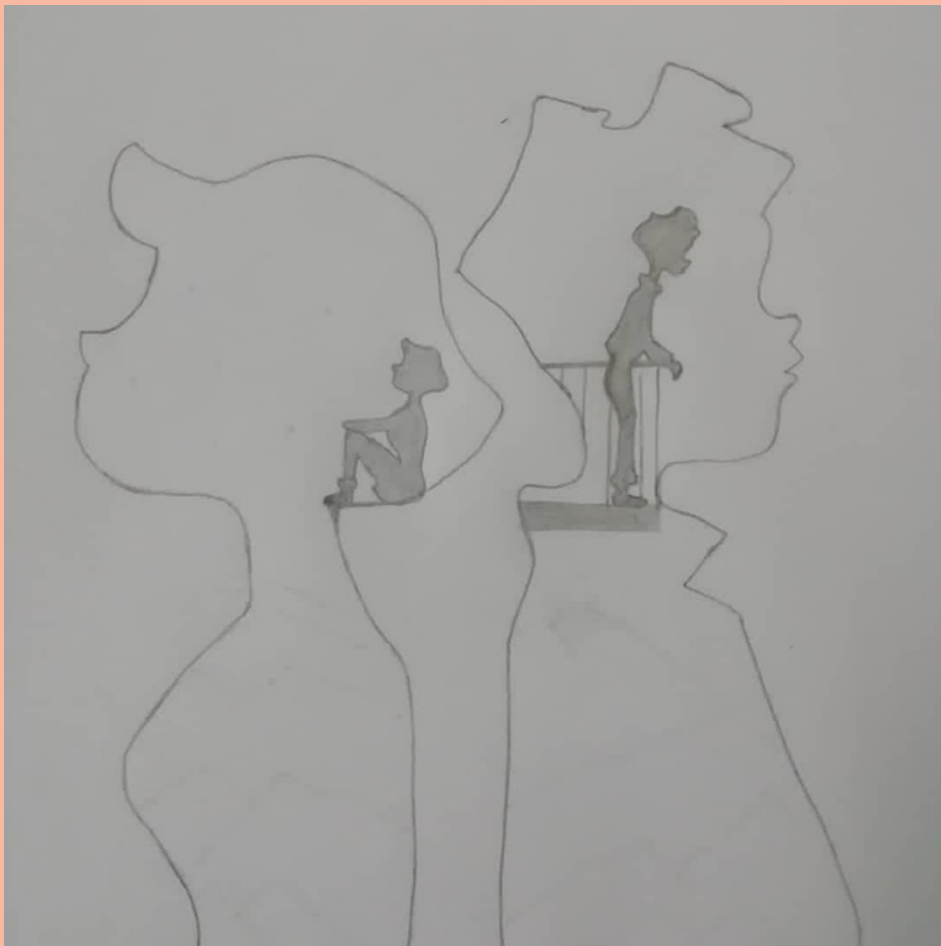
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Glimpse of Student Talent



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Glimpse of Student Talent

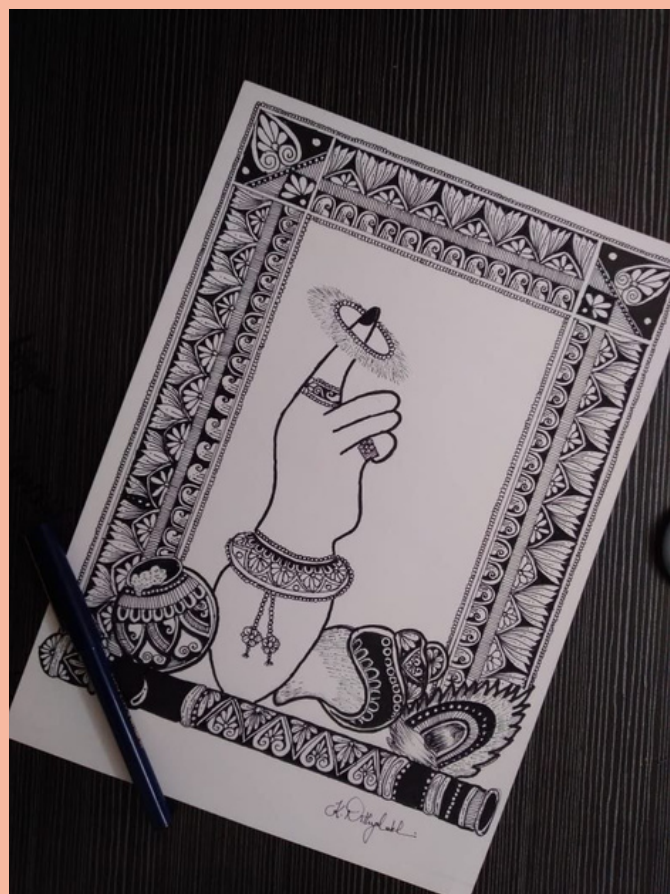


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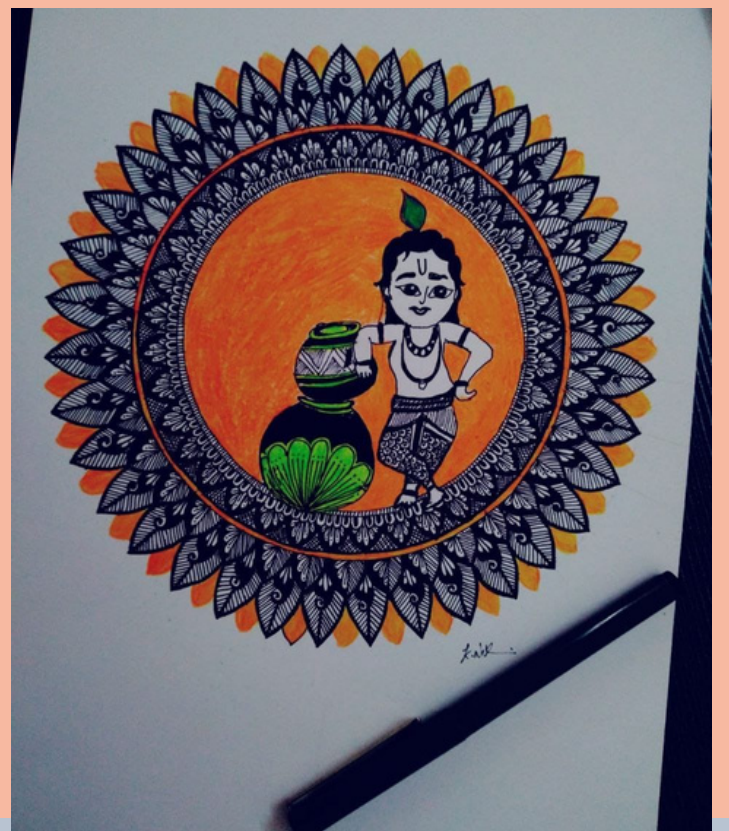
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Nithyalakshmi K, IV Civil



Glimpse of Student Talent



Done by
Nithyalakshmi K, IV Civil





THANK YOU !!!

