

# **AI IMPACT ON CIVIL ENGINEERING**





01

INTRODUCTION

02

IMPORTANCE OF AI IN CIVIL ENGINEERING

03

APPLICATION OF AI IN CIVIL ENGINEERING

04

ADVANTAGES AND DISADVANTAGES

# **INTRODUCTION**

- The AI is a branch of computer science , involved in the research, design and application of intelligent computer .
- Field of AI ,attempts to understand intelligent entities as well as construct them to make the operation reasonably simple and easy , correct and precise.
- Using the concept of the AI makes the field civil engineering more accurate and efficient especially in the field of smart materials and many more.



# **IMPORTANCE OF AI IN CIVIL ENGINEERING :**

- ❖ The traditional method used for modeling and optimizing complex structural systems consume considerable time and computing resources. but AI-based algorithms provides better alternatives to solve the problem in civil engineering.
- ❖ AI algorithms have the potential to help the construction sector overcome challenges and improve overall productivity and efficiency.
- ❖ The data required to develop AI algorithms are obtained using programmed machines like drones ,smart camers ,smart sensors,etc.





# **AI APPLICATION IN CIVIL ENGINEERING**

- **Construction Management**
- **Smart Infrastructure**
- **Transportation System**
- **Safety Enhancement**
- **Environmental Impact**



# **CONSTRUCTION** **MANAGEMENT**

- Project Management
- AI for scheduling, budgeting and resource allocation
- Predictive analytics for project risk





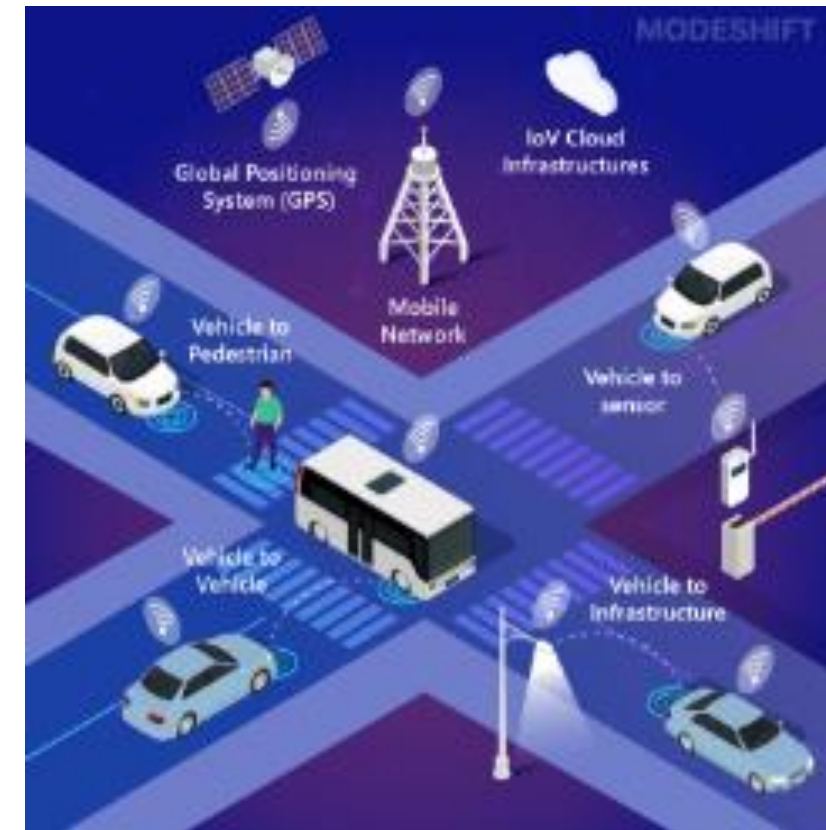
# **SMART INFRASTRUCTURE**

- Monitoring and Maintenance
- Use of AI in monitoring structural health (e.g., bridges, buildings)
- Predictive maintenance using IoT and AI



# **TRANSPORTATION SYSTEMS**

- Traffic Management
- AI in traffic flow optimization
- Autonomous vehicles and their impact on infrastructure





# ***SAFETY ENHANCEMENTS***



- ☐ Worker and Site Safety
- ☐ AI in identifying hazards and preventing accidents
- ☐ Use of drones and robotics

# **ENVIRONMENTAL IMPACT**

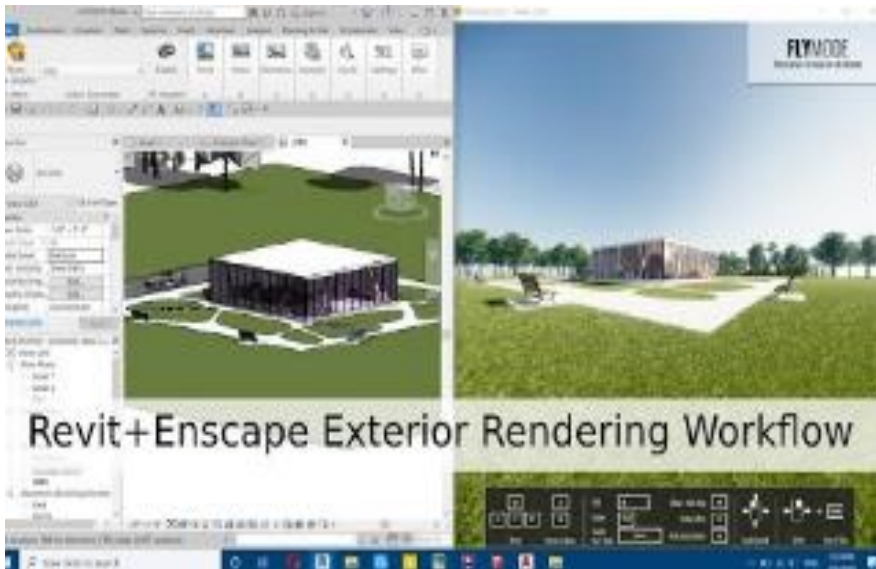


- Can predict future disasters and also protect and minimize the damage
- Helps in the design of the structures to safe guard against the earthquake and other natural disasters



# **AI SOTWARE IN CIVIL ENGINEERING :**

- ❖ Design and Planning
- ❖ AI-driven design software (e.g., BIM, generative design, Autocad,)





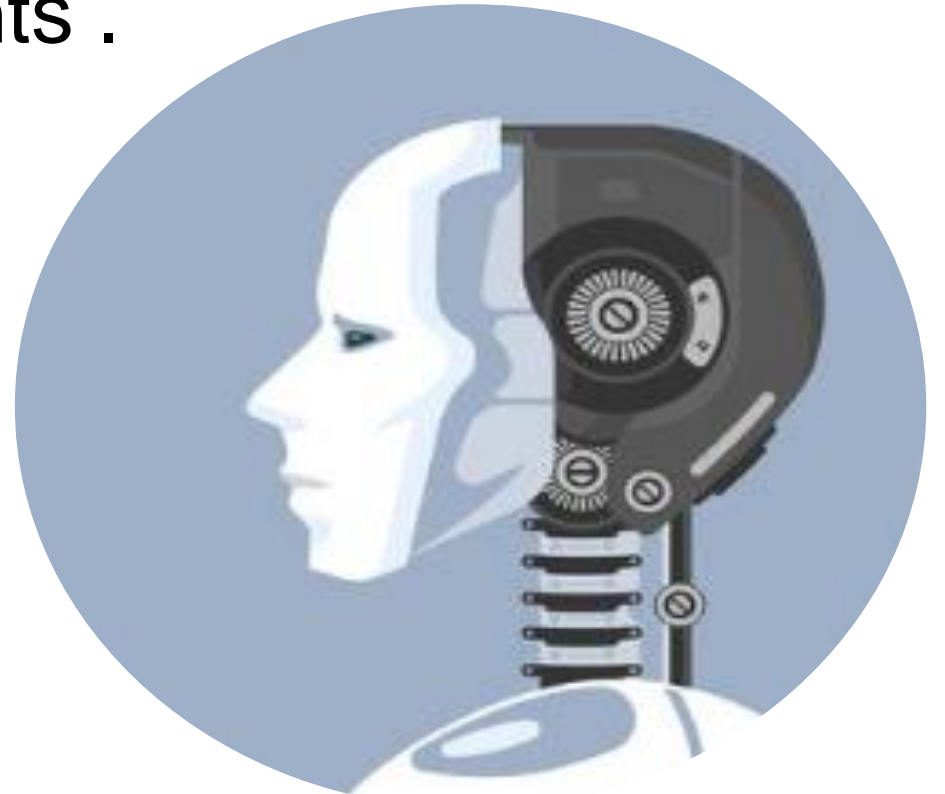
- Artificial intelligence (AI) in construction planning helps the industry solve its biggest challenges by providing real-time access to essential data to complete projects safely, efficiently, and on time
- Artificial neural networks (ANNs) to predict things like cost overruns. In construction, these ANNs use historical data to envision realistic timelines for future projects based on aspects





# **ADVANTAGES :**

- Reduce the risk of accidents in the workplace .
- Not affected by hostile environments .
- Can repair tiresome tasks .
- Don't need break at work time .



# **DISADVANTAGES**

- Can be very expensive .
- Not able to work outside of what they are programmed to do .
- Unemployment may rise .

# **CONCLUSION**

- ✓ Plays a major role in constructing and maintaining different aspects of civil engineering.
- ✓ Help the inexperienced users solve engineering problems and experienced users to improve the work efficiency.
- ✓ Instrument based on the algorithms and database to reduce the efforts and cost of construction and management.





***THANK  
YOU***