# SNS COLLEGE OF ENGINEERING

**Kurumbapalayam(Po), Coimbatore – 641 107**

**Accredited by NAAC-UGC with 'A' Grade**

**Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai**

## Department of Information Technology

## Course Name – Internet of Things and AI
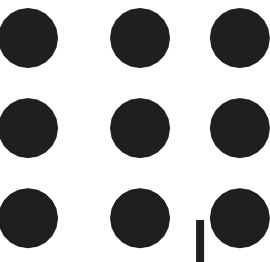
## III Year / V Semester

## Unit 5 - AI IN INTERNET OF THINGS

# Digital Twins

**How Does Digital Twin Technology Work?**

The life of a digital twin begins with experts in applied mathematics or data science researching the physics and operational data of a physical object or system in order to develop a mathematical model that simulates the original.

The developers who create digital twins ensure that the virtual computer model can receive feedback from sensors that gather data from the real world version. This lets the digital version mimic and simulate what is happening with the original version in real time, creating opportunities to gather insights into performance and any potential problems.

A digital twin can be as complex or as simple as you require, with differing amounts of data determining how precisely the model simulates the real world physical version.

Digital twins are used in a wide variety of industries for a range of applications and purposes. Some notable examples include:

**Manufacture**

Digital twins can make manufacturing more productive and streamlined while reducing throughput times.

**Automotive**

One example of where digital twins are used in the automotive industry is to gather and analyse operational data from a vehicle in order to assess its status in real time and inform product improvements.

**Retail**

Outside of manufacture and industry, digital twin is used in the retail sector to model and augment the customer experience, whether at the level of a shopping centre or for individual stores.

**Healthcare**

The medical sector has benefitted from digital twin in areas such as organ donation, surgery training and de-risking of procedures. Systems have also modelled the flow of people through hospitals and track where infections may exist and who may be in danger through contact.

**Disaster Management**

Global climate change has had an impact across the world in recent years, yet digital twin can help to combat this by the informed creation of smarter infrastructures, emergency response plans and climate change monitoring.

**Advantages of AI-powered IoT**

- **Avoiding unplanned downtime** — Utilizing examination to foresee hardware disappointment early to plan organized support methodology also called Predictive Maintenance can help moderate the harming financial aspects of spontaneous personal time.

- **Growing operative efficiency—**The Artificial Intelligence models can anticipate working circumstances and distinguish boundaries to be balanced on the hover to keep up ideal results which will help improve operative efficacy.

- **Empowering better products and services** — Individual Language Processing to exchange with tackles, AI-controlled mechanisms, and automatons, Navy administration are a portion of the manners in which that Artificial Intelligence will help in improving the current items.

- **Enhancing risk management** — Along with AI and IoT, a few bids are serving associations comprehend and anticipate an assortment of dangers just as computerize fast reaction.