



# CERTIFICATION IN DIGITAL TWIN

**BUILD - SIMULATE - DEPLOY**

Arduino, ThinkSpeak, Unreal Engine, Unity, AWS Twin maker

## ABOUT US

MONOLITH RESEARCH AND TRAINING LABS is the training arm of Monolith Technologies Private Limited, India, and is part of the Monolith associate companies spread across eight countries in the Asia Pacific and United Kingdom regions. The vision of Monolith's training arm is to create an ecosystem with a workforce that is ready to adopt and support future media communication technologies. Monolith is also focused on providing research opportunities to identify and develop scalable and economical solutions for problem statements in various domains.

Training programs at Monolith are developed in association with industry experts across the globe and mapped to job roles that are available not just in the current market but also with future demand in mind. Our training programs are designed and developed to inspire, motivate, and empower learners to excel in their desired careers.



**MONOLITH**



**MONOLITH**<sup>®</sup>  
RESEARCH AND TRAINING LABS

## OUR APPROACH

We translate real-world expertise into industry-aligned learning. Our programs are developed with global experts and mapped to current and future job roles.

## OUR IMPACT

We are building a future-ready workforce for media communication technologies. We serve leading global enterprises, including Fortune 500 companies.

## UNREAL AUTHORIZED TRAINING INSTITUTE

We are authorized training partner of Epic's Unreal Engine. Epic's Unreal Engine is the major tool in the industry to create AAA games, Virtual production, Virtual Reality and to create Real time rendering for movie productions. The partnership help to build the standardizes curriculum and industry exposure to the students.



Unreal Authorized Instructor  
2025



Unreal Academic Partner  
2025

## TOON BOOM AUTHORIZED TRAINING INSTITUTE

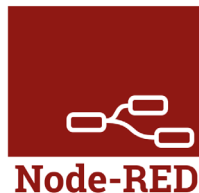
We are authorized training partner of Toon Boom. Toon Boom Harmony is a leading animation software used for creating high quality 2D animations across various industries, including television, film, and gaming. One of the most iconic productions that uses Toon Boom is Rick and Morty. The partnership help to build the standardizes curriculum and industry exposure to the students.



**Toon Boom**  
Authorized  
Training Centre

# COURSE SNAPSHOT

Course Title	Certification in Digital Twin
Duration	6 Months
Format	Offline
Tools Covered	6+ Pro Tools & Integrated AI



# COURSE OVERVIEW

This 6- month certification program trains you to build end- to- end Digital Twin systems by integrating IoT connectivity with advanced 3D visualization.

- This program takes learners from foundational embedded systems and IoT concepts to build fully functional, cloud- connected digital twin systems.
- It focuses on real- time data acquisition, communication, data pipelines, 3D twin creation, and interactive visualization, enabling learners to develop scalable, data- driven digital twins for real- world applications.

# SCOPE

To understand the scope of Digital Twin in 2026, it is important to recognize the rapid growth of Industry 4.0, smart systems, and real-time connected technologies. Digital Twin technology is becoming a core part of modern industries for real-time monitoring, simulation, automation, predictive analysis, and intelligent decision-making. The integration of IoT, cloud computing, AI, and interactive 3D visualization has created strong demand for professionals skilled in Digital Twin development.

## Key Growth Sectors for 2026 & Beyond

- Smart Manufacturing and Industry 4.0 are major adopters of Digital Twin technologies for automation and monitoring.
- Automotive and Aerospace industries use Digital Twins for simulation, testing, and predictive maintenance.
- Smart Cities and Infrastructure sectors are implementing real-time monitoring and connected systems.
- Healthcare and Robotics industries are expanding the use of simulation-driven digital environments.
- Cloud IoT, XR Simulation, and Industrial Automation sectors continue to show rapid growth worldwide.

## Market Size & Financial Scope

- The global Digital Twin market is expected to grow significantly over the next decade.
- Industry reports estimate the market to exceed USD 220 Billion by 2033.
- Increasing investments in Industry 4.0 are accelerating Digital Twin adoption globally.
- Companies are actively investing in IoT, AI, cloud platforms, and simulation technologies.
- The growing market is creating strong career opportunities for Digital Twin and IoT professionals.

This course provides practical exposure to the complete Digital Twin workflow including sensor integration, real-time communication, data pipelines, 3D asset creation, simulation environments, and cloud-connected deployment systems. Learners will build industry-oriented projects combining embedded systems, IoT communication, visualization dashboards, simulation engines, and cloud platforms into fully functional Digital Twin ecosystems.

For students entering the field now, Digital Twin technology offers excellent long-term career potential as industries continue adopting smart, connected, and simulation-driven systems across global markets.

## JOB OPPORTUNITIES

IoT Engineer

Cloud IoT Developer

Industry 4.0 Engineer

Digital Twin Developer

Smart Systems Engineer

Simulation Developer

Embedded Systems  
Developer

Digital Twin integration  
Specialist



# WHO SHOULD JOIN

## ENGINEERING & TECHNOLOGY STUDENTS

from Computer Science, IT, Electronics, Electrical, Mechanical, Robotics, Mechatronics, or related fields interested in Industry 4.0 and emerging technologies.



## UNREAL & UNITY ENGINE ENTHUSIASTS

Learners interested in real-time 3D development, simulation systems, interactive visualization, virtual environments, and Digital Twin applications using game engines.



## IOT & EMBEDDED SYSTEMS ENTHUSIASTS

Individuals who want practical knowledge in Arduino, sensors, communication, real-time data acquisition, and connected device systems.



## CAREER SWITCHERS & TECHNOLOGY ASPIRERS

Individuals looking to transition into Digital Twin, IoT, simulation, cloud technologies, and Industry 4.0-related career paths.

## INNOVATION & RESEARCH-ORIENTED LEARNERS

Individuals interested in smart systems, AI-integrated simulation, industrial research, automation technologies, and future-focused digital transformation domains.

<b>MONTH</b>	<b>MODULE</b>	<b>TITLE</b>
1	Embedded System & Data Acquisition	Sensor Data Collection
2	IoT Communication Layer	Device Communication
3	IoT Middleware & Data Visualization	Data Pipeline & Dashboard Creation
4	3D Digital Twin Creation	3DAsset Development
5	Digital Twin Visualization & Interaction	Interactive Simulation
6	Cloud Digital Twin Platform	Cloud Integration & Scaling

# MODULE 01: EMBEDDED SYSTEM & DATA ACQUISITION

## Topics:

- Microcontrollers & Programming Fundamentals
- Serial Communication & Data Acquisition
- Sensor Interfacing & Real-time Data Capture

## Tools:

Arduino, Sensor Simulation(Physical & Digital)

## EMBEDDED SYSTEMS WITH **ESP32**

— IOT SOLUTIONS —

CONNECT • MONITOR • AUTOMATE

Powerful, flexible and cost-effective embedded system solution for next generation IoT applications.



High  
Performance



Built-in  
Wi-Fi & BLE



Low Power  
Consumption



Secure  
& Reliable




# MODULE 02: IOT COMMUNICATION LAYERS

## Topics:

- Messaging Architecture & Protocols
- Publish- Subscribe Model
- Real- time Device Communication

## Tools:

Eclipse Mosquitto(MQTT)



# MQTT

## Message Queuing Telemetry Transport

*The Lightweight Messaging Protocol for IoT and M2M Communication*

MQTT is a simple, open and lightweight messaging protocol designed for low-bandwidth, high-latency or unreliable networks. It follows a publish/subscribe model and is ideal for connecting remote devices and cloud applications.

- LIGHTWEIGHT**  
Minimal overhead, ideal for bandwidth-constrained devices.
- EFFICIENT**  
Low power consumption and optimized for performance.
- RELIABLE**  
QoS levels, retained messages and offline message delivery.
- SECURE**  
Supports TLS/SSL encryption for safe and trusted communication.
- FLEXIBLE**  
Scalable from small sensors to enterprise systems.

### MQTT ARCHITECTURE

**PUBLISHERS** (Sensors / Devices) → **MQTT BROKER** (Central Server) → **SUBSCRIBERS** (Clients / Applications)

Receives all messages and routes them to subscribers based on topics.

#### TOPIC EXAMPLE

- home/livingroom/temperature
- factory/line1/machine1/status
- building/floor2/energy/usage
- weather/station1/humidity

Topics are hierarchical strings that act like channels. Clients publish or subscribe to topics to send or receive messages.


# MODULE 03: IOT MIDDLEWARE & DATA VISUALIZATION

## Topics:

- Data Pipelines & Device Integration
- API Handling & Data Formats
- Real-time Dashboards & Anomaly Detection

## Tools:


Node- Red, ThingSpeak




### Node-RED

**Flow-Based Programming for the Internet of Things**

Node-RED is a visual programming tool built on Node.js that makes it easy to connect hardware devices, APIs and online services in flows.






### ThingSpeak™

**IoT Data Analytics Platform**

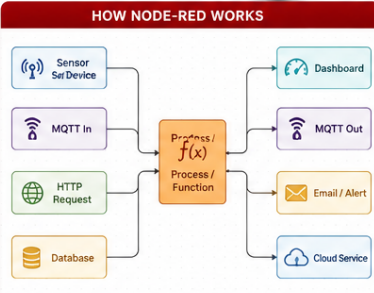
ThingSpeak is an open IoT analytics platform service that allows you to aggregate, visualize and analyze live data streams in the cloud.



#### KEY FEATURES

- Visual Flow Programming**  
Drag-and-drop nodes to build powerful IoT workflows.
- Wide Range of Nodes**  
Pre-built nodes for devices, protocols, cloud services, databases and more.
- Real-time Data Processing**  
Collect, process and act on data in real-time.
- Extensible & Open Source**  
Add custom functionality with JavaScript or install new nodes.
- Cross Platform**  
Runs on Windows, Linux, macOS and cloud platforms.

#### HOW NODE-RED WORKS



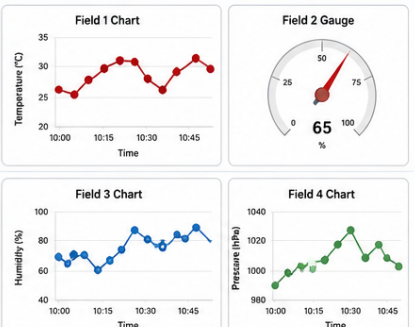
#### TYPICAL USE CASES

- IoT Data Integration
- Device Automation
- Real-time Dashboards
- Alert & Notifications
- Process Control

#### KEY FEATURES

- Data Collection in the Cloud**  
Easily collect data from devices in real-time.
- Powerful Data Visualization**  
Create instant live charts and visualizations.
- Data Analysis & Processing**  
Built-in math, statistical and data analysis tools.
- MATLAB® Integration**  
Analyze and process data using MATLAB in the cloud.
- Open & Flexible**  
Open API and integrates with many IoT platforms.

#### LIVE DATA VISUALIZATION



#### TYPICAL USE CASES

- Remote Monitoring
- Environmental Monitoring
- Predictive Analytics
- Asset Tracking
- Smart Cities & Agriculture

# MODULE 04: 3D DIGITAL TWIN

## Topics:

- 3D modeling & Object Creation
- Materials, Texturing & Optimization
- Asset Export for Simulation

## Tools:

Blender



## BLENDER FOR DIGITAL TWIN DEVELOPMENT

Design. Model. Visualize. Simulate. All in one open-source platform.

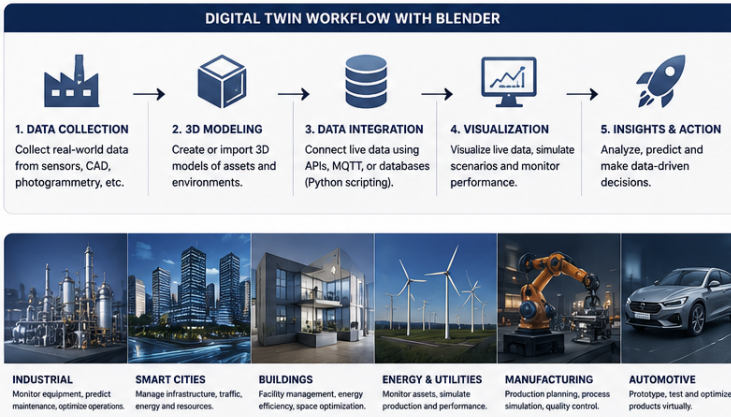
Blender is a powerful, open-source 3D creation suite that enables you to build realistic digital twins for industries, infrastructure, products, and smart environments.



### KEY CAPABILITIES

- 3D MODELING**  
Build accurate models of assets, machines, buildings and environments.
- PHOTOREALISTIC RENDERING**  
Create realistic visuals for better analysis and presentations.
- ANIMATION & TIMELINE**  
Visualize operations, assembly processes and system behavior.
- PHYSICS SIMULATION**  
Simulate real-world physics for testing and validation.
- DATA VISUALIZATION**  
Display real-time data on 3D models using drivers and scripts.
- ADD-ONS ECOSYSTEM**  
Extend functionality with a wide range of community add-ons.

### APPLICATION AREAS



### WHY BLENDER?

- OPEN SOURCE & FREE**  
No licensing cost. Free to use, modify and distribute.
- POWERFUL 3D MODELING**  
Create detailed and accurate 3D models of real-world assets.
- REALISTIC VISUALIZATION**  
High-quality rendering with real-time and ray tracing.
- ANIMATION & SIMULATION**  
Simulate movements, processes and behaviors over time.
- PYTHON API**  
Automate workflows and integrate with IoT, databases and more.
- MULTIPLE EXPORT OPTIONS**  
Export to glTF, FBX, OBJ, USD, Alembic and more for any platform.

### EXPORT & INTEGRATE

Seamlessly integrate your digital twin with multiple platforms and tools.



### BLENDER AT A GLANCE

- ✓ Lightweight yet powerful
- ✓ Cross-platform (Windows, macOS, Linux)
- ✓ Active community and continuous updates
- ✓ Ideal for real-time and offline digital twins
- ✓ Supports IoT, AI/ML and data-driven workflows



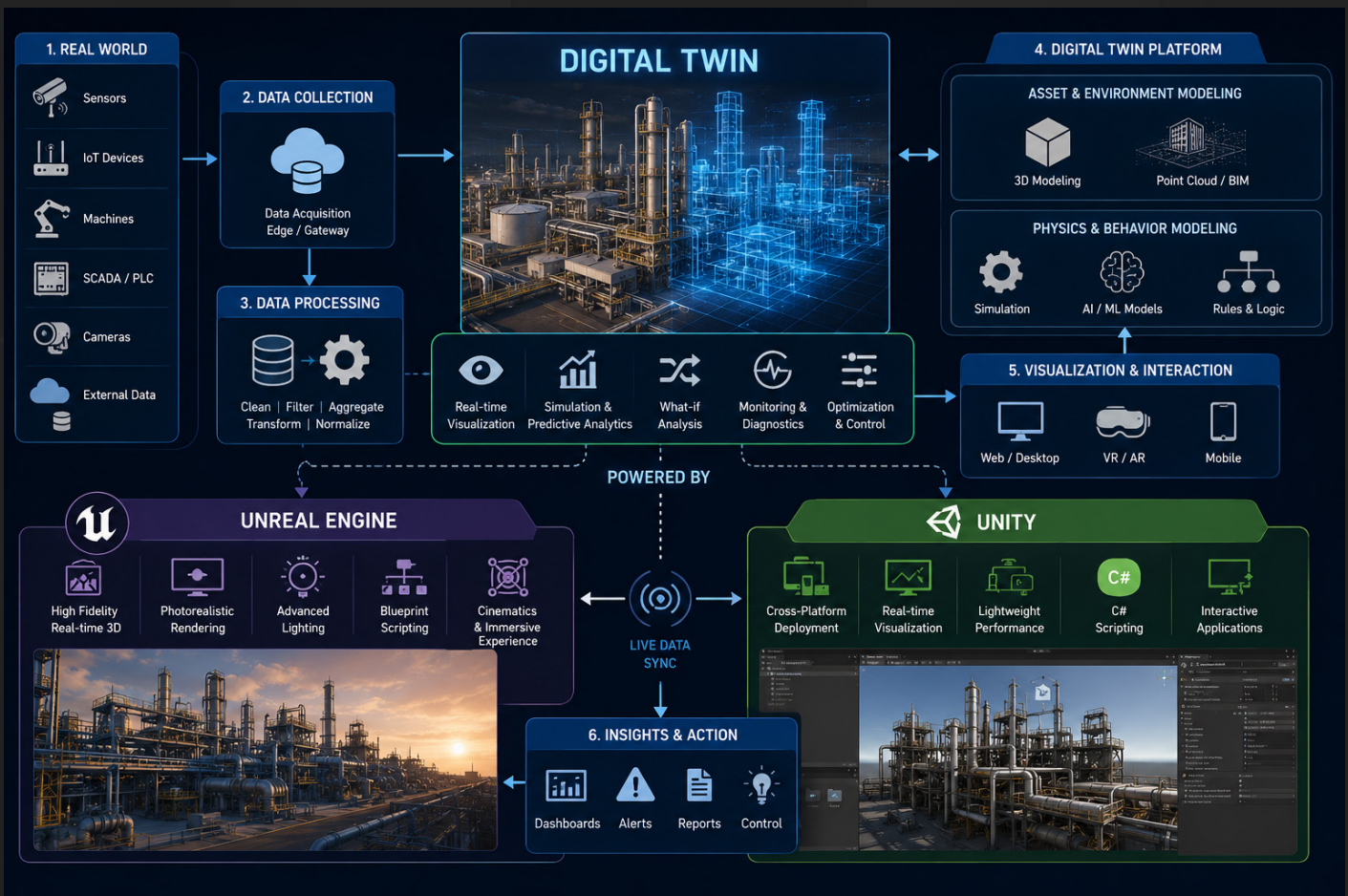
# MODULE 05: DIGITAL TWIN VISUALIZATION & INTERACTION

## Topics:

- Digital Twin Environment Setup
- Live Data Integration into 3D Models
- Interaction & Behavior Scripting

## Tools:

Unreal Engine, Unity Engine



# MODULE 06: CLOUD DIGITAL TWIN PLATFORM

## Topics:

- Device- to- Cloud Data Ingestion
- Cloud Pipelines & Twin Management
- Remote Monitoring & Dashboard Visualization

## Tools:

AWS IoT TwinMaker



## AWS TwinMaker

Easily build, scale, and operate digital twins of real-world systems

AWS TwinMaker makes it easy to create digital twins that help you optimize operations, improve performance, and drive better outcomes across your organization.



### EASY TO BUILD

Connect and model real-world systems at scale



### BUILT ON AWS

Leverage the security, scalability, and reliability of AWS



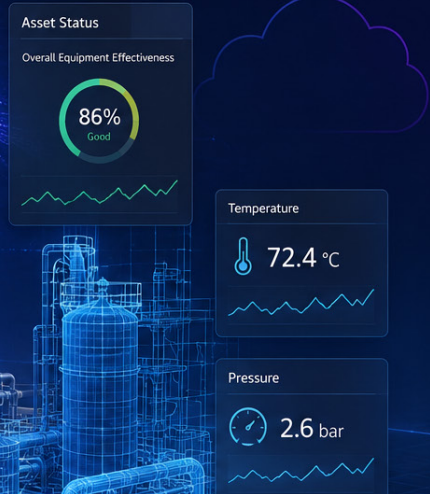
### GAIN INSIGHTS

Visualize, monitor, and analyze to make data-driven decisions



### OPTIMIZE OPERATIONS

Simulate, predict, and improve performance in real time



From physical to digital.  
Transform how you design, operate, and innovate.

# BUILD A STUDIO-READY PORTFOLIO

## Project 1: Smart Environment Twin

Build a system that captures and visualizes real-time environmental data through a basic digital twin.

## Project 2: Real-Time Industrial Twin

Create an interactive 3D digital twin system with real-time or simulated data for monitoring and behavior analysis.

## Project 3: Scalable Cloud Digital Twin

Develop a cloud-connected digital twin platform enabling multi-device data flow, remote monitoring and scalable insights.

# CERTIFICATE SAMPLE

This Course is accredited and certified by Monolith



# INSTRUCTORS BADGE



Our Faculty members are Certified from Epic's Unreal as Authorized Instructors. Currently at our Academy we have 5 Gold Badge Instructors and 2 Silver Badge Instructors.

## GOLD BADGE

5 Unreal Authorized Instructors

## SILVER BADGE

2 Unreal Authorized Instructors

# HOW WE TEACH & EVALUATE

- LMS
- Flipped Classroom Approach
- MCQ's (Beginner, Intermediate & Advanced Level)
- Skill Assessment - Industry POV
- Live Feedback
- The "Pipeline" Approach
- Portfolio based Teaching

## STUDENT TESTIMONIAL

"Monolith's hands-on training and the freedom to use PCs beyond class hours helped me practice more and learn faster. The continuous mentor support and practical learning environment encouraged experimentation and real-time problem-solving. This support played a key role in strengthening my Unreal Engine game development skills and building confidence in my work.

— Siva Prasad, Unreal Developer

Ameyaa Immersive world Pvt Ltd

# FAQS

**Q: What exactly is a digital twin?**

A: It is a highly accurate virtual replica of a physical object, system, or process. It uses real-time data to automatically update itself and mirror its real-world counterpart.

**Q: How does a Digital Twin differ from a standard 3D model?**

A: Unlike a static 3D model, a Digital Twin is a dynamic replica powered by live real-world data streams. If the physical machine moves or heats up, the digital version reacts instantly using sensor integration.

**Q: How do developers connect the physical world to the virtual one?**

A: To bridge the gap between hardware and software, developers use messaging protocols like MQTT and middleware like Node-RED to transmit sensor data into engines like Unreal or Unity in real-time.

**Q: Is Digital Twin technology only for manufacturing?**

A: No, it is essential for Smart Cities (traffic and energy management), Healthcare (virtual patient modeling), and Automotive testing for predictive maintenance.

**Q: Does Monolith Academy offer any job placement assistance after completing the courses?**

A: Yes, Monolith Academy Offers job placement assistance to students upon completion of their courses. Our dedicated placement cell works to connect students with relevant job opportunities.

# PLACEMENT SUPPORT

- Intensive Placement training from Beginner level
- Project and portfolio guidance
- MCQs and Mock Interviews
- Community Meetup and Networking Opportunities

# INDUSTRY CONNECT & PLACEMENT ASSISTANCE

For over twenty-five years, Monolith has provided mediatechnology communication services to Japan, Singapore, India, Hong Kong, China, the Republic of Korea, Australia, and the United Kingdom. With over two decades of experience in providing staffing and HR solutions, Monolith has established itself as an industry leader in delivering high-level service quality among the top hundred Fortune Five Hundred companies.

Monolith offers full support to the learners by helping them build a strong portfolio and identify jobs that align with their interests and goals. Learners will get highly beneficial insights about the current job market and what employers seek through the program. By providing hands-on training with cutting-edge technologies, exposure to real-world use cases and internships through its industry connect, Monolith helps learners to gain an accurate view of the industry.



# DESIGN - BUILD - GET HIRED

TRANSFORM YOUR IDEAS INTO IMMERSIVE EXPERIENCES

**ENROLL NOW**

## CONTACT US

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