Government Polytechnic for Girls, Surat

Department of Electronics & Communication Engineering

E-NEWSLETTER

SEPTEMBER 2025 • Vol. 02

Electronics & Communication
Engineering Department

Information & Communication
Technology Department

EVENTS

Campus Activities — EC/ICT Department | Gymkhana | NCC/NSS



VISION	Be an excellent department for girls to empower them in the field of Electronics and Communication engineering to excel in industry and serve the society.
MISSION	• To prepare professionally competent students and staff through academic excellence. • To create a conducive environment in the department for exchange of ideas and knowledge. • To provide opportunities in the department for skill development and innovation. • To provide resources and infrastructure for best learning experience in the department.

HEAD OF DEPARTMENT'S MESSAGE



Mrs. KUNDAN. N. VAGHELA
Head of Department
EC Department, GPG Surat

Hello Students!

We are proud to present the September 2025 Edition of our EC Department E-Newsletter! The Electronics and Communication Engineering (ECE) Department has always been committed to academic excellence, innovation, and holistic development. This newsletter continues to be a vibrant platform where students and staff can share their creative ideas, achievements, and reflections, strengthening the spirit of learning and collaboration.

I extend my warm greetings to all contributors and readers who make this initiative meaningful. In today's fast-evolving digital world, it is vital to adapt, learn continuously, and engage deeply with knowledge. I believe that the insightful articles and creative expressions featured here will not only encourage innovation but also promote values of empathy, culture, and human connection.

As always, the department remains dedicated to nurturing skilled professionals who are socially responsible and capable of making a positive impact on the world. Your contributions and enthusiasm are the heartbeat of this newsletter, and we look forward to more engaging participation in the future.

With this edition, our journey moves forward—bringing you inspiring stories, academic milestones, and glimpses of our collective growth. Thank you for your continued support, readership, and valuable feedback as we shape the next chapters of our E-Newsletter.

ARTICLE

By Vinayak Ramachandra Adkoli

AIoT: A Convergence of Intelligence and Connectivity

Published on electronics4u | 11 August 2025

Vinayak Ramachandra Adkoli have published a document in electronics4u on "AIoT: A Convergence Of Intelligence And Connectivity" @ 11 AUG 2025

The world of technology is undergoing a profound transformation. Two of the most revolutionary forces of the 21st century — Artificial Intelligence (AI) and the Internet of Things (IoT) — are no longer evolving in isolation. Their convergence has given rise to a powerful new paradigm called AIoT (Artificial Intelligence of Things), a fusion that is fundamentally reshaping how machines perceive, learn, decide, and communicate. Where traditional IoT focused on connecting devices and collecting data, AIoT goes several steps further — it enables connected devices to analyse that data intelligently, respond autonomously, and continuously improve through experience. The result is a smarter, faster, and more responsive technological ecosystem that holds enormous potential for industries, economies, and everyday life.

Global AIoT Market Value (2024)	Projected Market Size (2030)
USD 80+ Billion	**USD 1.2+ Trillion**

What is AIoT?

AIoT stands for Artificial Intelligence of Things — the integration of AI technologies including machine learning, deep learning, natural language processing, and computer vision into IoT infrastructure and ecosystems. In a conventional IoT system, sensors and connected devices collect real-world data (temperature, motion, sound, images, etc.) and transmit it to centralized cloud servers for human-driven analysis. AIoT

transforms this pipeline by embedding intelligence directly at every level — from edge devices to gateways to cloud platforms — enabling:

- **Real-time data analysis** without depending solely on distant cloud servers.
- **Predictive and prescriptive capabilities** where systems forecast problems before they occur.
- **Autonomous decision-making** enabling devices to act independently based on context.
- **Continuous self-improvement** through feedback loops and machine learning algorithms.

"AIoT is not just smarter IoT — it is the birth of devices that can think, learn, and act in collaboration with human intelligence." — Vinayak Ramachandra Adkoli

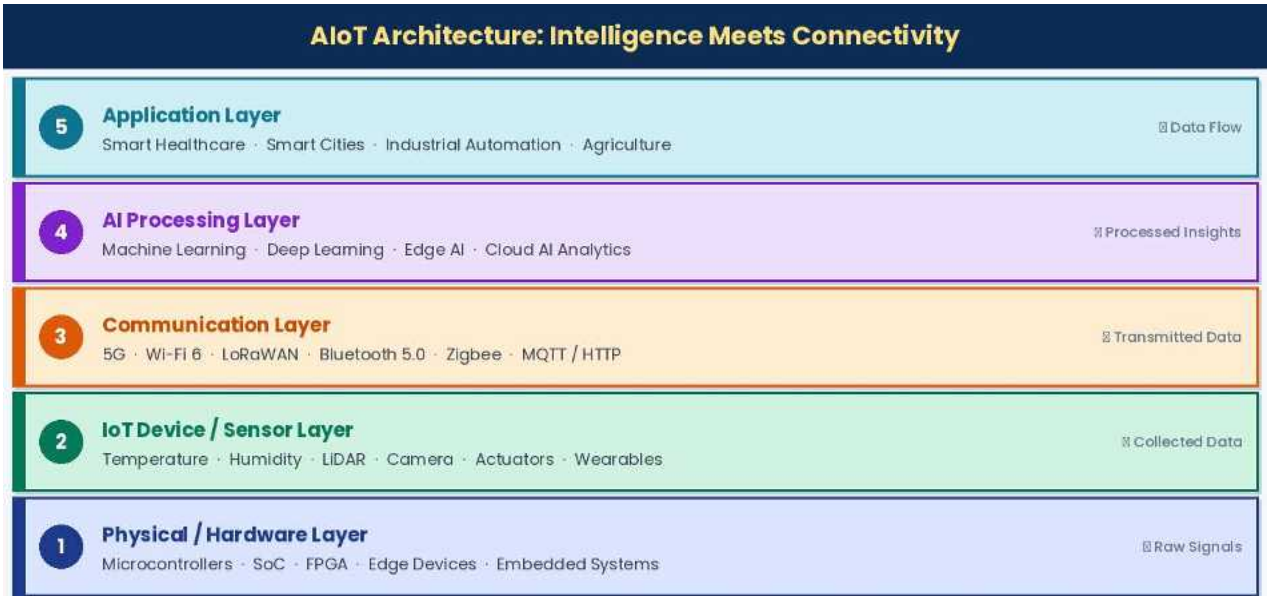


Figure 1: AIoT System Architecture — Five-Layer Model from Physical Hardware to Application

The Building Blocks: How AIoT Works

The AIoT ecosystem operates across a layered architecture where each layer contributes a distinct function toward delivering intelligent, connected outcomes:

1. **Physical / Hardware Layer** — Consists of sensors, actuators, microcontrollers, SoCs (System on Chip), FPGAs, and embedded processors. These devices are the eyes and ears of AIoT — capturing raw data from the physical world.
2. **IoT Device / Sensor Layer** — Specialised IoT devices — temperature sensors, LiDAR, cameras, pressure gauges, GPS modules, and wearables — continuously capture diverse forms of real-world data across environments.
3. **Communication Layer** — Responsible for transmitting data reliably and securely between devices and processing nodes. Protocols include 5G, Wi-Fi 6, LoRaWAN, Zigbee, Bluetooth 5.0, MQTT, and HTTP/HTTPS, each chosen based on bandwidth, range, and power requirements.
4. **AI Processing Layer** — The intelligence core. Machine learning models, neural networks, and edge AI chips process data either at the device edge (for low-latency response) or in the cloud (for complex pattern recognition). Key AI techniques include CNNs, RNNs, Transformers, and Federated Learning.
5. **Application Layer** — The layer users and businesses interact with directly — dashboards, mobile apps, enterprise systems, and automated controllers. This is where actionable insights from AIoT manifest as real-world outcomes.

AIoT vs. Traditional IoT: A Significant Leap

To appreciate the magnitude of AIoT's advancement, it is important to contrast it with conventional IoT:

Traditional IoT vs AIoT: A Comparative Overview

	Traditional IoT	AIoT (AI + IoT)
Data Processing	Sends raw data to cloud	☒ Processes at edge with AI algorithms
Decision Making	Requires human intervention	☒ Autonomous real-time decisions
Adaptability	Static, rule-based responses	☒ Self-learning, dynamic adaptation
Efficiency	Higher bandwidth & latency	☒ Optimized, low-latency AI inference
Scalability	Limited by cloud dependency	☒ Scales with distributed edge AI

Source: Vinayak Ramachandra Adkoli · AIoT: A Convergence of Intelligence and Connectivity · electronics4u.com · 11 Aug 2025

Figure 2: Traditional IoT vs AIoT — Comparative Overview

The fundamental distinction lies in intelligence. Traditional IoT generates massive volumes of data but depends on human analysts or cloud systems to derive value from it. AIoT closes this loop by enabling devices to be self-sufficient — perceiving context, learning from patterns, and acting without waiting for human instruction.

Key Application Domains of AIoT

The real-world impact of AIoT is already being felt across a remarkable breadth of industries:

Smart Healthcare
Smart Manufacturing
Smart Cities
Precision Agriculture
Smart Homes & Buildings
Connected & Autonomous Vehicles

Core Technologies Enabling AIoT

Several interdependent technology pillars make AIoT a reality:

- **Edge Computing**
- **5G & Advanced Wireless Networks**
- **Tiny Machine Learning (TinyML)**
- **Federated Learning**
- **Digital Twins**
- **Natural Language Processing (NLP)**

Challenges and Considerations

While AIoT presents transformative possibilities, it also introduces significant challenges that must be thoughtfully addressed:

- **Security & Privacy**
- **Data Quality & Bias**
- **Interoperability**

- **Power & Resource Constraints**
- **Regulatory Compliance**

India's AIoT Landscape: Opportunity at Scale

India is uniquely positioned to harness the AIoT revolution. With the world's second-largest internet user base, a rapidly expanding 5G network, a thriving semiconductor design ecosystem, and government-backed initiatives such as Digital India, Smart Cities Mission, and the National AI Strategy, India presents a massive AIoT opportunity.

Indian startups and enterprises are already deploying AIoT solutions in agriculture (precision farming for water-scarce regions), healthcare (AI-powered diagnostics for rural areas), manufacturing (Industry 4.0 adoption in automotive and electronics sectors), and smart infrastructure (intelligent traffic management in metros).

"India's combination of engineering talent, cost-competitive manufacturing, and a billion-strong connected user base makes it one of the most promising AIoT markets globally." — Vinayak Ramachandra Adkoli

The Future of AIoT

The convergence of AI and IoT is not a destination — it is an accelerating journey. In the coming decade, several advancements will further amplify AIoT's transformative power:

- **Neuromorphic Computing:** Brain-inspired chips that process sensor data with orders-of-magnitude higher energy efficiency than conventional processors, enabling always-on, ultra-low-power edge AI in implantable and wearable devices.
- **AI-Native 6G Networks:** Sixth-generation wireless networks will embed AI natively into the network fabric itself, enabling self-optimising, self-healing communication infrastructure for AIoT.
- **Autonomous AIoT Swarms:** Fleets of collaborative AIoT agents — drones, robots, autonomous vehicles — that communicate, coordinate, and execute complex collective tasks without centralised human control.
- **Cognitive Digital Twins:** Next-generation digital twins that not only replicate physical systems but reason about them, generating autonomous recommendations and strategic insights through advanced generative AI.
- **Ambient Intelligence:** AI embedded invisibly into the physical environment — walls, furniture, vehicles, clothing — creating surroundings that sense human intent and respond proactively and contextually.

Conclusion

AIoT represents one of the most significant technological convergences of our era. By bringing the reasoning power of Artificial Intelligence to the pervasive connectivity of the Internet of Things, AIoT creates systems that are not merely connected — they are genuinely intelligent.

From hospitals monitoring patient health in real-time to farms that irrigate themselves based on AI-driven soil analysis; from smart factories that self-diagnose mechanical failures to cities that adapt their infrastructure dynamically to citizen needs — AIoT is the engine of a smarter, more efficient, more responsive world.

For students and professionals in Electronics, Communication, and Information Technology, AIoT represents not just a technological evolution but a career-defining horizon. The skills to design, deploy, and govern intelligent connected systems will be among the most valuable in the decades ahead.

"Alone, AI is a brain without nerves. Alone, IoT is nerves without a brain. Together as AIoT, they form the complete nervous system of our intelligent technological future." — Vinayak Ramachandra Adkoli

EVENTS

Campus Activities — EC/ICT Department & Gymkhana & NCC/NSS

A wide and diversified range of extracurricular activities exists on GGP, SURAT campuses. Students become involved in extracurricular activities not only for entertainment, social, and enjoyment purposes, but most important, to gain and improve skills and offer many social opportunities while also promoting service.

EC / ICT Department

AI Resume Analyzer & Improvement Suggestions Workshop — Under SSIP 2.0

5 April 2025 • **Government Polytechnic for Girls, Surat**

The Electronics and Communication Department of Government Polytechnic for Girls, Surat organized a one-day workshop on "AI Resume Analyzer & Improvement Suggestions" on 5th April 2025 under the SSIP 2.0 initiative. The session was conducted by Mr. Sumit Thakkar, CEO & Founder of Govardhan Institute and Infotech.





Anti-Ragging Week 2025: Awareness through Activities

12 August – 18 August 2025 • **Government Polytechnic for Girls, Surat**

The Anti-Ragging Week was observed from 12th to 18th August 2025 with a series of awareness activities at Government Polytechnic for Girls, Surat. The program began with an Orientation Session on 12th August, followed by the screening of a short film/documentary on Anti-Ragging, online affidavit filing, and the Anti-Ragging Selfie Corner activity. Various competitions such as Slogan Writing, Poster Design, and Quiz were also conducted, where students from different departments actively participated and showcased their creativity and commitment towards maintaining an anti-ragging campus environment.













Student Induction Program

24 July 2025 – 06 August 2025 • **Government Polytechnic for Girls, Surat**

The enclosed photographs provide formal documentation of the Student Induction Program, demonstrating successful execution of the scheduled activities. The images clearly reflect the active participation of students in orientation sessions, classroom interactions, and various engagement activities as outlined in the official timetable.

Orientation and Classroom Sessions



Parents–Teacher Meeting — First Year EC & ICT Students

20 September 2025 • • **Classroom B-205, GPG, Surat**

A Parents–Teacher Meeting for First Year Electronics & Communication Engineering and Information & Communication Technology students was conducted on 20 September 2025 at Classroom B-205, Government Polytechnic for Girls, Surat. The objective was to discuss students' academic performance, attendance, discipline, and overall progress.



Industrial Visit — Sumul Dairy, Surat

12 September 2025 • **EC & ICT Department — Semester 05 Students**

The Electronics and Communication Engineering Department and Information & Communication Technology Department (Semester 05 students) organized an industrial visit to Sumul Dairy, Surat, on 12th September 2025. The visit provided students with valuable practical exposure and insights into the working of modern dairy processing and management systems. It was an enriching experience that complemented their academic learning with real-world industrial knowledge.



Industrial Visit — INOWEAVE, Surat

25 September 2025 • **EC & ICT Department — Semester 01 Students**

The Electronics and Communication Engineering Department and Information & Communication Technology Department (Semester 01 students) organized an industrial visit to INOWEAVE, Surat, on 25th September 2025.



Career Guidance Seminar — In Collaboration with ACPDC

28 April 2025 • **11:30 AM** • **Government Polytechnic for Girls, Surat**

A Career Guidance Seminar was organized at Government Polytechnic for Girls, Surat in collaboration with ACPDC on 28th April 2025 at 11:30 a.m.

The session provided insights on Diploma admissions, courses after Std. 10, online admission processes, and government scholarship schemes. Students and parents actively participated, making the event highly informative and impactful.



Techfest - Varenyam 2K25

29 August 2025 / 3 September 2025 • **Government Polytechnic for Girls, Surat**

The Techfest - Varenyam 2K25 was celebrated at Government Polytechnic for Girls, Surat, showcasing the creativity and technical skills of students across various departments. The event began with an inauguration ceremony followed by a series of competitions including:

Treasure Hunt, Fastest Fingers, Packet Hackers, Quiz 2 Code, Tech Charades, LED Art Challenge, Circuit Quiz, Fashion & Textile Trivia Challenge, Text Craft, Wire Hunt, and E-Quiz.

As part of Techfest - Varenyam 2K25, the Electronics & Communication Engineering Department organized two innovative events on 29th August 2025.

LED Art Challenge

Date & Time: September 03, 2025 & 1 to 3 PM
Venue: B-102, EC Department
Participants: 5 Teams (Total 15 participants)

Glimpses of the Electronics and Communication Engineering Department and Information & Communication Technology Department All Semester students, along with the winners of the 'LED Art Challenge' event



1st Place	2nd Place	3rd Place
EC Semester-03	**EC Semester-05**	**EC Semester-05**
PATIL MANSI JITESH (236150311019) BHATT SHRUTI SACHIN (246150311002) DESAI HEER SHAILESHBHAI (236150311002)	ADVITIYA D SAROJ (226150311001) JHA ROSHNI RANI (226150311007) VERMA KHUSHI (226150311027)	PATIL PAYAL NAVNIT (226150311017) KALPANA HARISH SINGH LATWAL (236150311006)

Circuit Quiz — "Spot the Spark!"

Date & Time: September 03, 2025 & 3 to 4:30 PM
Venue: B-103, EC Department
Participants: 14 participants

Winners:
1st: PATIL RUCHITA JITENDRA (236150311020) — EC Sem 05
2nd: PAL SWATI KANAIYA (236150311014) — EC Sem 05
3rd: KHAN ALQAMA JUNED (236150311008) — ICT Sem 05



Glimpses of the Electronics and Communication Engineering Department and Information & Communication Technology Department all Semester students, along with the winners of the 'Circuit Quiz — Spot the Spark!' event

Expert Lecture on "Awareness about NEP-2020"

4 April 2024 • **GPG, Surat**

An expert lecture on "Awareness about NEP-2020" was held on 4th April 2024 at GPG Surat. Dr. Namrata D. Jariwala (SVNIT) shared key insights on NEP-2020. Faculty from all departments enthusiastically participated in the session.



Online Workshop on "AI @ Work"

5 July 2025 • **Commissionerate of Technical Education, Gujarat**

An Online Workshop on "AI @ Work" was held on 5th July 2025 by the Commissionerate of Technical Education, Gujarat. The sessions covered AI tools, prompting with AI, AI-powered presentations, and the future of AI in governance. Experts from academia and industry shared valuable insights, making it a highly enriching experience for participants.



Gymkhana Activities

Cyber Awareness Programme

Cyber awareness program organized by Mr. Dhaval Baldaniya, in which more than 150 students participated. In this program, students were made aware to seek protection against cybercrime.



International Yoga Day

21 June 2025 • GPG, Surat

International Yoga Day was celebrated on 21st June 2025 at GPG Surat with great enthusiasm. Students and staff performed various yoga asanas promoting health, harmony, and mindfulness. The event highlighted the importance of yoga in leading a balanced and stress-free life.



CPR Training Session & Organ Donation Awareness Camp

25 July 2025 • 2:30 PM • Ground Floor, Girls Hostel, GPG, Surat

A CPR Training session was conducted on 25 July 2025 at 2:30 PM at the Ground Floor of the Girls Hostel, Government Polytechnic for Girls, Surat, where students were introduced to essential life-saving techniques such as chest compressions and emergency response procedures, helping them gain basic skills to act confidently during medical emergencies.

An Organ Donation Awareness Camp was organized on 25 July 2025 at 2:30 PM in V.K. Hall, Girls Hostel, Government Polytechnic for Girls, Surat. The camp session encouraged participants to develop social awareness, understand legal aspects, and support the noble cause of organ donation for the betterment of society.



Garba Celebration

26 September 2025 • 3:00 PM – 6:00 PM • Ground, GPG, Surat

A Garba celebration was organized on 26 September 2025 from 3:00 PM to 6:00 PM at the Ground of Government Polytechnic for Girls, Surat, where students enthusiastically participated in the traditional dance with festive spirit. The event aimed to promote cultural values, student interaction, and enjoyment in a joyful and vibrant environment.



NCC / NSS Activities

Independence Day Celebration

15 August 2025 • 9:30 AM • GPG Surat Campus

The Independence Day celebration was held on 15th August 2025 at Government Polytechnic for Girls, Surat. The program commenced at 9:30 a.m. The celebration began with the flag hoisting by Mr. Ravindra Gamit, followed by the singing of the National Anthem. Afterwards, he delivered an inspiring speech highlighting the significance of Independence Day. Students, staff, and NCC cadets participated with patriotic spirit, marking the occasion with pride and unity.



Tiranga Yatra — Har Ghar Tiranga Campaign

11 August 2025 • GGP, Surat

A Tiranga Yatra was held in GGP, Surat as part of the Har Ghar Tiranga campaign ahead of Independence Day on 11.08.2025.



Tree Plantation Drive

05 July 2025 • **GPG, Surat**



DERMATOLOGY CAMP

24 September 2025 | 02:00 PM – 04:00 PM | Hostel Building, Ground Floor, GPG Surat









STUDENT'S ACHIEVEMENTS

Wishing all of you a heartfelt congratulation for putting up such an extraordinary performance in your exam.

Government Polytechnic for Girls, Surat
Electronics & Communication Engineering Department

DEPARTMENT TOPPERS OF GTU EXAM — TERM 242

3RD YEAR — SEMESTER 06 | EC TOPPERS



1st RANK
SPI – 8.64
PANCHAL RIYA KAMLESHBHAI
(226150311012)



2nd RANK
SPI – 8.43
SARVAIYAM AMTABEN JASHUBHAI
(226150311022)



3rd RANK
SPI – 8.36
RAJPUROHIT SHRIYAM SHAILENDRASINGH
(226150311019)



3rd RANK
SPI – 8.36
MEWADA ANCHAL NANGJI
(226150311009)

2ND YEAR — SEMESTER 04 | EC TOPPERS



RANK 1st
SPI – 8.77
PAL SWATI KANAIYALAL
(236150311014)



RANK 2nd
SPI – 8.5
PATIL RUCHITA JITENDRA
(236150311020)



RANK 3rd
SPI – 8
KALPANA LATWAL
(236150311006)

1ST YEAR — SEMESTER 02 | EC TOPPERS



RANK 1st
SPI – 8.6
DEORE YASHASVI RATILALVINODBHAI
(246150311004)



RANK 2nd
SPI – 8.45
RAJPUT SNEHA SUJEETBHAI
(246150311022)



RANK 3rd
SPI – 8.1
SHIROYA BRINDA PARESHBHAI
(246150311025)

Government Polytechnic for Girls, Surat
Information & Communication Technology Department

DEPARTMENT TOPPERS OF GTU EXAM — TERM 242

3RD YEAR — SEMESTER 06 | ICT TOPPERS



RANK 1st
SPI – 10
CHAUDHRI VAISHNAVI SAILESH
(226150332010)



RANK 2nd
SPI – 10
PATEL FRENYSHA ILESHBHAI
(226150332039)



RANK 3rd
SPI – 10
MORADIYA ISHITA VINOBHAI
(226150332031)

RANK 4th
SPI – 10
VARIYA KHUSHI CHANDRAKANT
(226150332074)

2ND YEAR — SEMESTER 04 | ICT TOPPERS



RANK 1st
SPI – 9.62
VARSADIYA PALAK RAJENDRAKUMAR
(236150332075)



RANK 2nd
SPI – 9.48
KHAN MARIYAH RAHEMAN
(236150332026)



RANK 3rd
SPI – 9.38
CHAMRIYA KHUSHILA UMEDBHAI
(236150332008)

1ST YEAR — SEMESTER 02 | ICT TOPPERS



RANK 1st
SPI – 9.6
JAIN SNEHA ANISHKUMAR
(246150332016)



RANK 2nd
SPI – 9.4
VADODARIYA MISRI KAUSHIKBHAI
(246150332072)



RANK 3rd
SPI – 9.35
PARIKH JILA AMIT
(246150332029)

STAFF ACHIEVEMENT

Faculty Training & Professional Development



Mrs J. R. Patel,
Ms. K. R. Chaudhari,
Mrs P. A. Patel,
Ms. I. M. Mistri &
Mrs H. R. Mehta

Training: *"Yoga and Positive Psychology for Managing Career and Life"*

Venue: IIT Madras (Online MOOC — Swayam Portal)

Duration: **17-02-2025 to 11-04-2025**




Mr. A. D. Dobariya &
Mrs. H. R. Mehta

Training: "Switching Circuit and Logic Design"

Venue: IIT Madras (Online MOOC — Swayam Portal)

Duration: **20-01-2025 to 11-04-2025**




Mr. A. D. Dobariya &
Mr. D. U. Patel

Training: "Introduction to Internet of Things"

Venue: IIT Kharagpur (Online — Swayam NPTEL Portal)

Duration: **21/07/2025 to 10/10/2025**



Mr. D. Y. Vankawala

Training: *"AI and Digital Tools in Education"*

Venue: AVPTI, Rajkot (ATAL)

Duration: **20/05/2025 to 25/05/2025**