ACHARYA INSTITUTE OF GRADUATE STUDIES

(NAAC Re-accredited '**A+**' and affiliated to Dr. Manmohan Singh, Bengaluru City University)

Soladevanahalli, Bengaluru-560107

DEPARTMENT OF MCA

Report Submission: 17/06/2026

Semester:	**EVEN**	**Academic Year:**	**2025-26**	**Venue:**	**AIGS Block II AI032F04 - LR**
Event Date:	**04/06/2026**	**Time:**	**9:30 AM to 12:30 PM**	**Duration:**	**3 Hours**

TYPE OF EVENT: Workshop

EVENT NAME: Build and Control Smart Devices using IoT

Target Audience:	**II Sem MCA Students**	**Number of Participants:**	**62**

Objectives:

i) Gain hands-on experience designing, wiring, and simulating smart circuits virtually using the Tinkercad ecosystem.

ii) Learn to configure device templates, data streams, and interactive widgets within the Blynk IoT cloud platform.

iii) Develop the practical skills needed to interface microcontrollers with mobile apps to monitor and control hardware sensors and actuators from anywhere.

iv) Apply conditional logic and cloud communication workflows to tackle real-world mini-challenges, such as smart home appliances or plant monitoring systems.

Program Introduction:

The Department of MCA, Acharya Institute of Graduate Studies, successfully conducted the workshop titled "Build and Control Smart Devices using IoT" on 04th June 2026. This event was structured specifically to bridge the gap between traditional embedded programming and cloud-based architecture through intuitive, zero-cost simulation tools. The session served as an immersive platform for students to transition from theoretical system layers to practical, hands-on deployment.

Theme of the Event:

This workshop bridges the gap between local circuit architecture and cloud-based automation by training students to build responsive virtual systems using Tinkercad. It focuses on empowering participants to design custom, interactive dashboards and manage data telemetry via the Blynk IoT platform.

Resource Person: Mr. Nixon E, Founder & Director, TechKnots, Chennai

Detailed Report:

The technical session established the fundamental theoretical groundwork, systematically breaking down the expansive landscape of the Internet of Things (IoT). The resource person, Mr. Nixon E, Founder and Director, TechKnots, Chennai, initiated the discourse by defining an IoT network as a collection of physical devices interacting seamlessly over the internet to exchange data without human intervention. Students tracing the evolutionary trajectory of the field learned how traditional standalone embedded systems have systematically transformed into cloud-integrated, intelligent automation networks.

The technical presentation focused heavily on dissecting the essential building blocks of any functional IoT application. To contextualize these concepts, real-world case studies spanning automated smart homes, modern industrial automation, data-driven smart agriculture, smart cities, and continuous healthcare monitoring were analyzed. This architectural breakdown was reinforced with live, practical demonstrations of fully deployed, smart automation frameworks. He exhibited working models of a Smart Home Automation hub, a Smart Irrigation System, and a Smart Energy Monitoring unit. These examples effectively visualized how real-time sensor parameters travel through complex network layers to deliver actionable user insights on remote screens.

The second phase shifted the focus from passive listening to active, software-driven circuit prototyping using Autodesk's Tinkercad platform. Nixon introduced Tinkercad as an invaluable, accessible online web simulator that eliminates the immediate need for expensive physical hardware kits. Students explored the interface, discovering features like intuitive visual circuit design, embedded Arduino programming blocks, variable sensor simulators, and real-time electronic testing environments.

The resource person led a comprehensive live development demonstration, constructing a fully active cloud dashboard completely from scratch. Students learned to initialize clean project spaces, configure specific device templates, and establish distinct communication Data streams. The session offered an in-depth look at deploying various functional dashboard interface widgets. The demonstration showed students how to map software variables to Virtual Pins, converting abstract cloud data into user-friendly graphical interfaces.

Following the technical challenges, the workshop opened up into a 15-minute open discussion and Q&A session, allowing students to clarify technical concepts with the resource engineers. One

student asked about the differences in deployment scaling when moving projects from simulated environments like Tinkercad to physical hardware rollouts. The speaker explained that while Tinkercad is ideal for verifying logic, real setups require careful consideration of power supplies, hardware component tolerances, and physical wiring constraints. Another question focused on data security and transmission reliability when using public IoT cloud platforms like Blynk. The resource person discussed the use of unique authorisation tokens and secure API connections to protect device networks. Additionally, students inquired about career options in this field.

The resource person highlighted high-demand roles, including IoT Application Developers, Embedded Systems Engineers, Solutions Architects, and Industry 4.0 Automation Specialists, noting how foundational cloud development skills give graduate students a strong competitive edge in the job market.

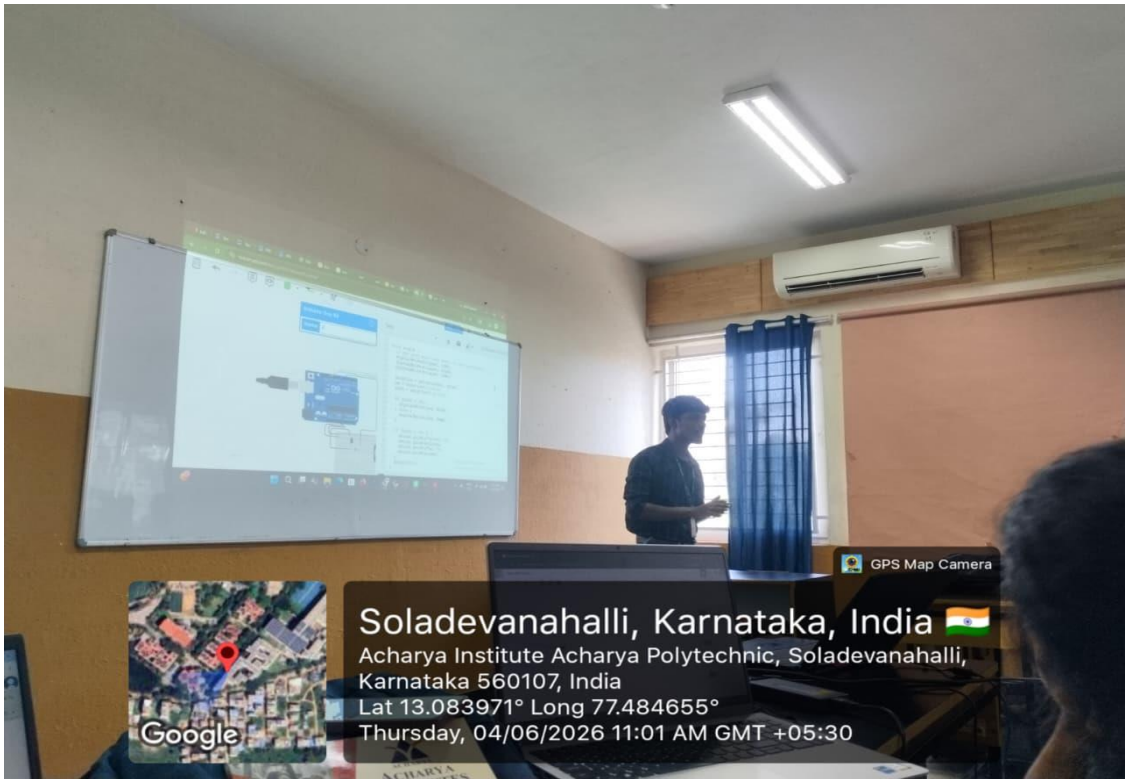
Photos:

Welcome Address by Dr. Balamurugan M, Associate Professor, Department of MCA

Session led by the Resource Person Mr. Nixon E

Hands-on experience

Cloud-connected dashboards using Blynk IoT



Q & A Session

Outcomes:

Over the course of the session, the participating postgraduate students demonstrated a high level of technical adaptability, shifting seamlessly from theoretical layered architectures to practical circuit deployment and real-time data monitoring. The measurable outcomes of this workshop serve as a testament to the students' hard work, showcasing their newly acquired abilities to analyze, design, code, and debug fully interconnected systems using industry-standard simulation platforms.

At the foundation level, the workshop achieved complete success in establishing architectural fluency among the students. Participants moved beyond simple definitions, gaining a deep, functional understanding of the complete four-layer IoT architecture, which includes the device, network, cloud, and application layers. This structural knowledge allowed the students to trace the path of data packets from physical sensor pins, through local micro processing blocks, across secure internet gateways, and onto remote web dashboards. By working through these architectural layers, the students can now confidently evaluate real-world computing environments, identify potential communication bottlenecks, and select appropriate hardware and network protocols for specific infrastructure layouts. This foundation ensures that the MCA graduates approach software development not just as isolated programmers, but as systems engineers who understand how code interacts with physical environments.

Furthermore, the workshop successfully built strong data telemetry skills through the development of the IoT Temperature Monitoring System. Students learned to write code that transformed raw voltage inputs into standard Celsius readings, uploading these live records to the cloud platform at regular intervals. This project taught participants how to manage data streams, prevent server overloads, and display live data using high-visibility gauge widgets. This experience provided students with a solid foundation in cloud-based data tracking, an essential skill for modern enterprise computing, industrial monitoring, and remote diagnostics. By looking at data through both local hardware and remote cloud perspectives, students gained a complete view of how to manage and visualise information across connected networks.

Conclusion

The three-hour intensive technical session, titled "Build and Control Smart Devices using IoT," concluded with outstanding academic and practical success metrics. Designed specifically for the Master of Computer Applications (MCA) cohort, the primary focus of this workshop was to move students past passive learning and into active engineering workflows. By providing an immersive, software-driven ecosystem, the event successfully bridged the gap between complex hardware configurations and intuitive cloud-based automation software. Finally, the workshop successfully prepared students for modern career paths by introducing them to emerging fields such as the Internet of Things (IoT), Industry 4.0 automation, and smart systems integration. The interactive question-and-answer session helped clarify practical issues regarding system security, data privacy, and the transition from virtual models to physical hardware deployment. By working directly with professional software tools like the Arduino IDE, Tinkercad, and Blynk IoT, the students built a strong portfolio of practical skills.

Feedback from the Workshop reflects exceptionally high levels of participant satisfaction across all 62 registered student respondents. Specifically, 74.6% of the attendees rated the overall workshop content as excellent in meeting their academic expectations, while an impressive 77.8% noted that the core IoT concepts were clearly and thoroughly explained. The pedagogical approach and instructional clarity of the corporate resource experts from TechKnots were a major highlight of the session, with 85.7% of the students rating the resource person's communication skills as excellent. Furthermore, 79.4% of the cohort strongly agreed that the event successfully introduced new, highly valuable, and career-relevant technical information to their curriculum. The experiential learning aspect was incredibly impactful, as 73% of the participants rated the hands-on practice as excellent and the remaining 27% rated it as good, showing complete approval of the practical sessions. This positive feedback highlights the value of using zero-cost web simulation tools like Tinkercad alongside cloud systems like Blynk to build immediate, practical engineering skills.

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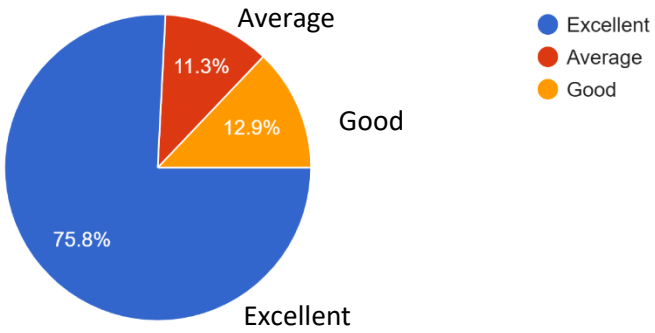
Feedback

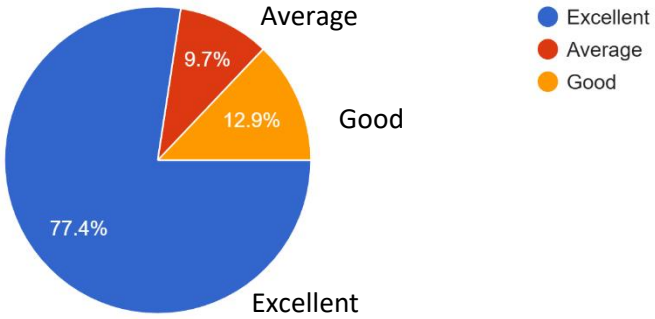
Did the workshop content meet your expectations?

62 responses



Is the concept is well & clearly explained?

62 responses

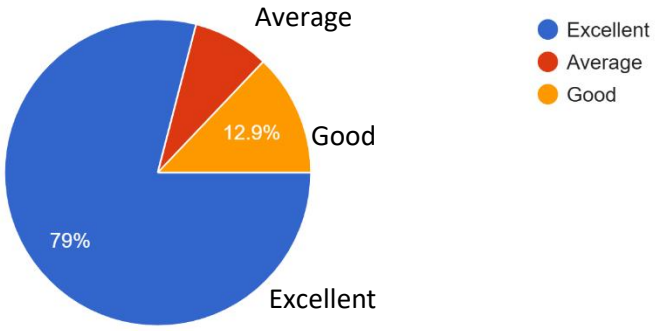


The Resource person was a good communicator

62 responses

The workshop Taught me New and useful information.

62 responses



How useful the hands-on experience

62 responses