

EXPERIENTIAL LEARNING

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City Choice – 1

PUNE

Day –

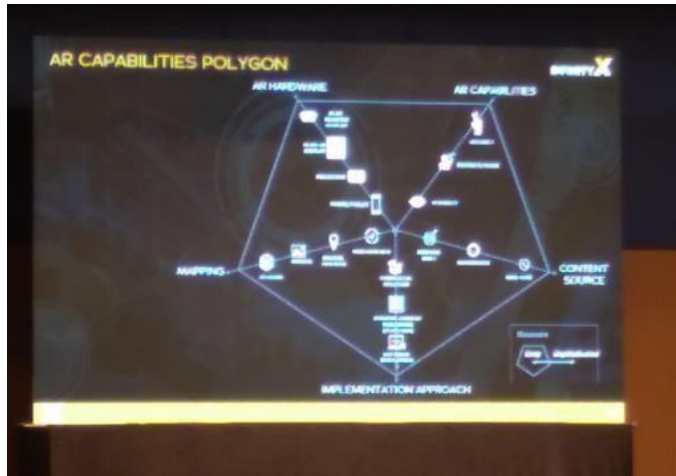
1 report

1.1.1 Industry Name – InfinityX at Acharya Atrang Mandir

1.1.2 Objectives - Conducted by InfinityX, this session taught us about Augmented Reality and its application in real world. We learned what change can we bring with Augmented reality with the help of live experiments of AR model.

1.1.3 Learning outcome – It can change the way we interact with mobile apps and other visual graphic experiences. Actually, Augmented Reality is capable of augmenting computer-generated graphics into the real environment on screen. it includes 25% digital reality and 75% existing reality. It means it doesn't replace the complete environment with the virtual; rather, it integrates virtual objects into the real world.

1.1.4 Photographs



1.1.5 Feedback of the day – 1: I have understood how effective and prominent AR usage in education can be. Rather, I would say it will be a game-changing technology. Extremely informative seminar that undoubtedly influenced my interest in augmented reality. The speaker was very articulate and knowledgeable while remaining interesting throughout which maintained our attention.

Day – 2 report

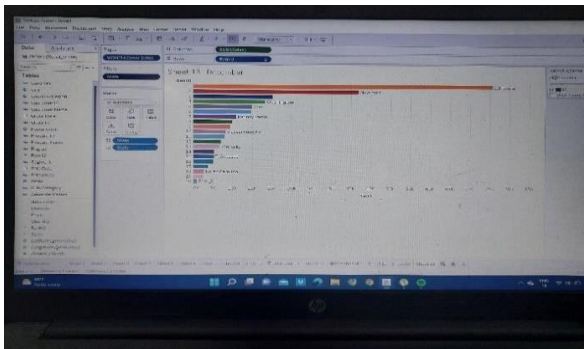
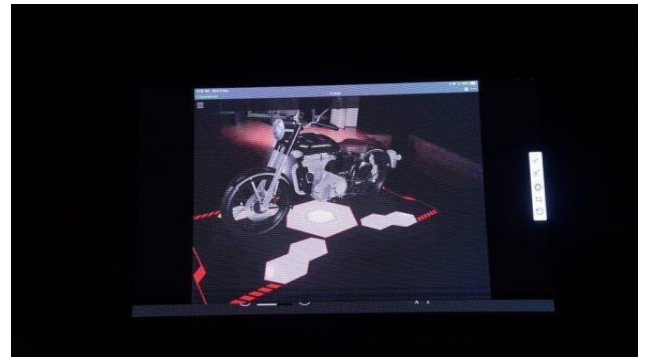
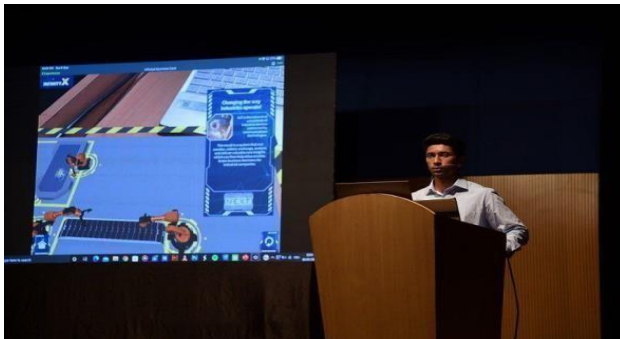
1.2.1 Industry Name – Ankushrao Landge Natyagruha

1.2.2 Objectives - Understanding H/W interfacing and designing an IoT application along with various communication protocols.

1.2.3 Learning outcome-

Get familiar about the PBI desktop which will help us Gain a competitive edge by building custom visualizations and using Power BI to deliver robust analysis of big data. Learn how to experiment, modify, prepare, and present your data quickly and easily. Create sales analysis reports and project management reports. Form relationships in your data model and learn best practices for data visualization. To conclude, IoT has the capability to create public value and the intended public value dimensions have widened from the goal of improved efficiency. There has been a shift in value creation with other goals and outcomes such as effectiveness, transparency and collaboration gaining increased presence.

1.2.4 Photographs



1.2.5 Feedback of the day – 2: The day included the basic information that was much deeper into how to think about sailboat racing.

Day –

3 report

1.3.1 Industry Name – CDAC

1.3.2 Objectives – Gain an insight about the supercomputers at Param Super Computing Facility.

1.3.3 Learning outcome – We learnt about the working of the super computers and their applications in Artificial Intelligence. Super computers consist of servers that are physically large in size and attached together for sharing information. They have high graphics and huge RAMs for computing at a great speed. There were various servers each for different operations.

1.3.4 Photographs – The students were not allowed phones in the server rooms as it might affect the computers electronically.

1.3.5 Feedback of the day – 3: Getting to know about super computing and its applications in real life and future was an eye opener. These computers are very expensive and maintaining them is very crucial.

Day –

4 report

1.4.1 Industry Name - Robotics at Ankushrao Landge Natyagruha

1.4.2 Objectives - PLC Programming for Industry Automation
Human Machine Interfacing programming

Robotics hardware design (mobile robots, haptic devices)

1.4.3 Learning outcome - Able to identify basic components of a PLC and describe their functions. Create, edit, download, and run PLC programs. Monitor variable values in real time in program execution. Interpret simple ladder logic programs.
The major advantage an HMI has over a PLC is functionality HMIs can be used for both simple and complex tasks.
Acquired in-depth experience with software and/or hardware programming tools which are much applied in industry.

1.4.4 Photographs



1.4.5 Feedback of the day – 4: The session opened a door of opportunities for us and introduced us to concepts we were not aware of. The session could've been a better experience if it was explained how a new company can establish in this market. The instructor should have also shared his experience of entering this domain.

Day –

5 report

1.5.1 Event/Industry Name – Hackathon at Ramkrishna More Natyagruha

1.5.2 Objectives - We had to find the solution to the problems that we faced during our city tour by applying the concepts we learned during the experiential learning and prepare a presentation to present our idea.

1.5.3 Learning outcome - We learned more about AR (Augmented Reality) technology that was introduced to us on Day 2 learning of the program and how to use it to our solution to the problem. Also, we presented our idea to the respected faculty.

1.5.4 Photographs



Day –

- 1.5.5 Feedback of the day – 5: I found this activity really helpful and learning which really improved my problem solving & presenting skills. It was the most enjoyable and interactive day & session of the whole program.

City Choice – 2

Bangalore

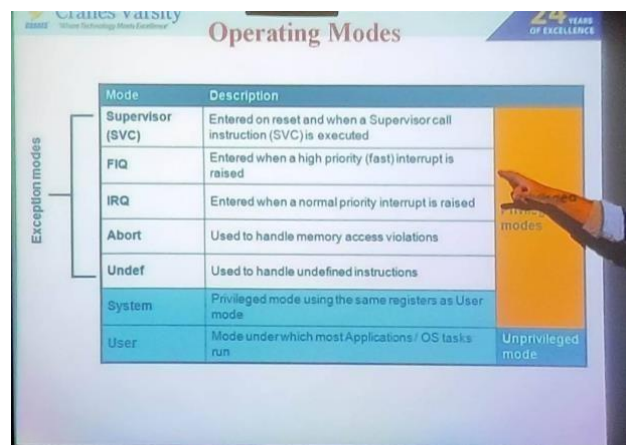
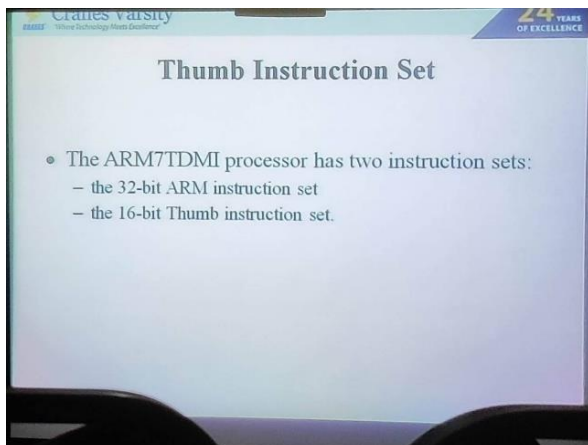
Day – 1 report

2.1.1 Industry Name – Cranes Varsity

2.1.2 Objectives - The main agenda was to learn about ARM (Advanced RISK Machine). ARM processors are a family of central processing units (CPUs) based on a reduced instruction set computer (RISC) architecture.

2.3.3 Learning outcome – The ARM ecosystem has developed server-optimized goods and services for applications in high-performance computing (HPC), telecommunications, edge computing, and cloud and hyperscale computing. Understanding the use cases and applications for ARM architectures really starts with an understanding of the history of ARM processors.

2.3.4 Photographs



2.3.5 Feedback of the day - 1: Day 1 was very exciting as we were taught about ARM and then they gave us questions related to ARM and the students who answered them correctly were give T-shirts as prizes

Day – 2 report

1.2.1 Industry Name – CDAC [Centre for Development of Advanced Computing]

1.2.2 Objectives- Session

1-

Part 1: Internet Engineering Task Force (IETF)

Part 2: domain name system DNS Part 3:

What is malware?

Part 4: DDOS OPEN THREAT SIGNALLING (DOTS)

Session 2 -

Business continuity and disaster recovery

Session 3-

Problem statement, Strategies for investigation and response

Session 4-

Internet protocol and standards

1.2.3 Learning outcome-

Session 1

Part 1: Internet Engineering Task Force (IETF)

1. What -Large open international community of network, designers, operators and researchers with the evolution of the internet .

2. Why- remove monopoly, openness, uniformity, usability, maintainability, availability. 3. Working groups in two. Business Continuity Vs Disaster management - Preparation for, response to and recovery from an outage.

Disaster recovery - Operation Management, internet, transport.

Part 2: Domain name system - DNS

Domain name -> ip address vise versa

Nixi manages any domain-name we register in .com

Http- protocol

Www. Sub domain

Abcd.com - domain name

/.html - path

———— how DNS work ————(RFC-1035)

If no rfc resolver found we move to the nearest rfc resolver DNS
eco system

DNS business model

Hierarchy

DNS application attack

DNS changer - begin DNS / malicious DNS

DNS tunnelling - tools / mitigation

Infected machine-firewall-DNS resolver- attackers C&C servers/attackers machine Private key public key

Attacker get access to the machine when we compromise (inviting file)

Public key decrypted by hackers private key

Attacker use his private ki to encrypt your machine and get hold of your machine only can decrypt by attacker private key (ransom comes in play can be the motive of hacking)

————What is malware?————

Exploit-how it reaches

Payload

Spreading of malware- the hhgwebsites\email\physical-media\software download (trojan\data download

Common malware

Spreading of malware

Part 4: DDOS OPEN THREAT SIGNALLING (DOTS)

Ddos open threat signaling (RFC8811)

- real time signalling

- Telemetry and threat handling requests and data between elements

- Attack detection, classification, traceback, and mitigation

Tech challenge (a proof of concept)

Blockchain notes -terminal notes, monitoring notes

Store the value to a blockchain

- list of software

- Network traffic - Registry values

- Activity time logging

- Power consumption

Poster challenge (native language)

Awareness

Session 2

Business continuity and disaster recovery

1. Critical infrastructure

- - Body of system , networks abd assets eeq to run essential services.

- - High availability is rhe availablity of a system to operate continuously without failure and intervention for a disaster

2. Business Continuity Vs Disaster management - Preparation for , response to and recovery from an outage. Disaster recovery

3. Business continuity vs disaster recovery

- business continuity
 - ~ preparation for
 - ~ response to
 - ~ recovery from an outage (dr)

Disaster recovery

Business continuity planning-BCP

Bcp includes -

Identifying the mission or critical business function

Collecting data on current business processes

Assessing priorities mitigation and managing risks- risk analysis/ business impact analysis

Design and developing contingency plan and dr plan

Training, testing and maintenance

4. Terminologies -

uptime

- Downtime
- Failover
- Failback

5. Backup

Backup is an additional copy to restore and recover

Need of backup

- hardware failure
- Human factor
- Application failure
- Security backup
- Disaster
- Regulatory and business requirement

Types

- hot backup
- Cold backup

6. Backup granularity

- full backup - backup of all data - faster to restore
- Cumulative- all changes since last full backup- - Incremental- changes since last backup-

7. Parameters for measurements rpo-

recovery point objective -

- The point in time to which the data could be recovered after a disaster - - should be as low as possible - depends on last backup/ replication interval - RPO refers to the data loss tolerance

Depends on application priorities individual rpo range from 24 to 12 to 8 to 4 to down to 0 measured in sec

Optimal RPO- depends on size of data and bandwidth to dr site

Near zero RPO

recovery time objective RTO

- amt of time it takes to bring up the service

RTO refers to the time that can be lost when an application is down without causing damage to business

Applications are to be categorised by priority and potential business loss in order to focus on critical applications

Applications require near zero RTO

8. Replication

- local replication

Data from the production devices is copied to replace devices within the same array The replication can then be used from restore operation in the event of data corruption or other events

- Remote replication

Data from

- Backup/ restore

- host based replication

Logical volume replication

File system snapshot

- Storage based replication

Storage to storage replication

9. Site location and replication

Remote site-Adv Diadv

Bunker style/ n-tier architecture- hybrid structure mix or

10. Operational architecture -

Host based replication -

local vol replication

- File system snapshot

Storage based replication

- storage to storage replication

11. Connectivity

Choice of connectivity between sites

- leased line

- MPLS

- VPN

Tips

- redundant links from different vendors

- Ensure clean bandwidth and encrypted communication

12. Testing and mock drills

Dr site and process needs to be routinely tested

Session 3

Problem statement

Strategies for investigation and response

1. Cyber attack

Any attempt to gain unauthorised access with the intent to cause damage

- computer
- Computer system
- Computer network

2. Incident response and investigation

- understand what went wrong
- What do you need to do to recover effectively
- Procedure to handle cyber attack

3. Incident response

- respond to cyber attacks efficiently with our on call team of experience incident responders and forensic experts
- Bring your operations back to service quickly
- Minimise damage from cyber attacks

4. Incident root cause analysis

Identify the flaws that lead to the cyber incident caused by

- people
- Processes
- Technology

5. Automated investigation and response to

save time and effort correlating

- content
- Devices
- Ppl at risk of threat

AIR processes begins

- certain alert are triggered
- When started by security operations team

6. Steps in Incident response

- prepare in adv by putting concrete ir plan
- Test

Assemble your expert team

Detect the source

- identify the cause of breech which lead to the attack

Contain and recover

Assess damage and severity

Notification process

Take actions to prevent

Session 4

Internet protocol and standards

1. Definition of internet standards Aa defined by IETF as internet standards in characteristic by a high degree of technical maturity and by a general

held belief

2. Internet engineering task force (IETF)

Organisational responsible for the development of internet standards

A community of ppl contributing

There are 7 areas

Membership is free

How to contribute

3. IETF Meeting

Ietf meeting happening three times a year

Discussion and debate will go

Develop integral categories

4. How to propose new id

Identify a problem

Work a solution

5. Imp ietf working area

- application of real time area

- General area

- Internet area

6. Application or real time area

Developed to support delay sensitivity impersonal communication

Protocol and architecture

7. Gen area

8. Internet area

A forum for discussion far ranging topics that support

9. Operations and management

10. Routing area

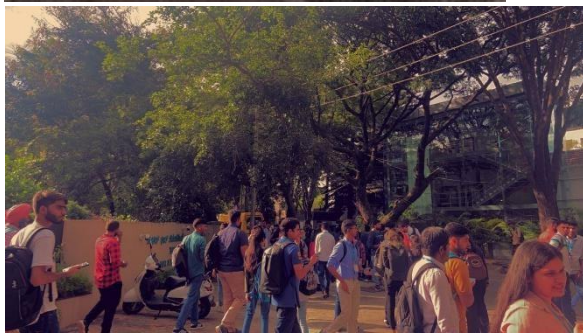
11. Security area

Focuses on security protocol

Intersects with all other IETF areas

Support end to end data transport

1.2.4 Photographs



1.2.5 Feedback of the day – 2

The experience of day 2 was wonderful. Besides all of the knowledge acquired, the words of, Sir, were warm, inspiring and welcoming. The ambience of the place was peaceful, and the arrangements and other services including the lunch provided, was great.

Day – 3 report

1.3.1 Industry Name – CraneVarsity, IoT

1.3.2 Objectives-

The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.

1.3.3 Learning outcome- basic

open cv structure Point

point 2f - 2d point

Size

Rect

Rotated rect

Mat- image object

- raspberry pi

Pixel ranges to 0-255

2d point object

Int x,y

Functions - point dot point inside

Math operators

2D size structure- int width, height

Rectangle- 2D rectangle structure, int x,y,width height

- converting colourspace

- Thresholding img img thresh mas val code

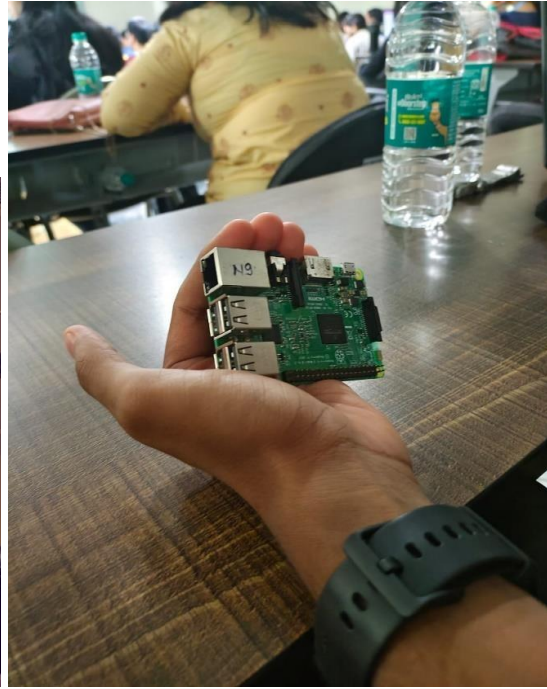
Edge detection

- sobel edge detection

- Scharr edge detection

- Laplacian edge detection

1.3.4 Photographs-



- 1.3.5 Feedback of the day – 3: The experience was wonderful. Besides all of the knowledge acquired, the words of Ma'am Arpita Mitra, Vice President, CraneVarsity, Sir Syed, and Sir Rakesh, were warm, inspiring and welcoming. The questions-and-answers session held at the end was also quite engaging and interesting.

Day – 4 report

1.4.1 Industry Name – CDAC Centre for Development of Advanced Computing

1.4.2 Objectives-

Multiple processors in shared memory parallel computers access the same memory resources. Modern laptops, desktops, and cellphones are examples of shared memory parallel architecture. Distributed memory parallel computers employ many processors, each with its own memory, that are linked over a network.

1.4.3 Learning outcome- Parallel computing

What's parallel computing

- doing things simultaneously
- Serial computing / problem broken down in stream
- Parallel computing / problem broken down into parts

Why parallel computing

- real world is parallel and complex and inter related events happen simultaneously
- Why use pc- save time produce result in reasonable time huge memory
- Processors are not getting faster

Major applications in scientific computing

Single core era -> multi core era -> heterogeneous era

Hardware parallelism

- execute instructions that

Flynn's taxonomy

- Sisd-

- Simd

- Misd

- Mimd

Single instructions single data

- Operates on single data

Single instructions multiple data

- many data multiple processor

Multi instruction single data

- multiple instructions one data stream

Multiple instructions multiple data

- multiple stream multiple data

Multi core evolution

- single threading- task processors at one time

- Multi tasking multi threading - two or more taak executed on one time
- HT Technology - two single thread executed simultaneously on a single processing core - Multi/many core technology

Pros and cons of multi core

Programming model

- mpi
- Open mp shared memory model
- Mpi + open mp hybrid model

What is a programming model

Shared memory model

- all processor to access all memory as a global address space - Positive
- Negative
- Example

Message passing model

- concurrently sequential processor

Hybrid model

- multiple modes multiple nodes

Mpi vs open mp

Why hybrid

- using mpi and open mp both

Parallel strategy

- deposit with mpi then open mp

Characteristics of open mp execution model

Thread / process

Fork join model

How do threats interact

1.4.4 Photographs –



1.4.5 Feedback of the day – 4

Day 4 was a fantastic experience. Aside from the knowledge gained, Sir's words were warm, inspirational, and welcome. The atmosphere was serene, and the preparations and other amenities, including the offered meal, were excellent

Day – 5 report

1.5.1 Event/Industry Name – CraneVarsity, MATLAB

1.5.2 Objectives-

It was a different MATLAB session this time, but it was more advanced. The purpose of this seminar was to obtain a better understanding of machine learning, as well as the development and possible applications of MATLAB software in Oracle.

1.5.3 Learning outcome-

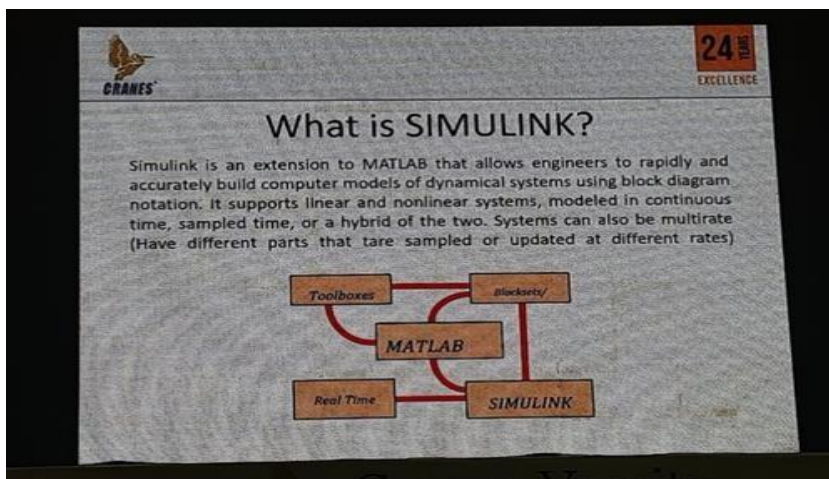
I learned about the development of the IoT sector throughout the MAT session, which addressed the following topics. Pre-Internet, Internet of Things, Internet of Content, Internet of Services, Internet of People

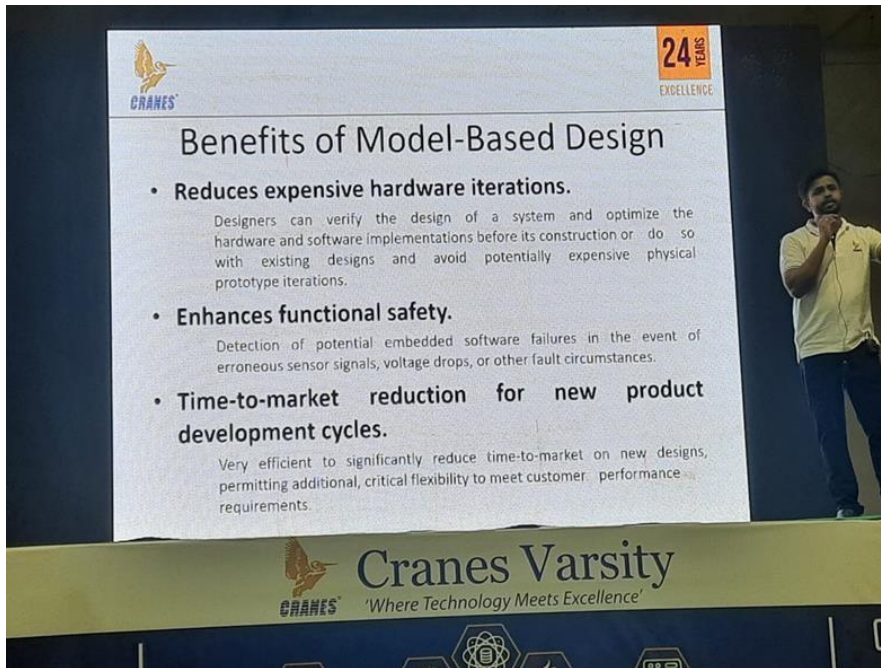
Why is MATLAB so important? As one of the most significant technological advances of the twenty-first century, matlab.

- The Internet of Things (IoT) makes low-cost, low-power sensor technologies available. Platforms and links for cloud computing
- Analytics based on machine learning
- Artificial intelligence (AI) has learned about the global Internet of Things (IoT) sector.

There are the following IoT applications: Waste collection with IoT, IoT in agriculture, and so on.

1.5.4 Photographs-





1.5.5 Feedback of the day – 5

Cranes Varsity - IOT (using Computer Vision) - It was a nice session that gave us a glimpse into the world of image processing. VK Sports Stadium - It was a valuable session and helped us in learning something new. It was a great experience in acquiring new information and facts about aerospace engineering. The session was very interactive and we got to learn about so many new things. Cranest University ran the entire programme with astounding efficiency on the final day of Bangalore's practical education. Throughout the lesson, appropriate instances were used. Furthermore, the food and water administration for these five days was faultless. They also arranged a closing ceremony at which we would take tests on the subjects we had studied over the previous four days. I was also able to participate in the quiz and answer some insightful questions. I liked the overall layout of Bangalore.

Conclusions

From the beginning to end, the experiential Learning was an unique experience and also faced many challenges. The learning was not limited to hands-on experience and training.

Three problems that I faced from program proceedings were:

- The traveling from Hotel to the venue, for both Pune and Bangalore, was around a 10 km trip.
- Vehicle traffic and pollution were way over what I thought, and it gave a exposure to such kind of stuff, and be better at time management.
- Due to different languages and cultures, we faced some issues while communicating with local people.
- Due to rain, traffic jams increased in both cities, travelling to the destinations was difficult.

In conclusion, experiential learning allows us to gain real-world experience while also exposing us to challenges that helps us grow. We were also able to think more critically, develop more ideas, and act. However, as experiential learning takes place, it is also vital for instructors to set some structure specifying and observing learning objectives.