class 6

review class

class 7

quize

Class 8 slide (7)

Input Device : Scanner (2D)

Scanner :

An input device, that digitizing an image.

It has a light source and a set of optical sensors.

Working process of scanner :

Here reflected light is sensed by the sensors & converted into digital signal.

Classification of Scanners:

based on Dimension scanners are 2 types:

1. 2D scanners
2. 3D scanners.

based on Scan Technology:

1. Flat bed scanners
2. Sheet-feb Scanners
3. Handheld Scanners
4. Drum Scanners.

To scan poster or banner drum scanners are used

Flatbed scanner:

Flatbed scanners are the most commonly used scanners. It also known as desktop scanner.

Def^n:

A flatbed scanner is an optical scanner which makes use of a flat surface for scanning documents.

Here document is stationary, that means it does not require movement of the document. The head is movable

sheet-fed scanner:

A scanner that allows paper to be scanned rather than books or other thick objects. It moves the paper across a stationary scan head.

So, here the document is movable and Head is stationary.

Handheld scanner:

A scanner that is moved by hand over the material being captured. (Barcode reader.)

So, It is movable scanner, can be hold by hand, can be used for quick scan, scan scan quality is not much better. It basically used for barcode reading

Drum scanner:

It is a large scanner used to capture the highest resolution from an image.

So, it is used in graphics production houses and used for scanning a large size of image.

Anatomy : Flatbed Scanner

Important

8. How Flatbed scanner works

At first see the Basic components of a flatbed scanner are :

1. charged coupled Device (CCD) Array:
   Basically it is a sensor.

2. Mirrors: where lights are reflected to scan.

3. Lamp : Used as the source of light.

4. Lens : Used to capture.

5. Filter : Used to process :

6. Scan Head assembly :

7. Mother board:

8. Control board:

9. Control Panel:

Now, Here CCD Array is the main component of a scanner. Basically it is the image sensor.

The CCD is a set of light sensitive diode known as photosites.

CCD converts photons into electrons.

Now How the Flatbed Scanner works:

Now, first the document is placed and cover is closed.
then a lamp is used to illuminate the document.

The scan head is moved slowly across the document. Then it digitally converted.

Now the internal procedure :

At first the image of the document is reflected by a mirror.

Then that reflected image, is reflected by two other mirrors.

The last mirror reflects the image onto a lens.

The lens focuses the image through a filter on the CCD Array.

The purpose of three mirroses in a scanner to reduce extra light intensity.

—o— end of anatomy of flatbed scanner —o—

Q. What is the purpose of three mirrors?

Ans: The purpose of three mirrors in a scanner to reduce extra light intensity.

class 9 (slides 8-9)

What is internet of Things?

Ans: The internet of things (IOT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UID) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction

Basically, the Internet of Things (IOT), refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data.

Now What is Things in IOT:

A thing in the IOT can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an IP address and is able to transfer data over a network.

যদি মানুষ এর মধ্যে একটা Impliment করা হয় তবে মানুষ ও একটা Things হয়ে যাবে যেমন heart beat sensor use করলে মানুষ Things আবার Normal TV remort কে Internet of Things বলা যাবে না, কারণ Internet of Things হবে

হলে অবশ্যই তার মধ্যে Internet connection থাকতে হবে, যেমনই ইন্ডকেও Headphone ও Internet of things না

Q. Why we use IOT ?

Ans : 1. It enables devices/objects to observe, identify and understand a situation or the surroundings without being dependent on human help.

অনেক দূর থেকে মাটির soil test

2. When devices/objects can represent themselves digitally, they can be controlled from anywhere. The connectivity then helps us capture more data from more places, ensuring more ways of increasing efficiency and improving safty and IOT security.

IP camera

3. IOT is a transformational force that can help companies improve performance through IOT analytics and IOT security to deliver better results.

অর্জন করাচ্ছে

More about IOT:

IOT is an evolution of mobile home and embedded applications that are being connected to the Internet integrating greater compute capabilities and using data analytics to extract meaningful information. Billions of devices will be connected to the Internet and soon hundreds of billions of devices as related devices connect with each other they can become an intelligent system of systems and when these intelligent devices and systems of systems share data over the cloud and analyze it they can transform our businesses our lives and our world in countless ways.

IOT improving medical outcomes creating better products faster with lower development costs making shopping more enjoyable or optimizing energy generation and consuption.

Advantages of using IOT:

1. Automation: which leads to uniformity in tasks, quality of services and control of day to day tasks without human intervention.

Machine-to-machine communication also helps maintain transparency throughout the process.

2. Efficiency: Machine-to-machine interaction provides for better efficiency, enabling people to focus on other jobs.

3. Cost Savings: In addition to the optimal utilization of energy and resources, the IOT helps alleviate the problems associated with bottlenecks, breakdowns and system damages.

4. Communication: IOT allows physical devices to stay connected and better communicate, which creates greater quality control.

5. Instant Data Access:

More available information helps simplify the decision making process, making life easier to manage.

6. Data: The more the information, the easier it is to make the right decision. Knowing what to get from the groceery while you are out, without having to check on your own, not only saves time but is convenient as well.

7. Tracking: The computers keep a track both on the quality and the viability of things at home. Knowing the expiration date of products before one consumes them improves safety and quality of life. Also, you will never run out of anything when you need it at the last moment.

Time: The amount of time saved in monitoring and the number of trips done otherwise would be tremendous.

Money: The financial aspect is the best advantages. This technology could replace humans who are in charge of monitoring and maintaining supplies.

Q. How IOT works?

Ans:

- There are Two major subsystems involved in the IOT network. 1. front end part and back end part. It includes optical sensors, light sensors, gesture and proximity sensors, touch and finger print sensors, pressure sensors and more.

2. Back end consists of cellular, wireless and wired networks which are interfaced with IOT devices. The device will report to the central servers and also interact with databases

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in the backbone network. Routers and gateways are part of the wireless backbone networks.

Name of some basic IOT projects:

- IoT Based Humidity and Temparature Monitoring Using Arduino Uno
- IoT Connected Healthcare Applications
- IoT Based Intelligent Traffic Management System
- IOT Based Smart Parking System Using RFID
- IOT Based smart Waste Management system for Smart city
- IOT Smart Home automation using Node MCU.