FemBit

Year 2021-22 A Technical Newsletter by Department Of Computer Engineering

Government Polytechnic for Girls , Ahmedabad Date:17/08/2022

About Institute & Department

Institute Vision

To carve a brighter prospect for the nation through excellence in technical education for fostering skills, ethical values and environmental consciousness among girls while undertaking existing and forthcoming challenges.

Institute Mission

To nurture technical and creative skills through quality education

To strengthen industries interaction

To impart real life problem solving skills.

Department Vision

To instill technical skills among students through excellence in education and develop them as computer professionals for forth coming challenges with moral values, environmental and societal consciousness.

Department Mission

To impart quality education for developing technical skills.

To create awareness on emerging trends and technologies.

To cultivate a sense of social responsibility with ethical and strong moral values.

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Computer Faculties

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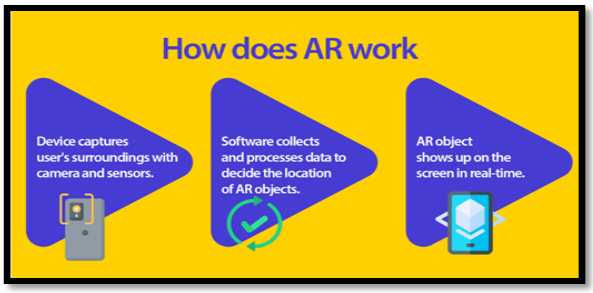
Technical Articles

Augmented Reality

Augmented reality, or AR, is a technology that allows digitally generated 3D objects to be overlaid in real-world scenarios using an AR device. The virtual object shows up on the screen in the real environment together with the device's camera input. This way, the users can interact both with the physical world and the virtual object enriching the experience with data. The technology is being used across industries, including marketing, healthcare, education, product development, manufacturing, etc.

How does augmented reality work?

AR projections can be displayed on various devices: various screens, glasses, handheld devices,



smart phones, and headsets. For the computer-generated perceptual information to show up correctly, it calculates the position and orientation of the surrounding objects in real life. Usually, it works like this:

Based on the type, AR can use depth sensors, accelerometers, cameras, gyroscopes, and light sensors to collect data on the user's surroundings. They measure the distance to the objects, speed of the motion, direction and angle, and overall orientation in space. The data is then processed to

show animation in a real-time and relevant location.

Examples of AR technology

Snapchat & Instagram filters - These include everything from illustrated flower crowns or retro picture filters o "beautifying" filters.

Pokémon Go - The game combines digital technology with physical involvement – the players catch cartoon characters virtually present in real-life surroundings.

Maintenance assistance- Apps like this are often used in the manufacturing, automotive or field service industry.

Interior decoration apps -When you want to remodel your home, you don´t need to go and buy new furniture. Instead, you can try it out in one of the many interior decoration apps that allow you to

virtually impose a picture over your surroundings so that you can try out if the new piece of furniture would fit.

Source : resco.net

Rathi Archi(semester 6)

Enrollment number: (196140307112)

Hey Alexa…..

Alexa is a voice-controlled virtual assistant. She can play audio, control your smart home, answer questions and engage your favorite services to keep you organized, informed, safe, connected and entertained. As a product of Amazon, she's also your personal shopper. Based in the cloud, Alexa is accessed through a growing number of smart speakers and other Alexa-enabled devices.

Technical Articles

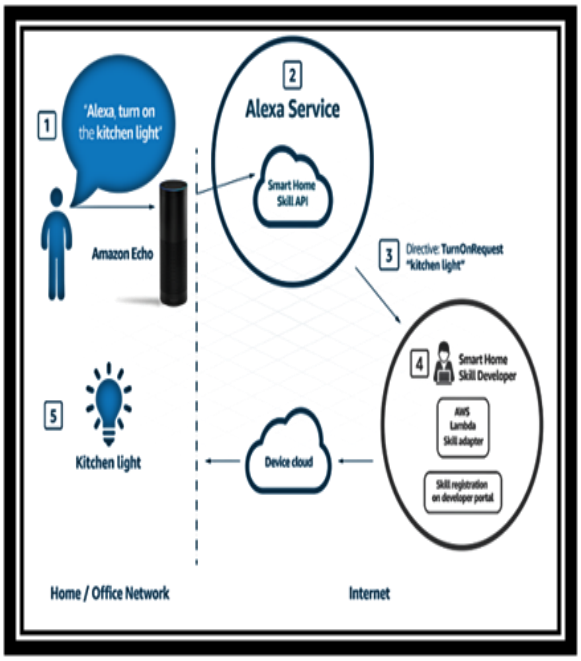
How does Alexa work?

Alexa is built based on natural language processing (NLP), a procedure of converting speech into words, sounds, and ideas.

Amazon records your words. Indeed, interpreting sounds takes up a lot of computational power, the recording of your speech is sent to Amazon's servers to be analyzed more efficiently.

Amazon breaks down your "orders" into individual sounds. It then consults a database containing various words' pronunciations to find which words most closely correspond to the combination of individual sounds.

It then identifies important words to make sense of the tasks and carry out corresponding functions. For



instance, if Alexa notices words like "sport" or "basketball", it would open the sports app.

Amazon's servers send the information back to your device and Alexa may speak. If Alexa needs to say anything back, it would go through the same process described above, but in reverse order

Analysis of an "order"

The above command has 3 main parts: Wake word, Invocation name, Utterance.

Wake word-When users say 'Alexa' which wakes up the device. The wake word put the Alexa into the listening mode and ready to take instructions from users.

Invocation name-Invocation name is the keyword used to trigger a specific "skill". Users can combine

the invocation name with an action, command or question. All the custom skills must have an invocation name to start it.

Utterance-'Taurus' is an utterance. Utterances are phrases the users will use when making a request to Alexa. Alexa identifies the user's intent from the given utterance and responds accordingly. So basically the utterance decides what user wants Alexa to perform.

Source: towardsdatascience.com, quora.com

Shah Naiti(Semester 6)

Enrollment number: (196140307128)

Introduction to Burp

Burp, is a tool dedicated to auditing web platforms. Its main functionalities are a web proxy and a web vulnerability scanner. This software is developed by PortSwigger. Burp Suite has a free version, which includes the proxy, the repeater and the intruder.

This tool is the indispensable software to audit a web application, as it meets the first need of an audit professional: to access the exchanges between the browser and the web server, in order to understand the architecture and how the solution to be audited works. We will now detail the

principles of three essential modules of this software.

HTTP Proxy

The HTTP proxy is an interception proxy, which enables to be placed between the user and the HTTP applications, in order to intercept all the requests issued by the user. It is THE main function for a web pentester, because it allows a total understanding of the working of the website. The proxy offers two possibilities:

either to intercept and block the requests, in order to modify very quickly all requests made by the web app (tab intercept);or to set the tool in passive mode, and in that case a history of the requests sent by the site will be available in the tab HTTP history or Websocket history (depending on the communication protocol).

Vulnerability Scanner

The vulnerability scanner enables to automate some tests. During an audit, a pentester does not have enough time to test all the parameters of the requests made by a website manually. The scanner helps the pentester in its task. In order to scan a request, it only requires to selecting in the proxy the request to analyse. Burp will then take the request and send it again with various malicious payload for every parameter it has. The server's behaviour in response to these loads is analysed by Burp, which will notify when a vulnerability seems to have been discovered.

Intruder

The intruder of Burp is a module which enables to scan the requests with personalized payloads. Contrary to the scanner, the intruder does not have lists of pre-defined payloads. It is up to the pentester to fill in a load list, which allows specifying the parameters to scan and the tests to execute. This module is used for brute force attacks, to enumerate objects or even bypass filters. It is indeed possible to set up a specific payloads list according to the target vulnerability.

Source : Wikipedia

Maurya Shruti J.(Semester 4)

Enrollment Number : (206140307051)

Title: The Three Layers of the Internet: Surface Web, Deep Web, and Dark Web

Introduction:

The internet is not just a single, monolithic entity. It consists of multiple layers, each with its own distinct characteristics and uses. The most well-known layer is the surface web, which includes all the websites that can be found through search engines like Google. But there are also two deeper layers: the deep web and the dark web. In this article, we'll take a closer look at each of these layers and what makes them unique.

Section 1: The Surface Web

The surface web, also known as the visible web, is the layer of the internet that most people are familiar with. It includes all the websites that can be easily accessed through search engines like Google or Bing. These websites are publicly accessible and can be accessed by anyone with an internet connection. Examples of surface web websites include news sites, social media platforms, and online shopping websites. The surface web is estimated to make up only about 4% of the total internet.

Technical Characteristics:

- The surface web is accessible through standard web browsers.
- Websites on the surface web are indexed by search engines.
- Websites on the surface web are publicly accessible.

Section 2: The Deep Web

The deep web is the layer of the internet that is not indexed by search engines and cannot be accessed through normal web browsers. It includes all the websites and data that are hidden behind password-protected pages, paywalls, or other access restrictions. Examples of deep web content include online banking sites, email accounts, and private social media profiles. It is estimated that the deep web makes up around 90% of the total internet.

Technical Characteristics:

- The deep web is not indexed by search engines.
- Websites on the deep web require specific software or configurations to access.
- Websites on the deep web may be password-protected or hidden behind paywalls.

Section 3: The Dark Web

The dark web is a subset of the deep web that is intentionally hidden and inaccessible through standard web browsers. It is often associated with illegal activities such as drug trafficking, hacking, and the sale of stolen goods. It can only be accessed through specialized software such as Tor (The Onion Routing Project), which allows users to browse the internet anonymously.

Technical Characteristics:

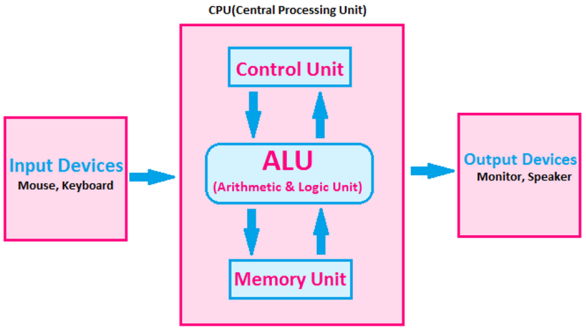
- The dark web is intentionally hidden and inaccessible through standard web browsers.
- Websites on the dark web can only be accessed through specialized software such as Tor.
- The dark web is often associated with illegal activities.

In conclusion, the surface web, deep web, and dark web are distinct components of the internet with their unique technical characteristics and access requirements. While the surface web is the most familiar to most users, the deep web and dark web are vast and contain a wealth of information that is not publicly accessible. It is important to note that while the dark web is often associated with illegal activities, not all activity on the dark web is illegal, and it can be used for legitimate purposes such as anonymous communication and whistleblowing.

Patel Khiloni (Semester 2)

Enrollment No: 216140307053

Processor



CPU Block Diagram & Architecture

A processor, also known as a central processing unit (CPU), is the primary component of a computer that performs most of the calculations and logic operations required for the computer to function.

The processor is essentially the "brain" of the computer, interpreting and executing instructions from software programs.

Block Diagram of a Basic Microcomputer

How does a Microprocessor Work?

The microprocessor follows a sequence to execute the instruction: Fetch, Decode, and then Execute. Initially, the instructions are stored in the storage memory of the computer in sequential order. The microprocessor fetches those instructions from the stored area (memory), then decodes it and executes those instructions till STOP instruction is met. Then, it sends the result in binary form to the output port. Between these processes, the register stores the temporary data and ALU (Arithmetic and Logic Unit) performs the computing functions.

There are several companies that manufacture processors:

1. Intel - One of the largest manufacturers of processors for desktop and laptop computers.
2. Advanced Micro Devices (AMD) - A competitor to Intel, AMD makes processors for desktop and laptop computers, as well as servers.
3. Qualcomm - A leading manufacturer of processors for mobile devices, including smartphones and tablets.
4. Samsung - A manufacturer of processors for mobile devices, as well as some of their own laptops.
5. Apple - A manufacturer of processors for their own line of devices, including the iPhone, iPad, and Mac computers.
6. IBM - A manufacturer of high-performance processors for servers and mainframes.

4004

8080

8085

80286

celeron

Pentium

Intel Processor table:

4004	1971 - Nov 15
8008	1972 - April good
8080	1974 - April
8085	1976 - March
8086	1978 - June 15
8088	1979 - June
80286	1982 - Feb
i80386	1985 - 1990
i80486	1985 - 1999
Intel Pentium	1993 - 1999
Intel Pentium MMX	1996 - 1999
Intel Atom	2008 - 2009 (as Centrino Atom)
Intel Celeron	1998-present
Pentium II	1997 - 1999
Pentium III	1999 - 2003
Pentium 4	2000 - 2008
Pentium M	2003 - 2008
Pentium D/EE	2005 - 2008
Pentium Dual-Core	2006 - 2009
Intel Pentium (2009)	2009-present
Intel Core	2006 - 2008
Intel Core i3	2010-present
Intel Core i7	2008-present
Intel Core i7	2011-present
Intel Core i9	2018-present
Intel Core i9	Q3 2017-present

Communication is essential in today's world, and the demand for high-quality voice communication is growing day by day. This is where VoLTE comes in – it offers an advanced and efficient way to make voice calls over a 4G LTE(Long Term Evolution) network. VoLTE is an emerging technology that has already made a significant impact on the telecommunications landscape and is poised to play an even more significant role in the future.

Voice over LTE, also known as VoLTE, is a technology that enables voice calls to be made over a 4G LTE network. While traditional voice calls are transmitted over 2G or 3G networks, VoLTE uses the same data network as internet data and provides a higher quality of voice calls.

Before the introduction of VoLTE, voice calls were transmitted over 2G and 3G networks, which provided a relatively low quality of sound and lacked the clarity and consistency of traditional landline calls. However, with the introduction of 4G LTE networks, VoLTE has revolutionized the way we make phone calls.

One of the primary advantages of VoLTE is the higher quality of voice calls. This is because voice calls are transmitted over the same data network that is used for internet data. This means that the quality of voice calls is significantly improved, with clearer sound and less background noise. In addition, VoLTE supports high-definition voice calls, which further enhances the overall call quality.

Another significant advantage of VoLTE is the faster call setup time. With traditional voice calls, it could take several seconds for the call to connect, which can be frustrating for users. However, with VoLTE, calls can be set up within a matter of seconds, providing a more seamless user experience.

VoLTE also supports simultaneous voice and data transmission, which means that users can make phone calls while browsing the internet or using other data-intensive applications. This is particularly useful for business users who need to make phone calls while accessing important data.

However, despite the many advantages of VoLTE, there are still some challenges to its widespread adoption. One of the primary challenges is the need for compatible devices and network infrastructure. While many newer smartphones support VoLTE, older devices may not be compatible.

In conclusion, Voice over LTE is a significant advancement in the way we make phone calls. With its higher quality voice calls, faster call setup times, and simultaneous voice and data transmission, VoLTE is likely to become the predominant technology for making voice calls, replacing existing standards in the near future.

:- Vihol Urvi B. (Semester 4)
Enrollment Number : (206140307073)

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Outstanding Students
GTU Exam Winter 2021 (Sem 1,3 ,5) & Summer 2022 (Sem 2,4,6)

1st SEMESTER

SPI OUT OF 10

216140307055	BHANUSHALI PRIYANSHI KHIMJIBHAI	9.43
216140307003	SUTARIYA TIYA GIRISHBHAI	8.62

2nd SEMESTER

SPI OUT OF 10

216140307055	BHANUSHALI PRIYANSHI KHIMJIBHAI	9.8
216140307078	SHAIKH BUSHRA ASIF	9.6

3rd SEMESTER

SPI OUT OF 10

206140307008	KIKANI HELY NILESHBHAI	10
206140307006	PATEL POOJA HARSHAD	10

4th SEMESTER

SPI 10 OUT OF 10

206140307008	KIKANI HELY NILESHBHAI	10
206140307006	PATEL POOJA HARSHAD	9.84

5th SEMESTER

SPI OUT OF 10

196140307015	CALCUTTAWALA RUSHDAH ASHISH	10
196140307024	DAMANI URVI PRADIPBHAI	10

6th SEMESTER

SPI OUT OF 10

196140307015	CALCUTTAWALA RUSHDAH ASHISH	9.77
196140307024	DAMANI URVI PRADIPBHAI	9.77

Events @ Department

Project Fair

Techno Sarita-2022 is a competitive exhibition of academic projects of final year students. The projects are developed by the students during last year on real life problems using various technologies. The projects are short listed by the faculties of the department. the review of experts from Industry and Engi-

Event Photos

Events @ Department

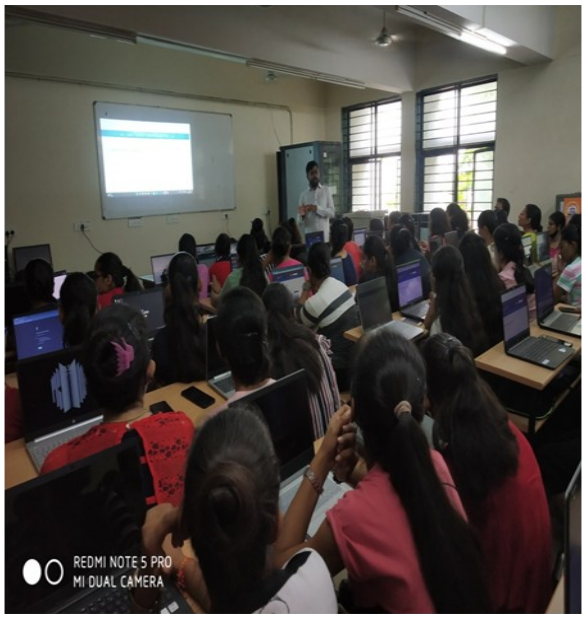
Sr. No	Title	Company
1	Expert Lecture on Emerging Trends and Technologies	INFOLABZ IT SERVICESPVT. LTD.
2	Seminar on PHP Laravel	Tops Technologies
3	Expert talk on Recent trends and technology	Ganpat University
4	Interview preparation and Study abroad Guidance Session from Study square	Study Square
5	Webinar on Block Chain	Way to Web
6	Webinar on Technology Awareness	Virtual Height
7	Webinar of Android App Development for beginners	INFOLABZ IT SERVICESPVT. LTD.
8	Workshop HandOns Python Workshop	Way to Web
9	Webinar on Digital Marketing	CreArt Solutions
10	Logout: Cyber Awareness Campaign	ComExpo Cyber Security Foundation, Mozilla Reps, Mozilla Foundation
11	Webinar on C++ Programming	Tops Technologies
12	Webinar on PHP MVC	Tops Technologies
13	Python Workshop	Aspirations

Event Photos

Seminar on Robotics & Automation

Seminar on PHP Laravel

Seminar on Awareness on Recent Technologies



Workshop on Advance Python

Students Achievements

Detroja Heli from Computer Department and her team from GTU has secured ninth rank at DD National Robocon 2022.

Students Participation

Azadi ka Amrit Mahatsav Hackathon-2022 Participation details:

Sr. No.	Team ID	Enrollment No.	Problem Statement
1	TM001528	206140307111	Sensor based water logging Alerts
		206140307115	
		206140307017	
		206140307122	
		206140307105	
		206140307062	
		206140307063	
		206140307043	
2	TM002659	206140307081	Conversational Chatbot for Institutes
		206140307029	
		206140307067	
3	TM001537	206140307007	Develop Auomatic Fare Collection System for City bus services
		206140307095	
		206140307104	

Students Participation

Hackathon-2022

FemBit

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Ahmedabad.

Contact for Queries and Suggestions

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Under

The Commissionerate Of Technical Education

Education Department

Government Of Gujarat

Affiliated with Gujarat Technological University

Ahmedabad

A Newsletter Of The Department Of Computer Engineering at The Government Polytechnic for Girls

Ahmedabad

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Newsletter Editorial Committee....