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NPTEL ONLINE CERTIFICATION COURSE

INTRODUCTION TO INTERACTION DESIGN

Lecture10

Interactive Interfaces

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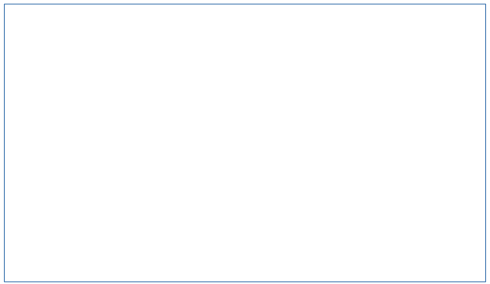
DEPARTMENT OF DESIGN

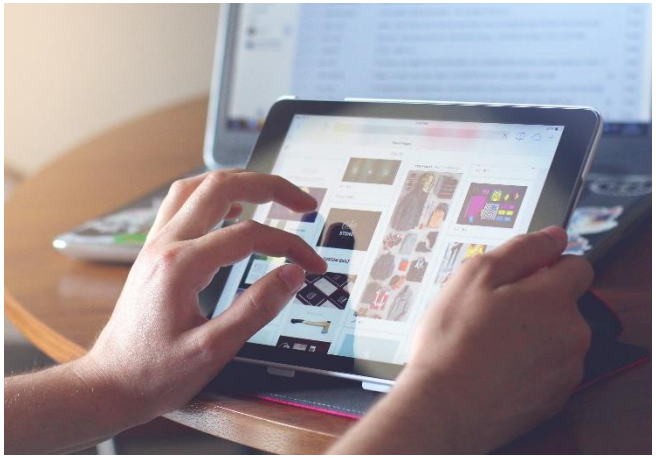
Interfaces



A **digital interface** is a user interface that allows users to interact with digital devices or software using visual or tactile input methods such as a keyboard, mouse, touch screen, or voice commands. The purpose of a digital interface is to facilitate communication and control between the user and the device or software.

Different types of user interfaces:

- graphical user interface (GUI)
- command line interface (CLI)
- menu-driven user interface
- touch user interface
- voice user interface (VUI)
- form-based user interface
- Virtual Reality Interface



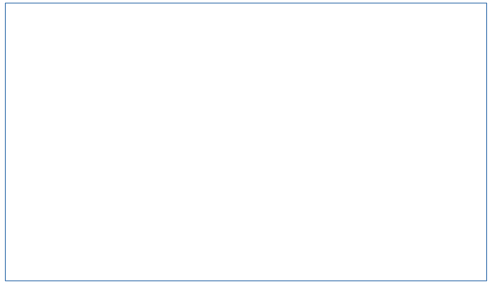
Graphical User Interfaces (GUI)

Source: https://americanhistory.si.edu/collections/search/object/nmah_1064205

Graphical User Interfaces (GUI)

Digital interface that uses graphical elements such as icons, windows, menus, and buttons to enable users to interact with digital devices or software.

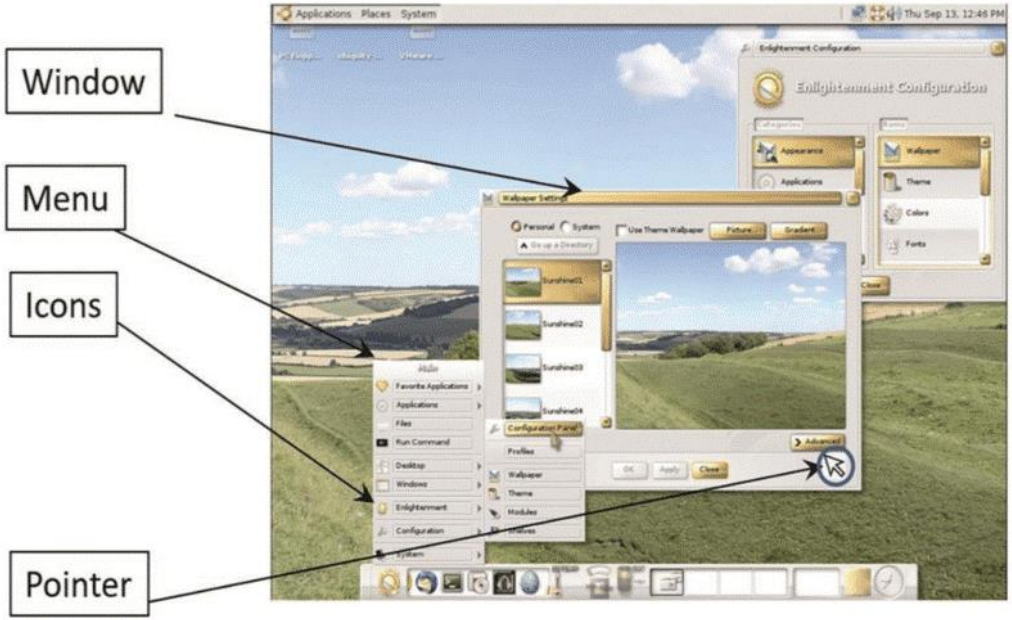
A GUI is designed to make it easy for users to navigate through complex systems and complete tasks without needing to know complex commands or programming languages.



The key components of a GUI include:

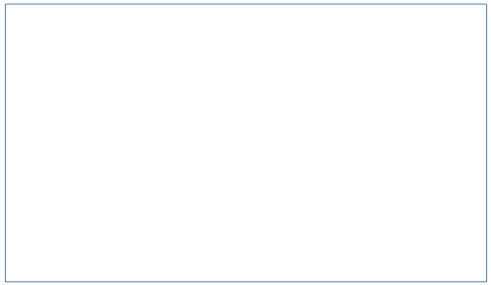
1. **Icons**: These are graphical representations of objects or actions that users can interact with by clicking on them.
2. **Windows**: These are graphical containers that hold user interface elements such as icons, menus, and buttons.
3. **Menus**: These are lists of options that are displayed when a user clicks on a specific menu item.
4. **Buttons**: These are graphical elements that users can click on to initiate an action or complete a task.

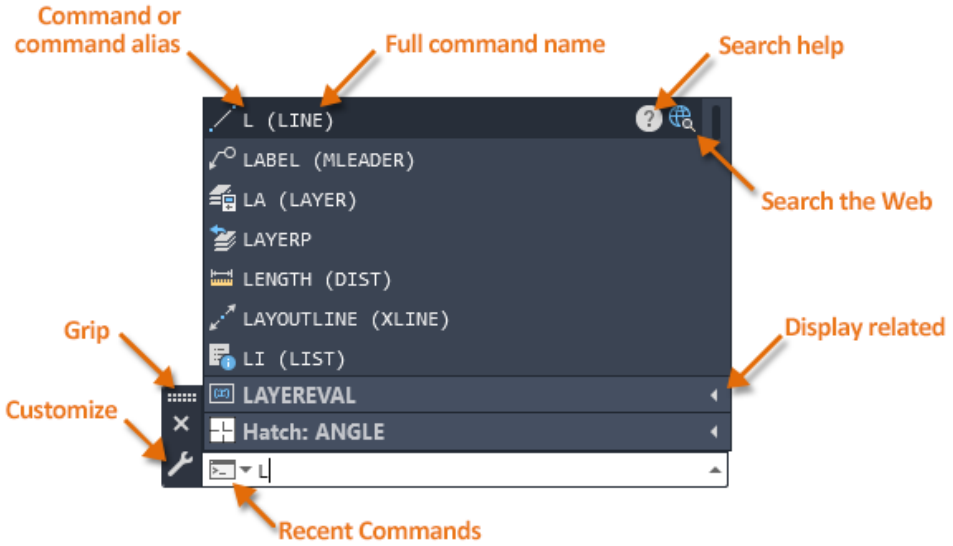
The original GUI was called a WIMP (windows, icons, menus, pointer) and consisted of the following:

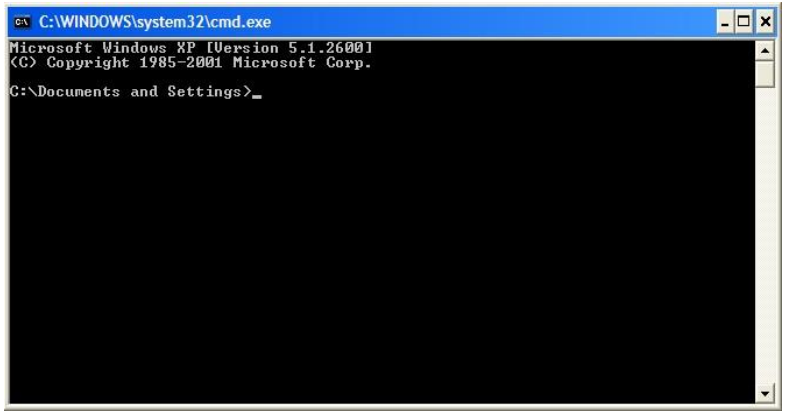


Command line interface (CLI)

Digital interface that allows users to interact with a computer program or operating system by typing commands into a text-based terminal or console. The CLI requires users to have knowledge of specific commands and syntax, and it is typically used by developers, system administrators, and advanced users who prefer the flexibility and power of a command-based interface.

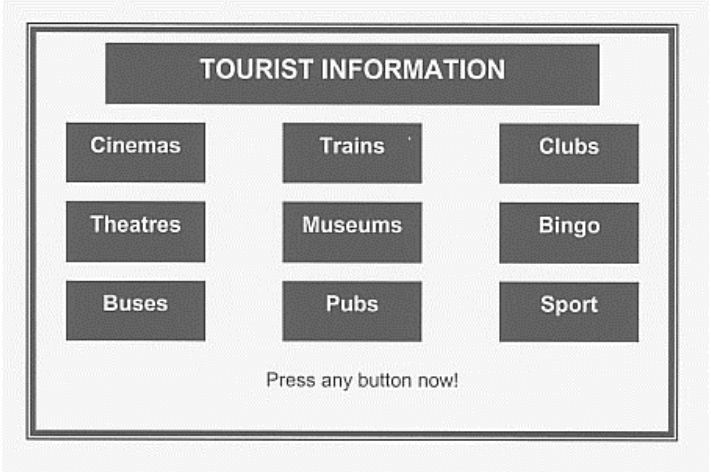


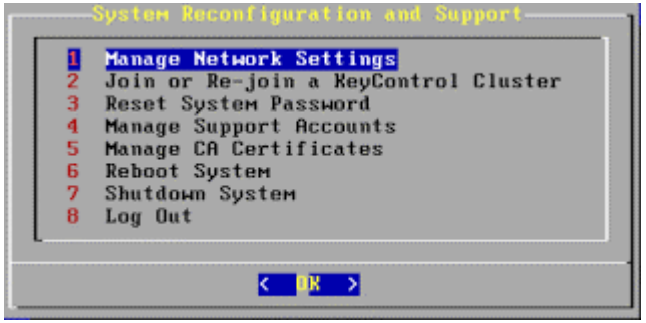

Command or command alias
Full command name
Search help
L (LINE)
LABEL (MLEADER)
LA (LAYER)
LAYERP
LENGTH (DIST)
LAYOUTLINE (XLINE)
LI (LIST)
LAYEREVAL
Hatch: ANGLE
L
Search the Web
Grip
Display related
Customize
Recent Commands


C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings>

Menu-driven user interface

Digital interface that presents users with a series of options in a hierarchical menu structure, allowing them to navigate through a system or application and perform specific actions. Menu-driven interfaces are commonly used in software applications, mobile devices, and other digital devices where users need to interact with a range of features and functions.


TOURIST INFORMATION
Cinemas
Trains
Clubs
Theatres
Museums
Bingo
Buses
Pubs
Sport
Press any button now!


System Reconfiguration and Support
1 Manage Network Settings
2 Join or Re-join a KeyControl Cluster
3 Reset System Password
4 Manage Support Accounts
5 Manage CA Certificates
6 Reboot System
7 Shutdown System
8 Log Out
< OK >

Touch user interface

Digital interface that allows users to interact with a device by touching its screen directly. Touchscreen interfaces have become increasingly popular in recent years, particularly for mobile devices such as smartphones and tablets, as well as interactive kiosks, digital signage, and other types of devices

Some advantages of touchscreen interfaces include:

1. **Intuitive:** Touchscreen interfaces are often intuitive and easy to use, particularly for users who are already familiar with smartphones or other touch-enabled devices.
2. **Efficiency:** Touchscreen interfaces can be fast and efficient, allowing users to perform tasks quickly and easily without the need for additional hardware or input devices.
3. **Versatile:** Touchscreens can be used in a wide range of applications, from mobile devices to interactive kiosks to industrial control systems.

Some potential disadvantages of touchscreen interfaces include:

1. **Limited feedback:** Touchscreens provide limited physical feedback to users, which can make it difficult to determine whether a touch or gesture has been registered successfully.
2. **Visibility:** Touchscreens can be difficult to use in bright sunlight or other conditions where the screen may be difficult to see.
3. **Hygiene:** Touchscreens can be a source of germs and bacteria, particularly in shared or public environments.

Voice user interface (VUI)

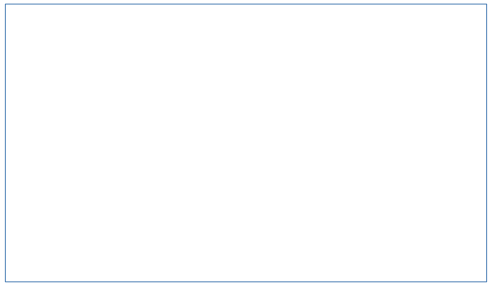
A voice user interface (VUI) is a type of digital interface that allows users to interact with a device or software application using spoken commands or natural language. VUIs are commonly used in virtual assistants, smart speakers, and other voice-enabled devices, as well as in applications such as automated customer service systems and speech recognition software.

Some advantages of VUIs include:

1. **Hands-free operation:** VUIs allow users to interact with a device or application without needing to use their hands, which can be particularly useful in situations where hands-free operation is important or necessary.
2. **Accessibility:** VUIs can be more accessible than other types of interfaces, particularly for users who may have difficulty using a keyboard or touchscreen.
3. **Natural language processing:** VUIs can use natural language processing (NLP) to interpret user commands and questions, allowing for more natural and conversational interactions.

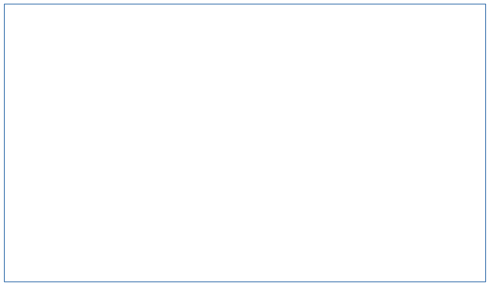
Some potential disadvantages of VUIs include:

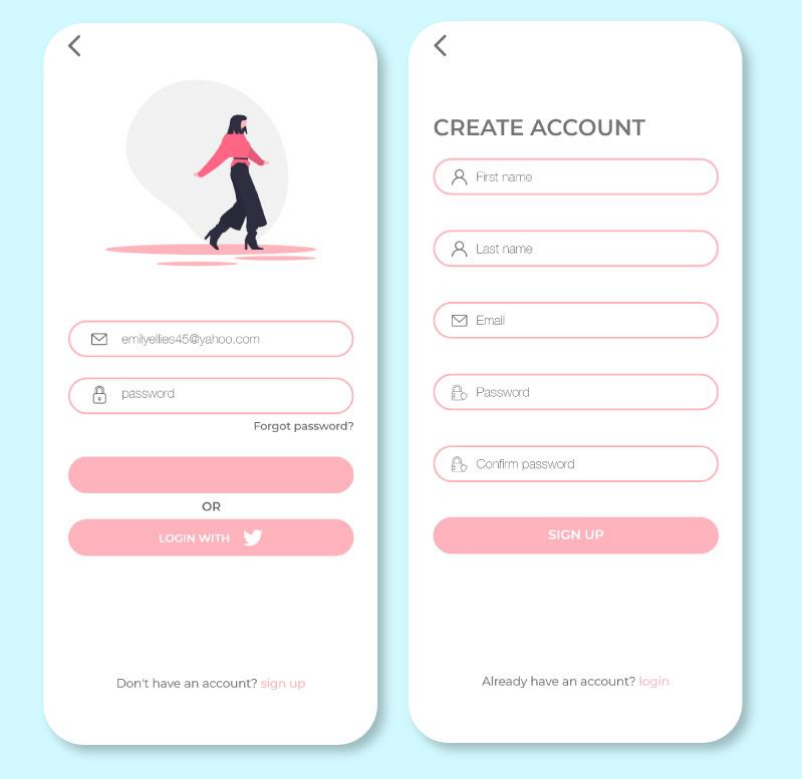
1. **Limited functionality**: VUIs may be less versatile than other types of interfaces, particularly for complex tasks or interactions that require visual feedback or detailed input.
2. **Privacy concerns**: VUIs may raise privacy concerns, particularly if the device or application is recording user conversations or personal information.
3. **Accuracy**: VUIs may be less accurate than other types of interfaces, particularly in noisy environments or for users with accents or speech impediments.

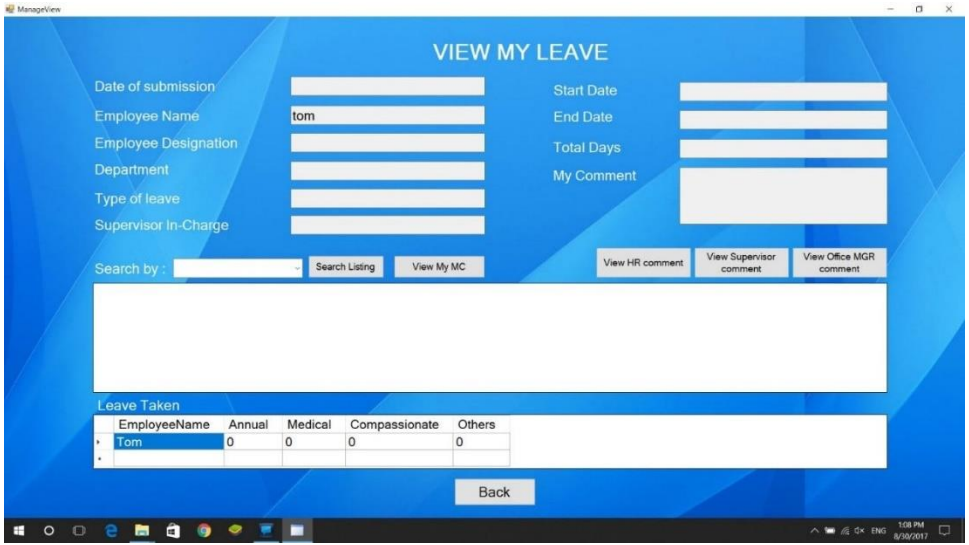


Form-based user interface

A form-based user interface (UI) is a type of digital interface that presents users with a structured form or set of fields to input data or information. Form-based interfaces are commonly used in web applications, mobile apps, and other software systems that require users to input data or information.




emilyellies45@yahoo.com
password
Forgot password?
OR
LOGIN WITH
Don't have an account? sign up
CREATE ACCOUNT
First name
Last name
Email
Password
Confirm password
SIGN UP
Already have an account? login


ManageView
VIEW MY LEAVE
Date of submission
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View Supervisor comment
View Office MGR comment
Leave Taken
EmployeeName
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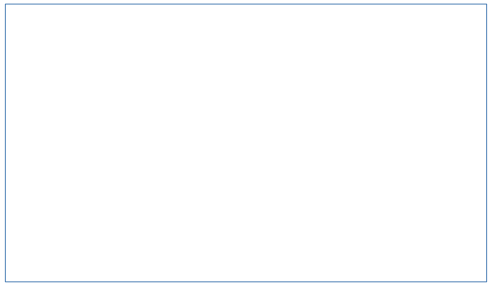
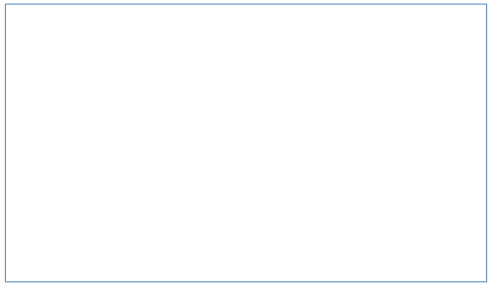
Some advantages of form-based UIs include:

1. **Consistency**: Form-based UIs are often consistent and predictable, making it easy for users to understand how to input information and navigate the interface.
2. **Accuracy**: Form-based UIs can help to ensure data accuracy by prompting users to input information in a structured and consistent way.
3. **Customizability**: Form-based UIs can be customized to collect specific types of information or to meet the needs of different user groups.



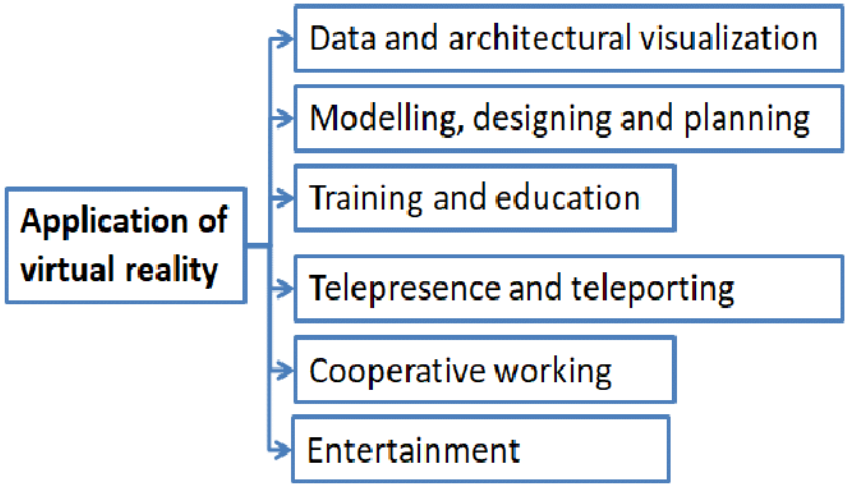
Some potential disadvantages of form-based UIs include:

1. **User experience**: Form-based UIs can be less engaging and less visually appealing than other types of interfaces, particularly if they are poorly designed or not user-friendly.
2. **Limited flexibility**: Form-based UIs may be less flexible than other types of interfaces, particularly for complex tasks or interactions that require more open-ended input.
3. **Cognitive load**: Form-based UIs can increase cognitive load for users, particularly if there are a large number of fields or if the form requires users to input complex information.



Virtual Reality Interface

Digital interface that allows users to interact with a computer-generated environment or simulation through a headset or other VR equipment. VR interfaces are commonly used in video games, training simulations, and other applications where users need to interact with a virtual environment in a more immersive way.



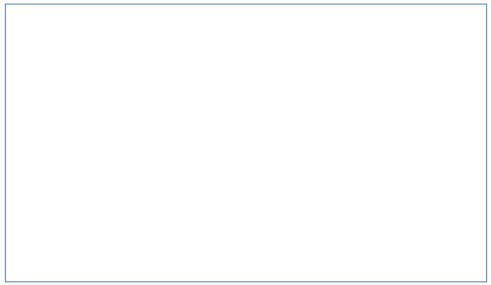
Source: https://www.researchgate.net/figure/Virtual-reality-applications_fig1_364962109

Some advantages of VR interfaces include:

1. **Immersion**: VR interfaces provide a high level of immersion and can make users feel like they are truly present in a virtual environment.
2. **Interactivity**: VR interfaces allow for a high level of interactivity and can support a wide range of interactions, from simple gestures to complex movements and interactions.
3. **Engagement**: VR interfaces can be highly engaging and can help to create a sense of presence and excitement that is difficult to achieve with other types of interfaces.

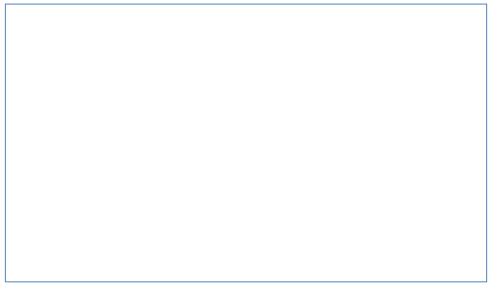
Some potential disadvantages of VR interfaces include:

1. **Cost**: VR equipment can be expensive, particularly for high-end systems that require powerful computers and specialized equipment.
2. **Complexity**: VR interfaces can be complex to set up and use, particularly for users who are not familiar with VR technology.
3. **Safety concerns**: VR interfaces can create safety concerns, particularly if users are not aware of their physical surroundings or if the VR environment includes potential hazards.



Other types interfaces:

- Multimedia
- Appliance
- Voice
- Pen
- Gesture
- Haptic
- Multimodal
- Shareable
- Tangible
- Augmented reality
- Wearables
- Robots and drones
- Brain-computer interaction



Thank You