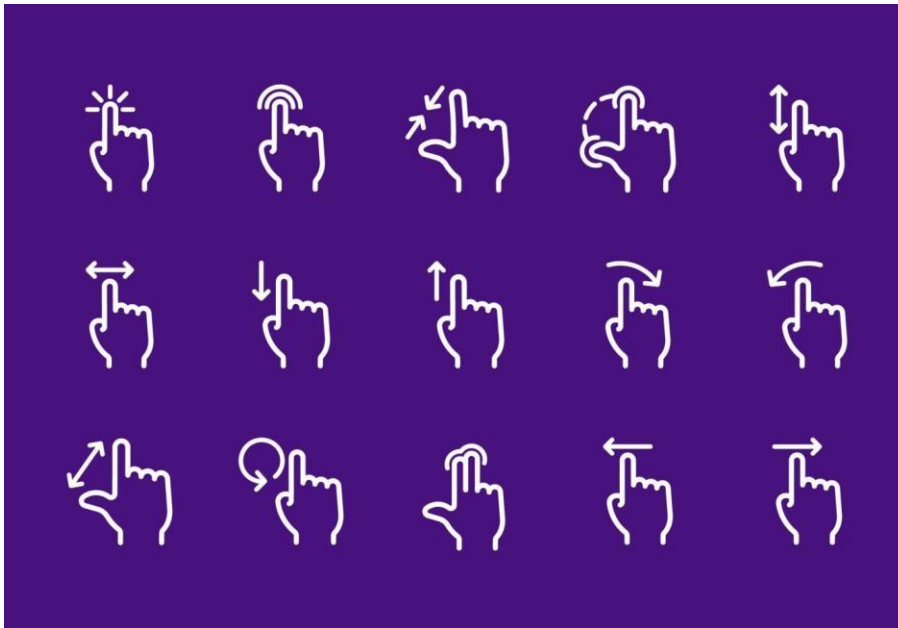**2.3 Gesture Based UI**

 the gestures that have come to dominate our digital experiences. Touch screen iPhones mainstreamed mobile gestures years ago, and we haven't looked back since.

Gestures affect how we interact with interfaces, including phones, laptops and iPads. But we don't have to look far to find a gestural interface beyond our work and entertainment devices. It's no longer uncommon to use gestures when interacting with car screens or bathroom sinks. Natural User Interfaces (NUIs) are so natural to users that the interface feels, and sometimes is, invisible, like a touch screen interface. Some NUIs even use gesture control, allowing users to interact with the interface without direct physical contact. BMW recently released a gesture control feature that gives users touch less control over car volume, calls and more.

Gestures are growing more common in user interface design and play increasingly complex roles in our everyday lives.

As technology advances, UX and UI designers and businesses will need to adapt. You don't have to know all the technological intricacies or have an in-depth knowledge of computer intelligence. Still, you should have a basic understanding of the capabilities, functions and best design practices for gesture technology.

What Makes a Good Gesture?

Gestures are a way of communicating. We've long used hand gestures and head nods to help

convey meaning, and now, gestures play a role in communicating with user interfaces.

Good gestures provide effective, efficient communication that aligns with our way of thinking. Our thoughts and knowledge influence how we speak, and they influence our use of gestures, especially in UI design. Consider how much easier it is for younger generations who grow up around modern technology to pick up on gestures – or how the act of swiping mimics pushing or wiping something away. It's why understanding your users is essential, even in gesture design.

Gestures cross the barrier between the physical and digital realms, allowing us to interact with digital media with our bodies. In some ways, it makes using digital applications more fun, but this isn't

enough to make a gesture a good one.
A good motion gesture improves usability by making applications easier to use in all contexts. Well-designed gestures have a shorter learning curve because they feel natural and are easy to pick up on. Toquote Bill Gates:

<Until now, we have always had to adapt to the limits of technology and conform the way we work with computers to a set of arbitrary conventions and procedures. With NUI, computing devices will adapt to our needs and preferences for the first time and humans will begin to use technology in whatever way is most comfortable and natural forus.=

Benefits of Gesture Technology:
The wide use of gestural interfaces is due to the many benefitsthat come with them. Three of the most significant benefits of gestures are cleaner interfaces, ease of use and improved task completion.

1. Cleaner Interfaces
Humans consume more content than ever before, businesses use more data and technology continues to provide more services. With this increase in content, it's easy for interfaces and displays to appear cluttered. Designers can use gestures to reduce the number of visual elements, like buttons, that take up space.

2. Ease of Use

As discussed above, interactions become more natural with a gesture- based interface. The ease of simple hand gestures allows us to use technology with minimal effort at maximum speed.

3. Improved Task Completion

Task completion rates and conversion rates increase when there's less a user has to do to complete a task. You're more likely to finish a task when it takes less effort. A gesture-based user interface capitalizes on this by making tasks simple and quick. They can even reduce the number of steps it takes to complete a task.

Types of Gestures in UI Design
Design for touch has led to the development of many types of gestures, the most common of which are tapping and swiping. There are three categories of gesture:

1. Navigational gestures (to navigate)
2. Action gestures (to take action)
3. Transform gestures (to manipulate content)

The following are some of the most common gestures across interfaces that all (or almost all) of users are familiar with – even if not consciously. We mention screens, but you can substitute the screen for a touchpad or any other gesture interface.

Tap

A tap gesture is when you tap on the screen with one finger to open or select something, like an app or page. Here's a tip: Design clickable interface elements so that the entire box or row is clickable – not just the text. Giving users more space increases usability.

Double-Tap
Double-tapping is when you tap the screen twice in a row in close succession. Many applications use this gesture to zoom in, but on Instagram, users can double-tap a photo to like it.

Swipe

Swiping involves moving your finger across the screen in one direction, touching down on one side and lifting your finger on the other. Swipe gestures are often used for scrolling or switching between pages. Tinder uses swiping right to match with a profile and swiping left to pass over one.

Multiple-Finger Swipe

You can also conduct a swipe gesture with two or three fingers. This is a common feature on laptop touchpads that use two- and three- finger swipes for different actions.

Drag

Dragging uses the same general motion as a swipe, only you move your finger slower and don't lift it until you've pulled the object to where you want it to be. You use dragging to move an item to a new location, like when re-organizing your phone apps.

Fling

Like swiping, a fling gesture is when you move your finger across thescreen at a high speed. Unlike a drag, your finger doesn't remain in contact with an element. Flings are often used to remove something from view.

Long Press

A long press is when you tap the screen but hold your finger down for longer than usual. Long presses open up menu options, like when you hold text to copy it or hold down an app to delete it.

Pinch

One of many two-finger gestures, a pinch is when you hold twofingers apart on the screen and then drag them towards each other in a pinching motion. Pinch gestures are often used to zoom back out after zooming in. Sometimes they present a view of all your open screens for navigation purposes.

Pinch-Open or Spread

A pinch-open or spread gesture is the opposite of a pinch. You hold your two fingers down close together and then spread them apart. Spreading, like double-tapping, is generally used to zoom in.

Rotation

To do a rotation, press on the screen with two fingers and rotate them in a circular motion. The best example of rotation is when you turn themap on Google Maps to see what's around you.