



IIT ROORKEE



NPTEL ONLINE
CERTIFICATION COURSE

INTRODUCTION TO INTERACTION DESIGN

Lecture 19

Affordances and UI Transformations

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DEPARTMENT OF DESIGN



Affordances

- An affordance is what a user can do with an object based on the user's capabilities.
- An affordance is defined in the **relation** between the user and the object: A door affords opening if you can reach the handle. For a toddler, the door does **not** afford opening if she cannot reach the handle.
- In essence, it is an **action possibility in the relation between user and an object.**

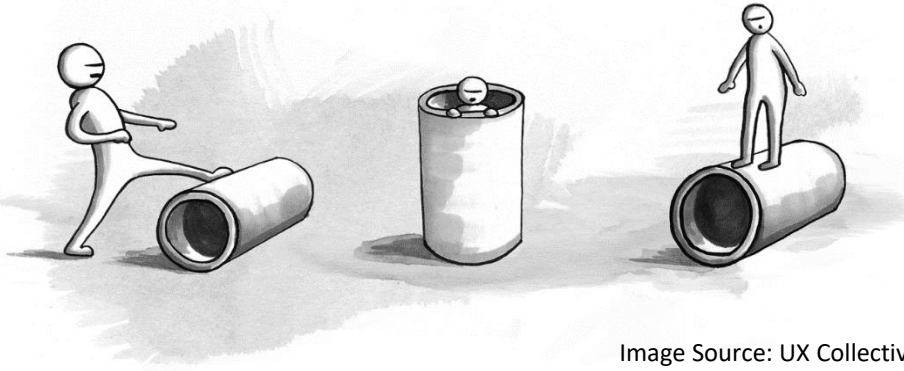
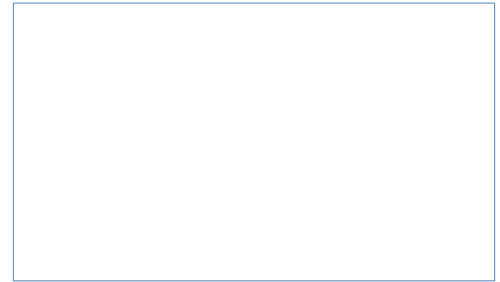


Image Source: UX Collective

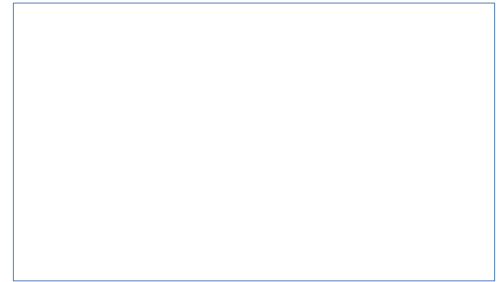


Types of Affordances

1. Explicit affordances
2. Hidden affordances
3. Pattern affordances
4. Metaphorical affordances
5. False affordances
6. Negative affordances



Source: Freepik

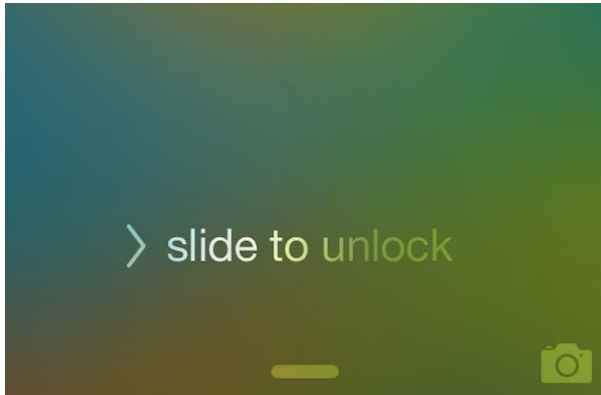


1. Explicit Affordances

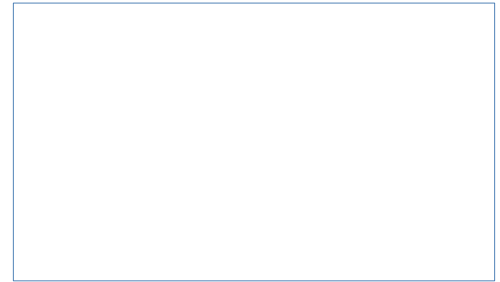
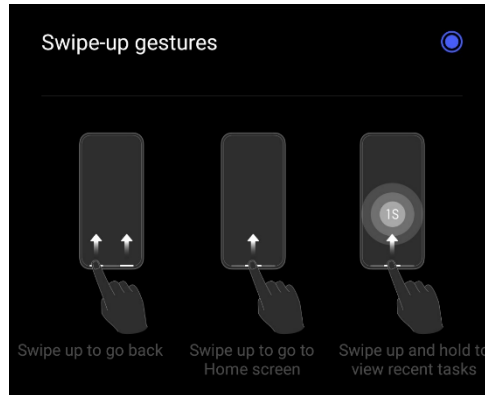
Explicit affordances are obvious, perceptual features of an item that clue you in on how it is to be used.

2. Hidden Affordances

Hidden affordances are implicit features of an object. A common example of hidden affordance is a drop down menu or other clickable feature that only appears when the user is hovering over it.



Source: Google images



3. Pattern Affordances

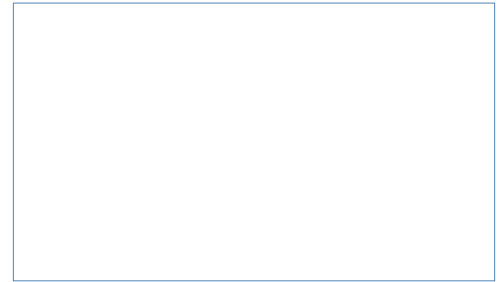
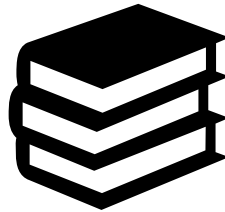
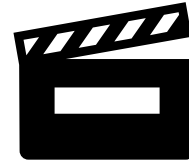
Pattern affordances are based on previously established conventions that indicate function.

4. Metaphorical Affordances

Metaphorical affordances rely on the imagery of real or original objects to convey purpose.



Source: Google images



5. False Affordances

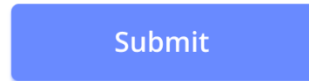
False affordances occur when a feature of an item suggests a use that the item can't actually perform.

6. Negative Affordances

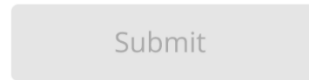
Negative affordances are used when conveying a lack of function or interactivity.



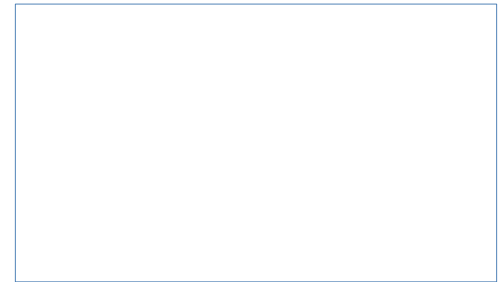
Source: Google images



enabled



disabled



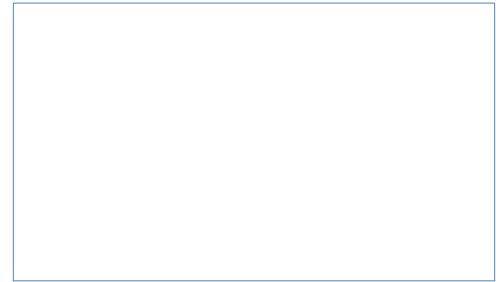
Affordances in UX Design

Buttons

- Buttons are one of the core elements used to suggest interactivity in an interface.
- It can be easy to accidentally create a hidden affordance by creating a button that doesn't look clickable.

Animations

- Animated affordances often imitate actions or movements in the real world (swiping, pushing, pulling, dragging, etc.) and range from simple to quite complex.
- Toggle buttons are simple animated affordances that show a user when something is turned on by the presence or change in colour when the toggle is dragged.

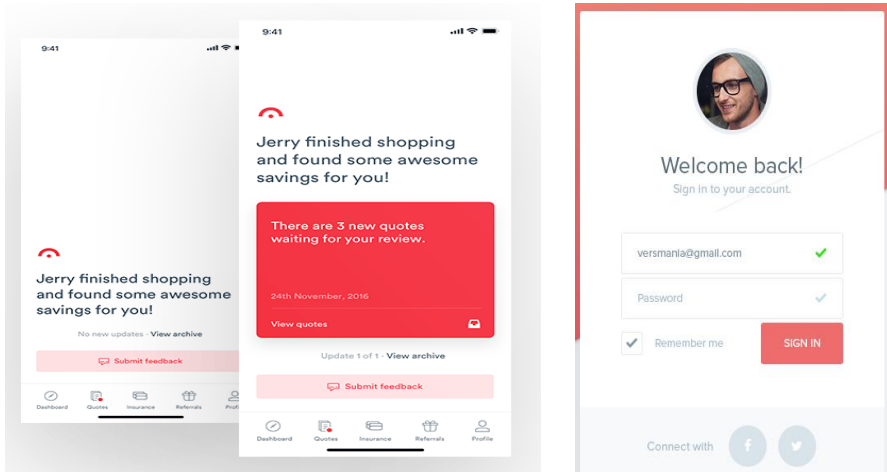


Notifications

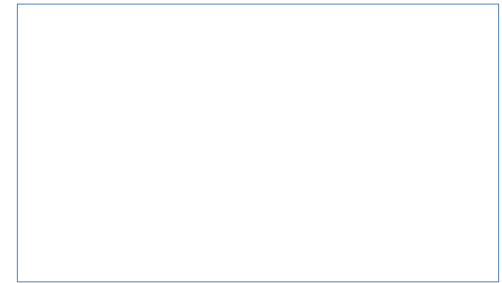
- Notifications are used to draw the user's attention to something or to indicate a change.

Input Fields

- Input fields indicate that a user can enter data. These are often conveyed by the shape of the field and the contrast between the field and its background.



Source: Google images

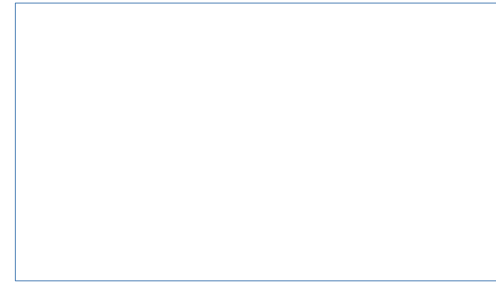
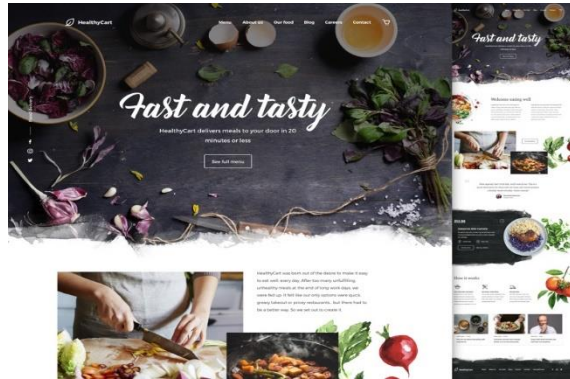
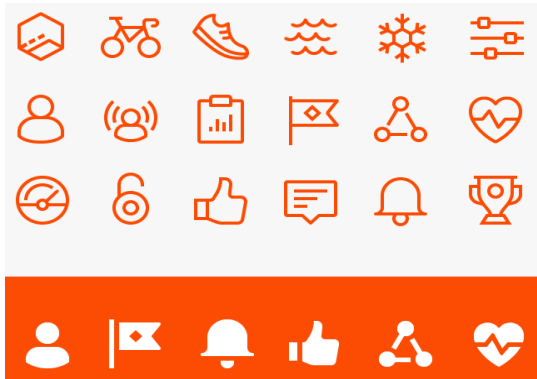


Icons

- Icons often rely on a pattern or metaphorical affordance to help a user navigate through an interface.

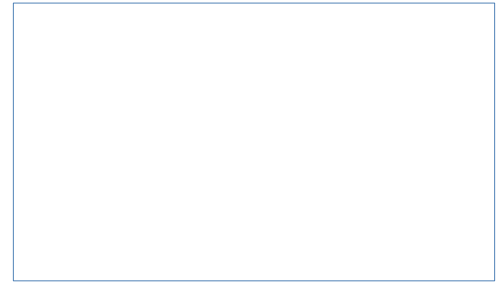
Photos

- They are quick visual cues that help users understand what they can do with a product.



Source: Google images

Animation in User Interface



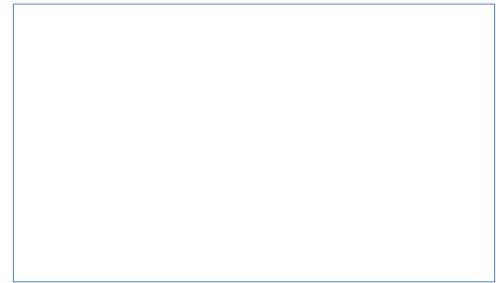


Communicate ideas - Stakeholders

Stand out- Wow Clients

Delight users - Immersive, interactive, memorable UX

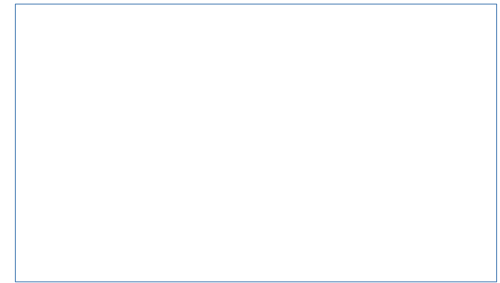
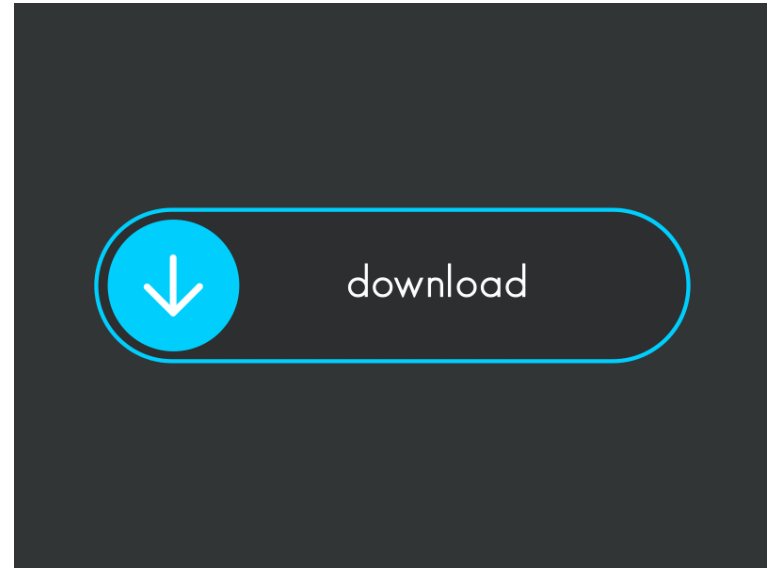
Push design forward – Original custom experience



Motion Types

Functional motion

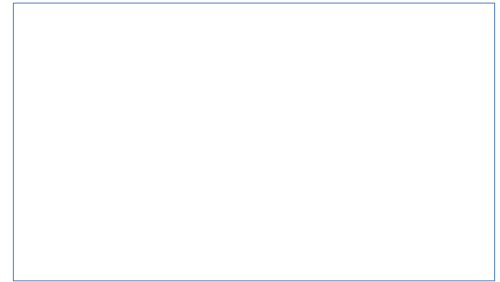
- Improve usability and user experience
- Drag and drop
- Animated hover and click states

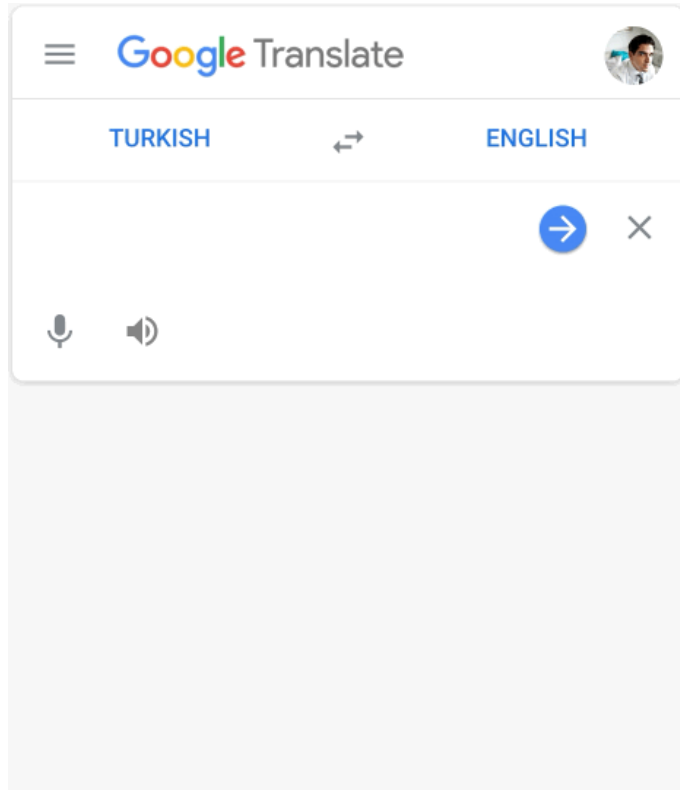


Source: <https://www.invisionapp.com/inside-design/5-examples-motion-design-ui/>



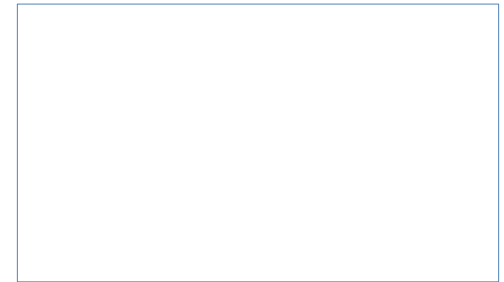
Source: <https://careerfoundry.com/en/blog/ui-design/ui-animation-examples/>



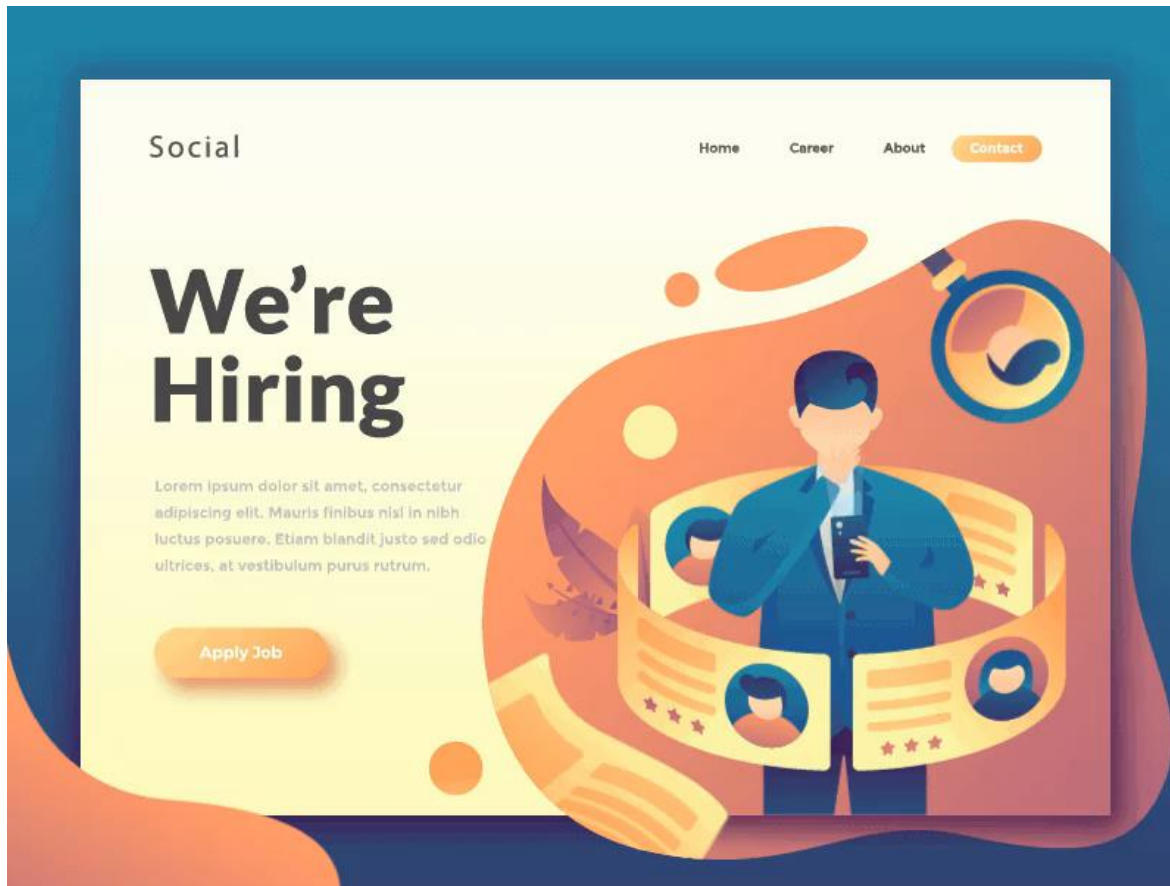


Structural motion

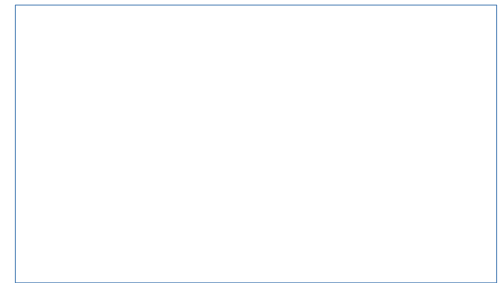
- Elements moving on and off
- Items growing in size
- Dropdowns
- Parallax animation

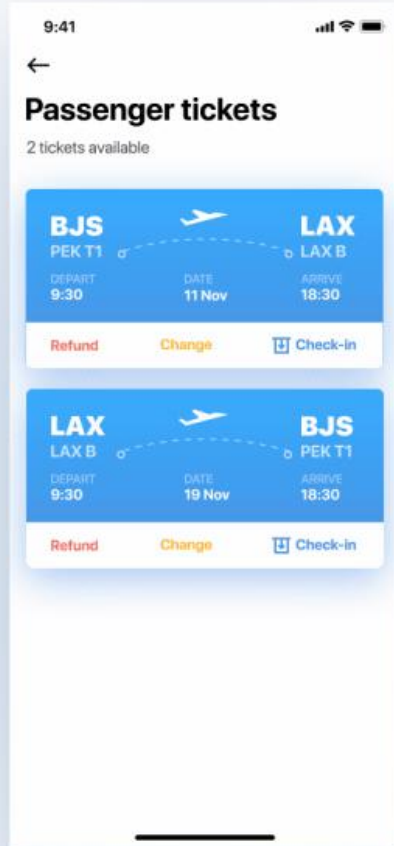


Source: <https://www.invisionapp.com/inside-design/5-examples-motion-design-ui/>



Source: <https://careerfoundry.com/en/blog/ui-design/ui-animation-examples/>

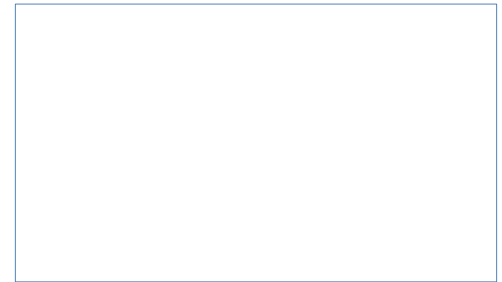


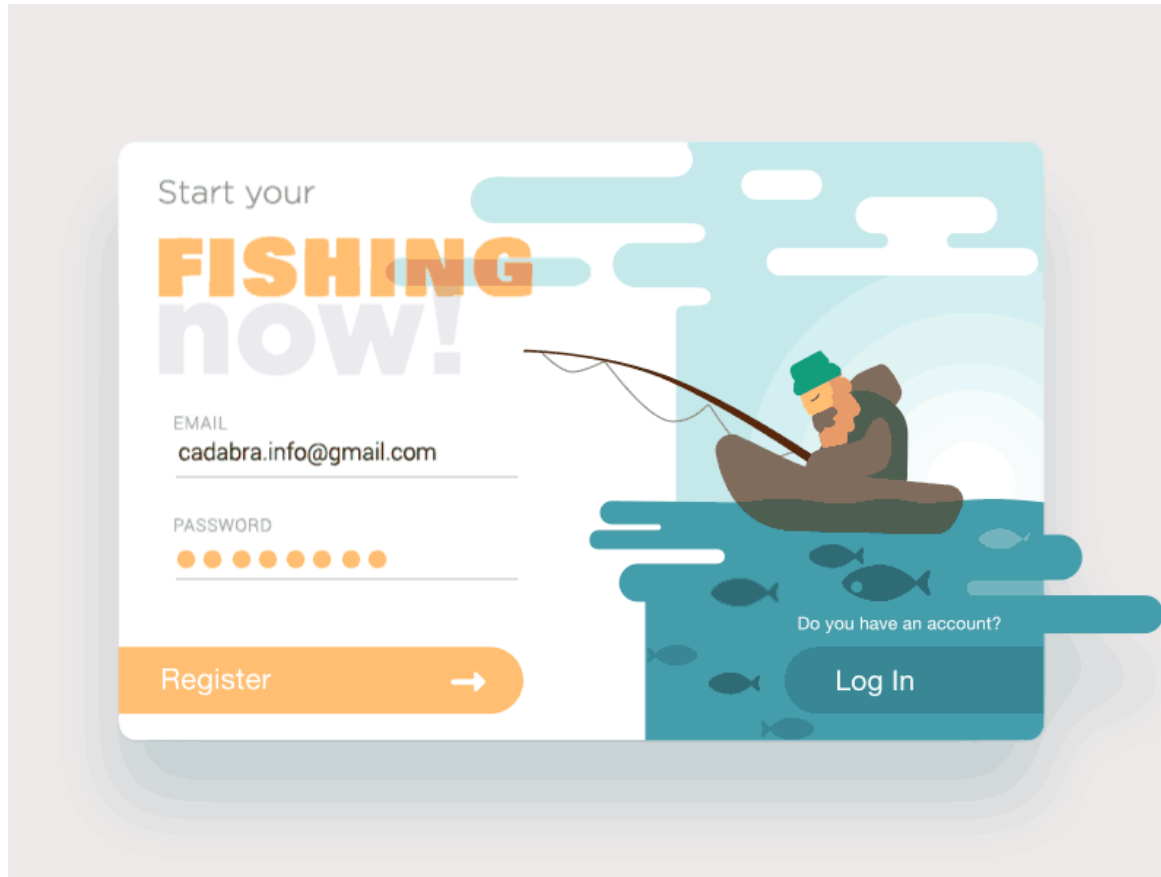


Emotional motion

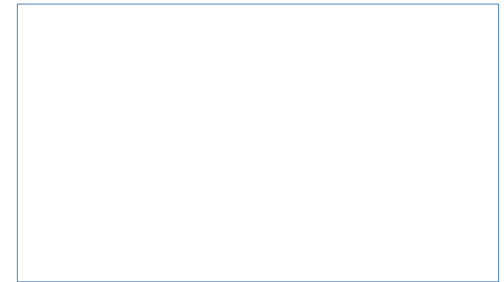
- Character and illustration animation
- Success and failure states
- Moments of delight

Source: <https://www.invisionapp.com/inside-design/5-examples-motion-design-ui/>



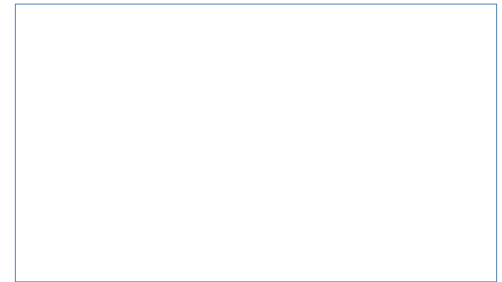


Source: <https://www.invisionapp.com/inside-design/5-examples-motion-design-ui/>





Source: <https://careerfoundry.com/en/blog/ui-design/ui-animation-examples/>



Interaction trigger

How is animation caused: mouse, tap, swipe etc

Response

How do elements react: flip, decrease, increase, change colour etc

Timing

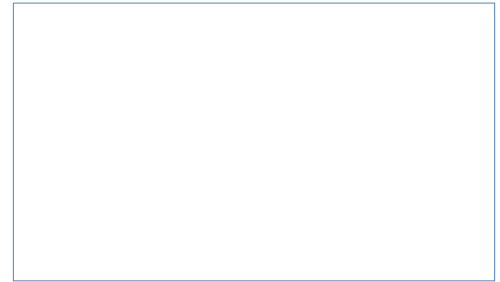
Duration of animation [micro animations - eg hover : 300ms]

How long after trigger animation begins (Delay)

Easing

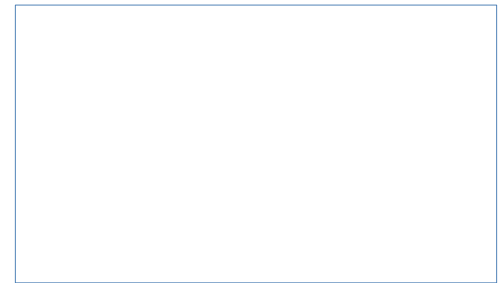
Smoothness

Seamlessness





Source: <https://www.invisionapp.com/inside-design/5-examples-motion-design-ui/>



≡ menu

OREGON

Water from the mountain

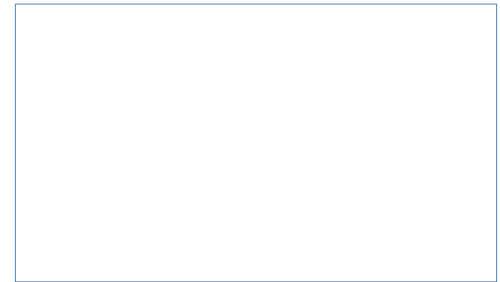
Plummeting 620 feet from its origins on Larch Mountain, Multnomah Falls is the second highest year-round waterfall in the United States.

Next: ~~Mt. Hood~~



Learn more →

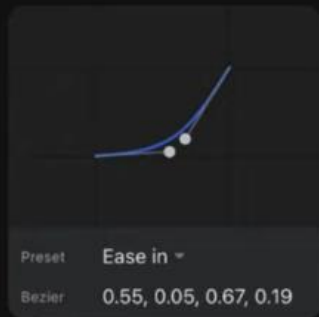
Source: <https://dribbble.com/shots/6041393-InVision-Studio-Waterfall-Transition>





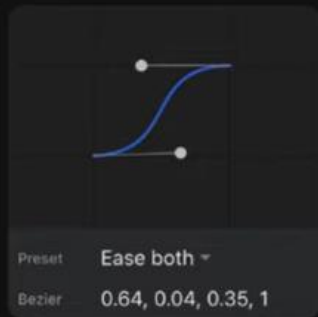
Linear

Avoid using unless animating specific objects that should move at a constant rate (i.e. music playing)



Accelerate

Use when objects leave field of view.



Ease Both

Maps closely to how objects behave in the real world. Use when objects start and end in the field of view.



Decelerate

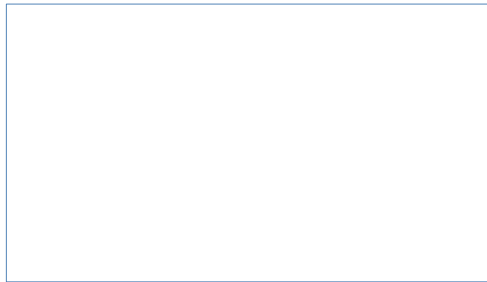
Use when objects enter the field of view (think friction and gravity)

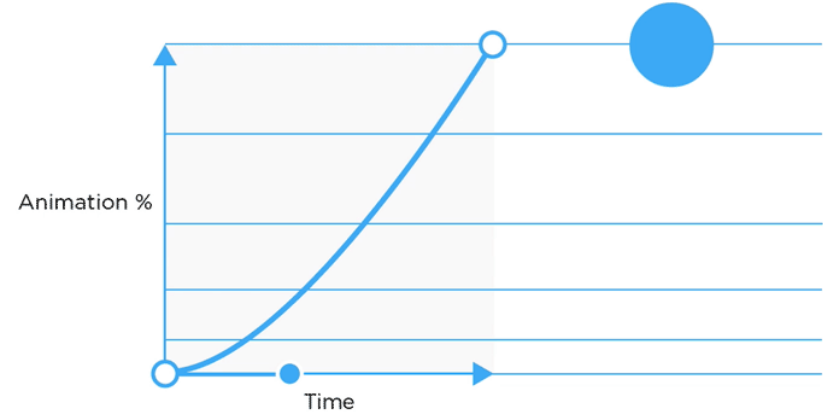
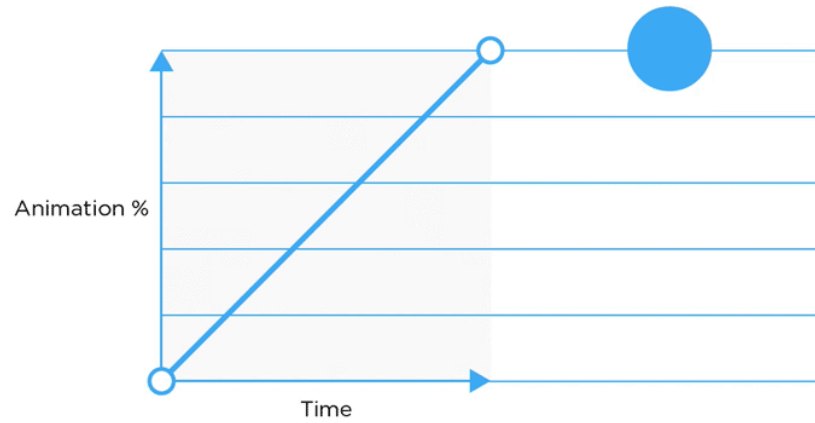


Elastic (Spring)

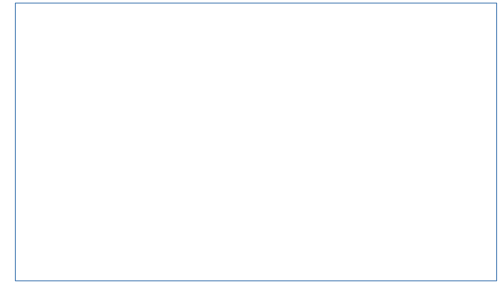
Can help portray a "fun and playful" experience. Be careful not to overuse.

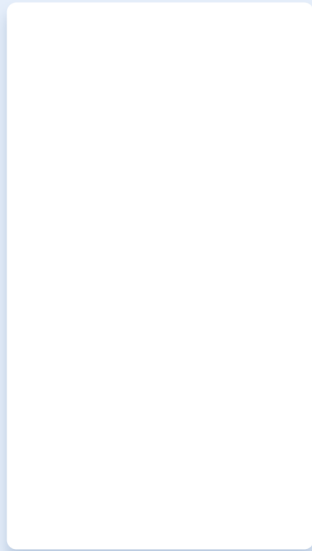
Source: Jake Pomper Design





Source: <https://www.invisionapp.com/inside-design/crafting-easing-curves/>

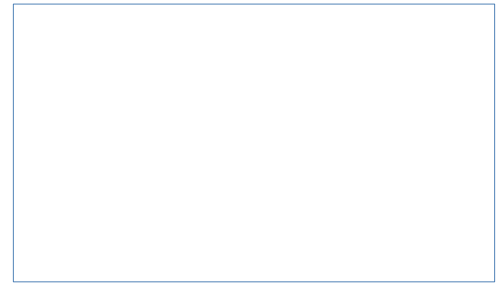




Good

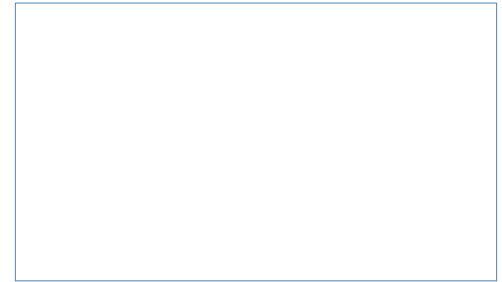


Bad



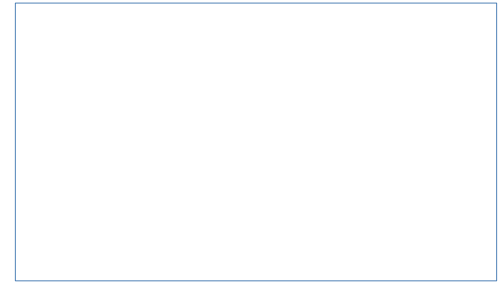
Source: <https://uxdesign.cc/the-ultimate-guide-to-proper-use-of-animation-in-ux-10bd98614fa9>

Creating Depth

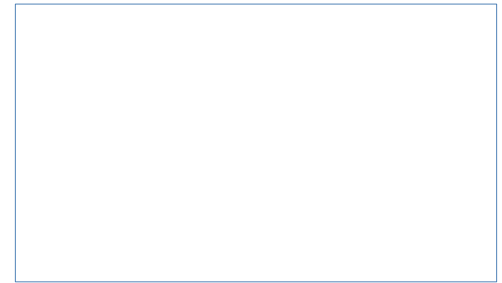




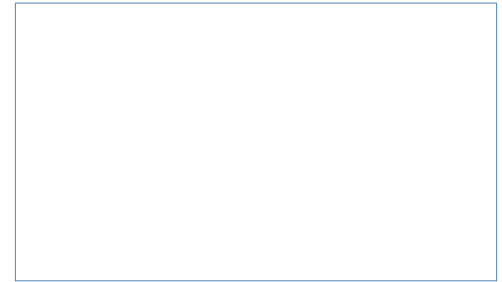
Creating Depth



Creating Depth

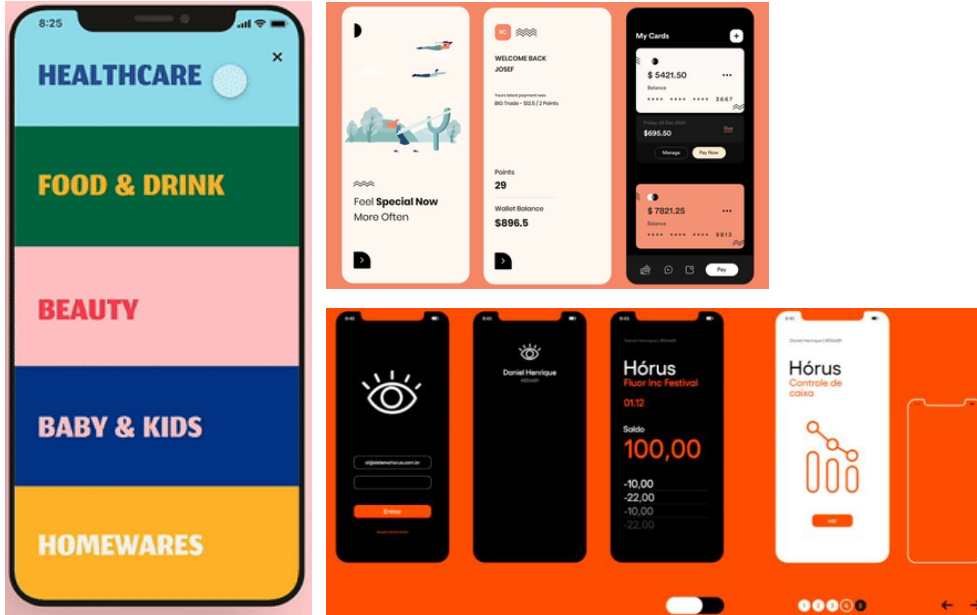


Creating Depth



UI Animations

UI animation involves incorporating movement into user interface elements to elevate the interactivity and overall quality of a product.



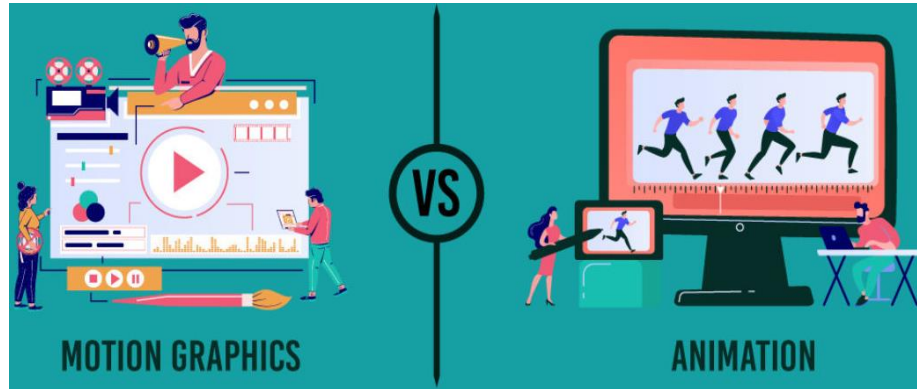
Source: Google images, YellowSlice



Source: Yellow Slice

Animation VS. Motion Graphics

Animation is a broad concept that encompasses the application of movement to visual elements. While it is commonly associated with UX/UI design, it extends its influence to various other domains like film, gaming, and VR. Motion graphics specifically involve infusing motion into graphic design components. In simpler terms, motion graphics can be considered a subset of animation.



Source: Google images



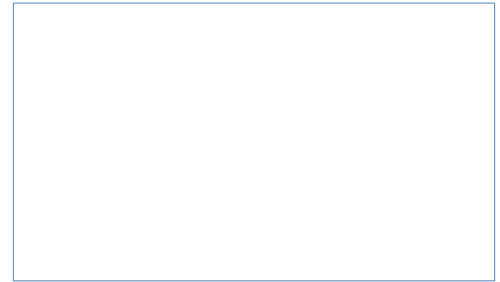
Source: logopoppin.com

Importance of UI Animation

By imitating the sensation of engaging with a tangible object in the physical realm, animation imparts a crucial human element to digital interfaces.

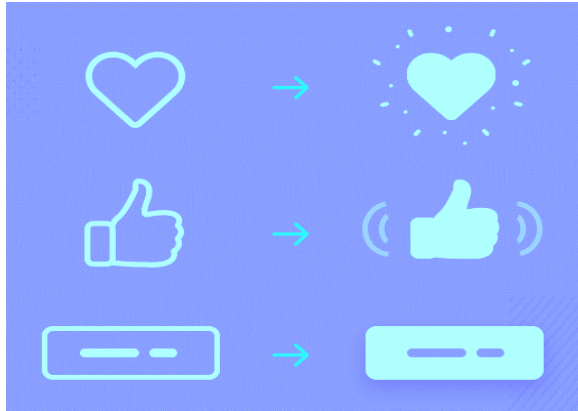


Source: CovetusLLC



Types of UI Animations

1. Micro-interactions
2. Loading and progress
3. Navigation
4. Storytelling and branding

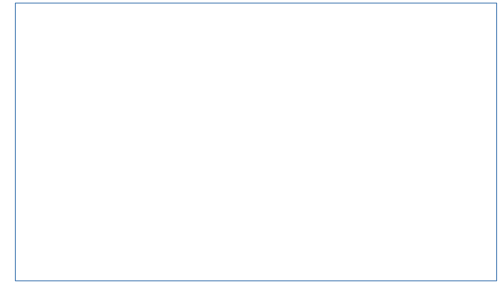
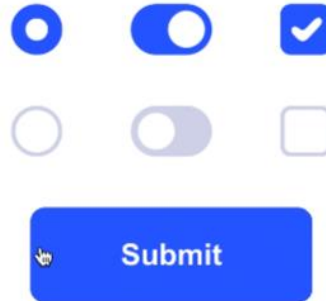


Source: Justinmind

Micro-Interactions

They are widely employed in digital interfaces. These subtle animations play a key role in providing visual feedback to users, indicating successful or unsuccessful completion of an action.

Aid users in comprehending and visualizing the outcomes of their interactions.

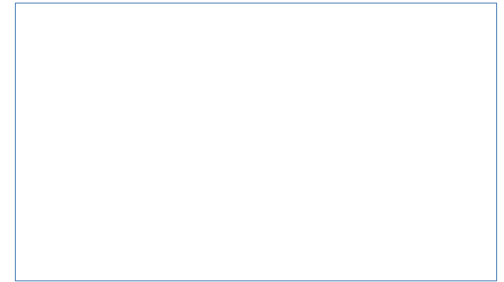
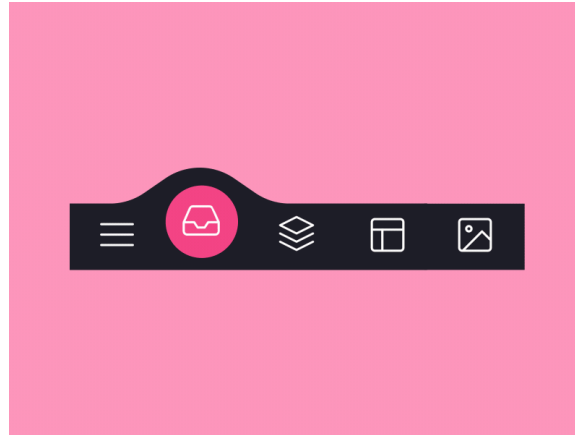


Loading and Progress

- Loading and progress animations visually depict ongoing processes or estimated completion time, ensuring users are informed and engaged.

Navigation

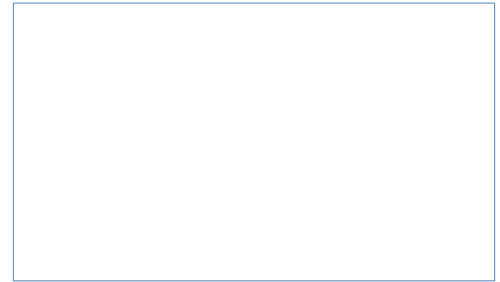
- Navigational animations play a pivotal role in guiding users through the interface, particularly on complex or extensive websites.



Source: Google images

Storytelling and Branding

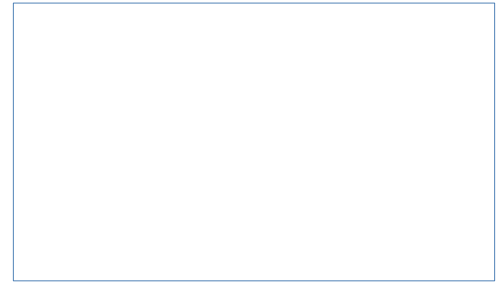
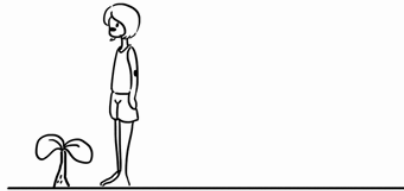
- Animation effectively grabs user attention, highlighting brand elements and presenting products in an engaging and entertaining fashion.
- An animated logo demonstrates the powerful fusion of storytelling and branding, instantly communicating a brand's essence and identity to viewers.



Source: Google images

UI Animation Principles

- **Squash and stretch:** Objects can change shape when interacting with other objects, exhibiting squash and stretch animations.
- **Anticipation:** Micro-animations preceding significant actions build anticipation.
- **Staging:** Organizing and arranging elements strategically to guide users towards specific actions or buttons.



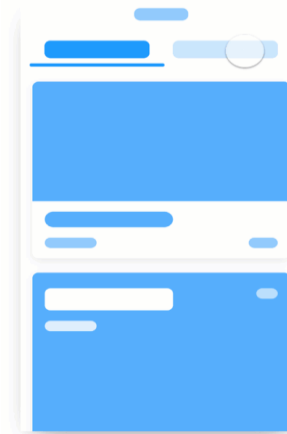
Source: Google images

Follow through and overlapping action: UI elements can exhibit natural movement by having different speeds and overshooting their action before settling.

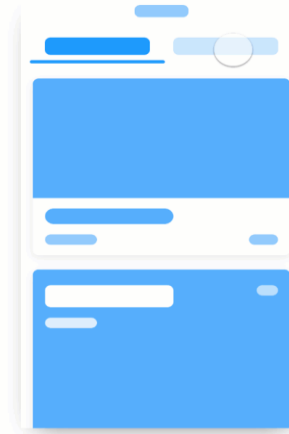
Easing: Gradual and smooth movements of UI elements replicate real-life motion, providing a more natural and comforting user experience.

Arcs: Utilizing curved paths, such as arcs, can highlight element transitions in responsive designs, deviating from rigid grid-based layouts.

Secondary action: Supporting primary actions, secondary actions like pulsing buttons enhance micro-animations and add visual interest.

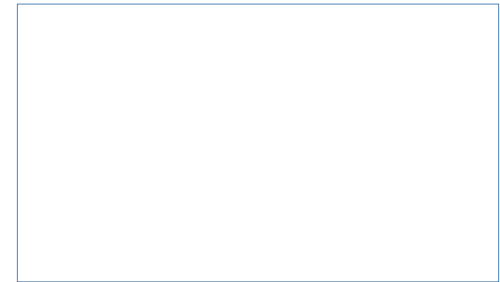


Good



Great

Source: Google images



- **Timing:** The order and sequence of animated elements impact the interface's mood and user focus, striking a balance between speed and comprehension.
- **Exaggeration:** Some UI animations can be creatively exaggerated to capture attention and infuse stylized elements into the design.
- **Appeal:** Micro-animations, even subtle ones, should be visually appealing to engage users, with color playing a significant role.
- **Solid drawing & straight-ahead vs. pose-to-pose:** These principles are less relevant to UI animation, involving 3D animation and the difference in creating frames between key poses.



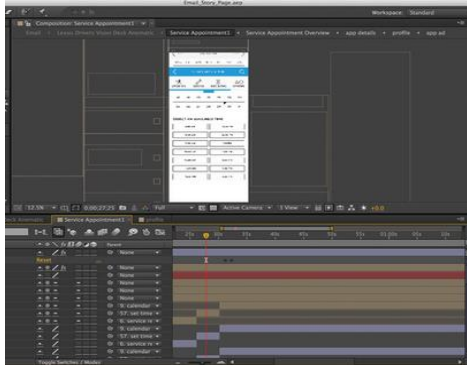
Source: Webuild

Animation Tools for UI Designers

Adobe After Effects: A powerful industry-standard tool for UI animation and visual effects, offering a wide range of effects and seamless integration with other Adobe software.

Motion UI: An easy-to-use tool with pre-made animations and transitions, along with the ability to create custom animations and code tutorials for prototyping.

Flinto: A prototyping and animation tool specifically designed for creating interactive transition-based animations for apps and websites.

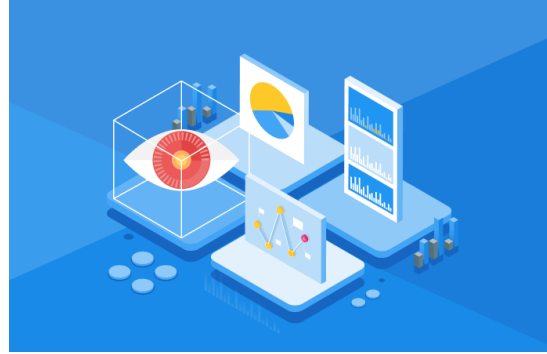


Source: Google images

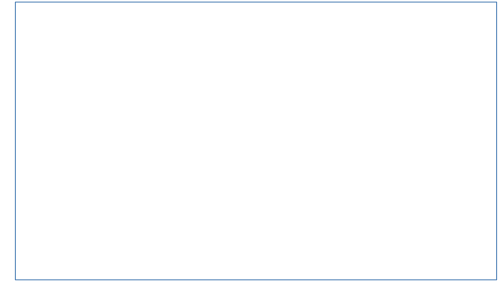


Application of UI Animation

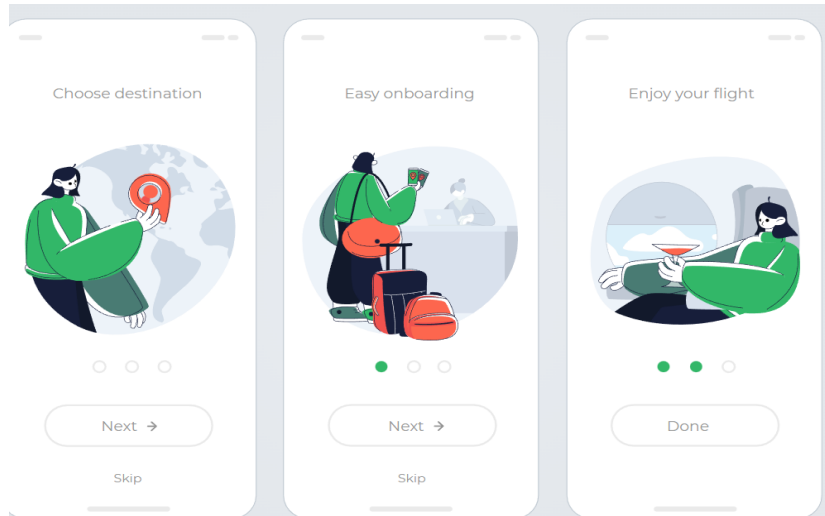
- Launch Screen Animation
- Onboarding Tour Animation
- Login Screen Animation
- Explainer Animations
- Icon Animations



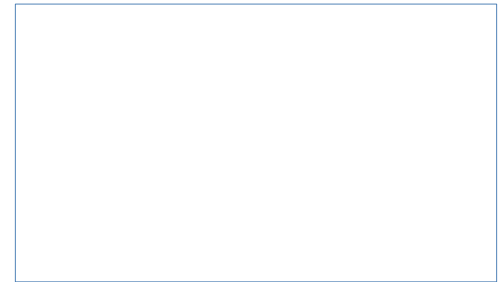
Source: Google images



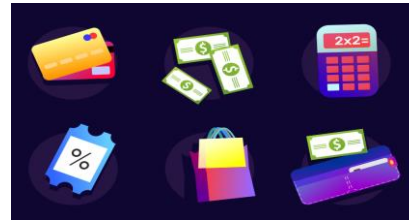
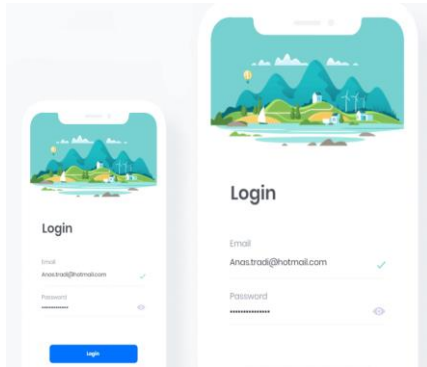
- **Launch screen animation:** Utilize in-app animations on the launch screen to enhance brand recognition and create a strong first impression.
- **Onboarding tour animation:** Implement engaging animations for onboarding tours, as they play a crucial role in user interactions after app installation.



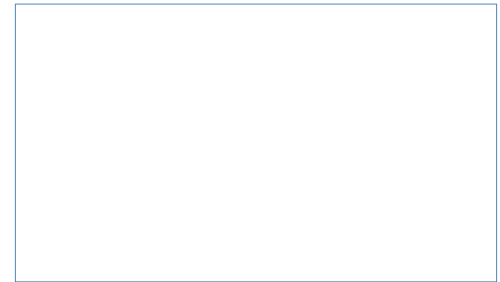
Source: Google images



- **Login screen animation:** Ensure that animated login screens align with the brand, utilizing brand colors, mascots, and visually setting the desired mood, while maintaining subtlety to avoid distracting users from the main objective of conversion.
- **Explainer animations:** Use explainer animations to break down essential content into easily understandable and digestible portions, offering a more user-friendly alternative to lengthy blocks of text.
- **Icon animations:** Employ icon animations as vital elements of the UI foundation, facilitating intuitive navigation within mobile apps.



Source: Google images



Thank You

