Topic 5: Adaptive and Personalized interfaces

1. Adaptive interfaces

An Adaptive User Interface (also known as AUI) is a user interface (UI) that adapts its elements and layout to the user's requirements or context. Adaptive user interfaces can change their appearance and/or interaction behaviour to match the requirements of an individual user, the used device and current context conditions. In contrast to adaptable user interfaces, which are modified by a deliberate and conscious choice of a user, adaptive user interfaces automatically initiate and perform changes according to the available knowledge about the user and context.

Adaptive user interfaces are widely recognized as a promising means towards accessible computer systems. They can provide high levels of personalisation without requiring the user to manage and master complex customization dialogues. Due to their multiple appearances, the designing and developing adaptive user interfaces is still a complex endeavour and a research challenge. Some approaches rely on rules or design patterns to define how the user interface changes in case of specific context conditions. Model-driven user interface development is perceived as the most powerful – but not the easiest way – towards extensive user interface adaptations for universal access.

For example, an adaptive user interface in web design enables tailoring specific site components for each visitor, such as hiding irrelevant content and improving the user experience (UX).

Personalized interfaces

Personalized interfaces are interfaces that can be customized, allowing users some degree of flexibility in input/output modality, display and control. For example, a user may choose to increase the size of the buttons on their browser, or change the look of the buttons altogether. Instead of using a ring tone on a mobile phone, a user can decide to receive vibrations alerts. Sensorial, aesthetic mappings can be changed at the user's whim. Parts of interfaces can be pared down or augmented.

Personalization serves to enhance self-expression and identity, rather than optimizing the interface function. As objects are increasingly differentiated based on design, they begin to take on their own identity while reflecting the self-expression of their users. Consumers are increasingly more sensitive to branding, using design to differentiate themselves rather than being content with mass-produced functional products. Norman presents five different levels of customization, from no customization to creating a whole new product, and suggests that users inherently want to customize. In any case, the two essential characteristics for successful personalization are ease of customization and ease of distribution for sharing the customized interfaces.

Ease of User Customization

What makes personalization so interesting is the variety of product categories where consumers can now participate in creating the look and feel of the end product. Potential buyers are given many levels of choices, so the product they take home is unique, designed around their personal preference. Instead of only choosing from among few possibilities, such as faceplates, buyers have the option of creating custom products that no other person may have an identical copy of. This flexibility in look and feel was a design approach that had been applied in fashion and accessories, and has finally migrated to other sectors.

2. Discussion about Personalized user interface

At a time of Human Centered Design determining how we interact with multiple arenas in our lives, there is one significant interface that is stuck in the past of ‘one-size-fits-all’. With an increasing amount of time being spent in our virtual lives vs. our real ones, there is a pertinent need to customize solutions that suit individual requirements, specifically on the digital front.

Consider the top few digital platforms worldwide - Instagram, Uber, Netflix, Youtube, Spotify, AirBnB, Amazon, or literally any other app - What is being offered currently is significantly personalized content to suit our requirements. Be it AI Models that predict our taste in music and make recommendations, or data analytics which alters the price we pay for our transport. All that's served to us is backed by an in-depth understanding of who we are, and how we fall into a larger matrix. However, this highly pin-sharp data is fed to us in a rather standardized manner. Regardless of our differentiators like - body, shape, size, color, nationality, age, society, status, psyche etc., we are all provided ‘Personalized Data’ in a ‘Non-Personalized’ manner. This led to the thought of a 'Personalized User Interface' which takes into account an 'Individual User Experience'.

Below are some thoughts from others on a Personalized User Interface -

Inclusivity - Most applications are currently being built for larger homogeneous cohorts. However, this can be significantly heterogenized through addressing the minorities -

1. Left / Right hand dominant users

The universal affordances that are currently offered in applications, are designed keeping in mind the right-hand dominant users - be it the 'Left to Right drag', 'Left to Right swipe', placement of labels or content icons. Take into consideration one of the most important elements of a consumer's decision making process - the ‘Call to Action’ button – ‘Confirm the Order - Cancel/Yes’ - The affirmative statement is always on the right and the refusal, always on the left. This is designed keeping in mind that for a right hander, the ‘Yes’ button appears closer, and the decision making time (or fixation to an answer) can be reduced drastically.

Multiple studies also show that left-handers are significantly faster at processing information owing to stronger interactions across both sides of the brain. Their emotions and motivations are associated with activities on the right hemisphere and they are often regarded as more divergent and creative thinkers. Their reptilian brain (the section of the brain that caters to instinctual needs, rather than emotional or rational ones) has adapted itself to focus on novel survival mechanisms, which has helped them tackle multiple situations, differently. This insinuates the need for an experience designer to constantly cater to reformed ‘normals’. With 10 - 15% of the World Population being left-handed, it is a considerable market to address.

2. Motor Differences

Decreasing the motor load on an individual plays an integral role in their interaction with an application. ‘Fitts’ Law’, a predictive model of human movement, suggests that the time taken to rapidly move to an object is proportional to the distance to the object, and the size of the object itself. Though these learnings have been utilized in UI/UX Design, the offerings are still standardized.

In most cases, an average adult index finger width of 1.6 - 2 cm and thumb finger width of 2.5 cm, is taken into consideration while developing mobile applications. This has been identified as an ideal ‘size’ at which a user can comfortably hit the target, while still being able to visibly see the peripheries of what he/she is hitting.