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Welcome to this session: Human-Computer Interaction (HCI)

The session will start shortly...

Questions? Drop them in the chat.
We'll have dedicated moderators answering questions.

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What is Safeguarding?

Safeguarding refers to actions and measures aimed at protecting the human rights of adults, particularly vulnerable individuals, from abuse, neglect, and harm.

To report a safeguarding concern reach out to us via email:
safeguarding@hyperiondev.com

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Live Lecture Housekeeping:

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly.
- No question is daft or silly - ask them!
- For all non-academic questions, please submit a query: www.hyperiondev.com/support
- To report a safeguarding concern reach out to us via email: safeguarding@hyperiondev.com
- If you are hearing impaired, please kindly use your computer's function through Google chrome to enable captions.

Creating Usable Systems

Many digital systems fail due to poor usability and design, leading to frustrated users and security vulnerabilities.

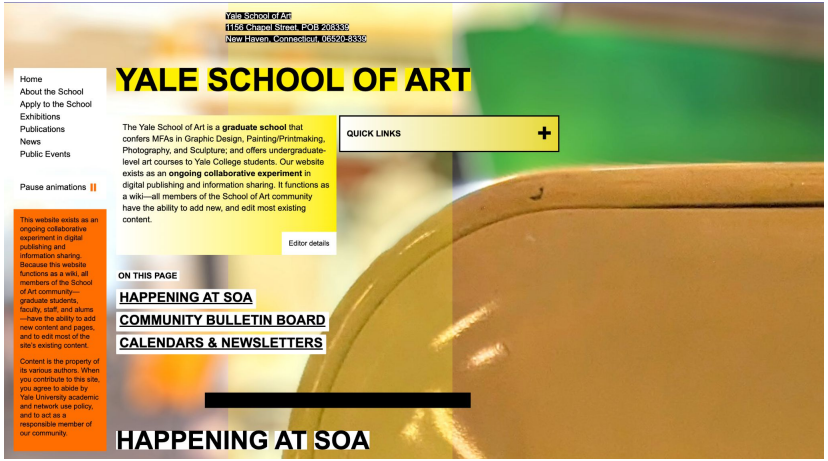
➢ *How can we create interfaces that are not only easy to use but also secure and accessible to all?*

Creating Usable Systems

HCI is crucial in software design, web development, cybersecurity, and AI. Whether designing websites, mobile apps, or interactive systems, understanding user behaviour helps create better products.

Creating Usable Systems

What is the most frustrating UI/UX experience you've ever had?



Healthy habits start small and can be simple. By drinking 2 cups of Lipton Green

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Learning Outcomes

- **Define key principles in Human-Computer Interaction** such as usability, accessibility, and user experience.
- **Apply design frameworks** by utilizing wireframes, prototypes, and user testing in interface design.
- **Analyse cognitive and psychological aspects of HCI** including how cognitive load and user behaviour influence design.
- **Identify best practices for designing secure interfaces** to prevent user errors and phishing attacks.

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Lecture Overview

- Introduction
- Theories and Frameworks
- Psychology behind HCI
- Accessibility
- Security

What is the primary goal of HCI?

A. Maximizing system complexity
B. Enhancing user experience and usability
C. Limiting user interactions
D. Removing accessibility features

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B. The process of making a system visually appealing

C. A security measure to prevent hacking

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C. The process of encrypting user data

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Human-Computer Interaction (HCI)

- **The study of how people interact with computers and how to design interfaces that are efficient, intuitive, and accessible.**
- In the previous slide, two examples of were given of websites where poor design choices were used:
  - **Yale Art School**: Busy design, with pages that are difficult to read and navigate.
  - **Lipton**: Low resolution, stock images used throughout the webpage, with an outdated overall design.

Human-Computer Interaction (HCI)

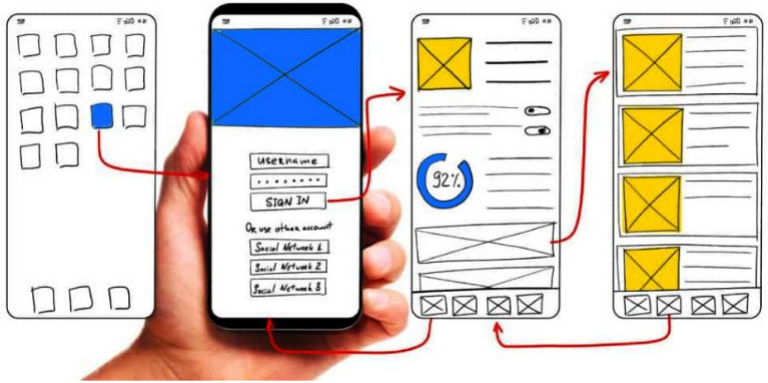
- These may seem to be insignificant details but our experience with these tools is very important!
  - **88% of online consumers** report that they are less likely to return to a site after a bad experience.
  - **90% of users** have stopped using an app due to poor performance.
  - Mobile users are **five times more likely to abandon a task** if the website isn't optimized for mobile.

Human-Computer Interaction (HCI)

- **Key Concepts in HCI:**
  - **Usability:** How easily users can achieve their goals.
  - **Accessibility:** Designing for users with disabilities.
  - **User Experience:** Overall satisfaction when using a system.
  - **Efficiency:** Reducing cognitive load and streamlining tasks.

Design Frameworks in HCI

- At every step of the design of your tool, HCI should be considered.
- **Steps in UX Design:**
  - User Research
  - Wireframing
  - Prototyping
  - User Testing
  - Implementation



Source: Wireframing and Usability Testing in UX Design

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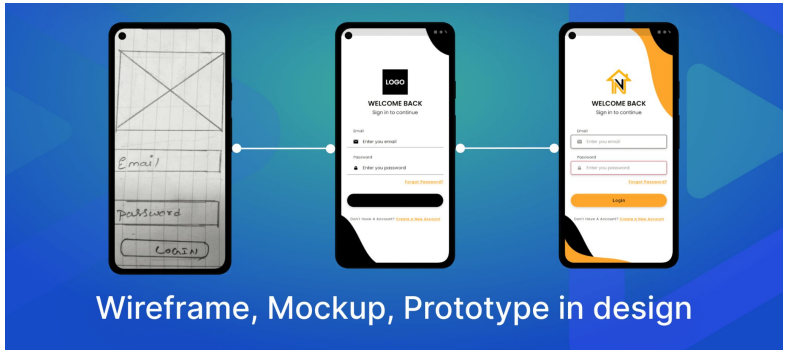
Wireframing and Prototyping

- **Wireframe:** A low-fidelity blueprint of a UI.
- **Prototype:** An interactive, testable UI mockup.
- There are various tools which can be used for these steps, most commonly used are **Figma, Adobe XD and Balsamiq**.



Wireframe, Mockup, Prototype in design

Source: Wireframes, Mockups and Prototypes: Differences

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BREAK

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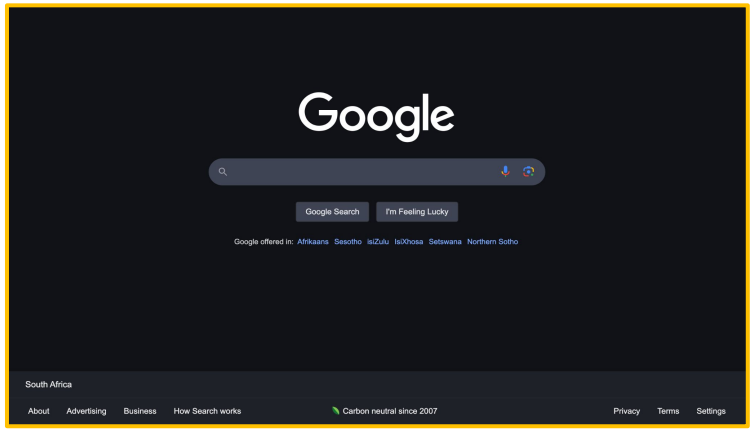
Psychological Aspects of HCI

- **Cognitive Load**: The mental effort required to use a system.
- Our aim is to reduce the cognitive load of our users by
  - **Reducing unnecessary choices**
  - **Simplifying our UIs**

Google's homepage is a good example of **minimalist** design. This aids in the navigation and usability



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Designing for Inclusivity

Accessibility Best Practices:

- High-contrast text for readability
- Keyboard navigation support
- Screen reader-friendly design

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HCI in Security

- Poorly designed interfaces can lead to **security risks**.
  - Dark patterns trick users into unwanted actions.
  - Insecure authentication, authorization, and data handling, potentially leading to unauthorized access and data breaches.
- **Best Practices for Secure Design:**
  - Clear error messages for failed logins.
  - Two-factor authentication (2FA) prompts.

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A. A digital security feature
B. A basic visual representation of a user interface
C. A deep learning algorithm
D. A type of encryption method

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B. It controls the internet speed
C. It helps prevent hacking attempts
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B. By eliminating the need for passwords
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Summary

- ★ Good HCI improves **usability, security, and accessibility.**
- ★ Design frameworks like **wireframing** help plan user interfaces.
- ★ Understanding **cognitive load** leads to better user experiences.
- ★ Security in HCI **prevents phishing** and **deceptive designs.**
- ★ Real-world applications of HCI span multiple industries, from healthcare to e-commerce.

Q & A SECTION

Please use this time to ask any questions relating to the topic, should you have any.


Thank you
for attending
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