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## Welcome to this session:

# Skills Bootcamp - Human-Computer Interaction (HCI)

**The session will start shortly...**

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

# Skills Bootcamp Data Science Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly. **(Fundamental British Values: Mutual Respect and Tolerance)**
- No question is daft or silly - **ask them!**
- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions. We will be answering questions as the session progresses as well.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: **Questions**

# Skills Bootcamp Data Science Housekeeping

- For all **non-academic questions**, please submit a query: ***www.hyperiondev.com/support***
- **Report a safeguarding incident: *www.hyperiondev.com/safeguardreporting***
- We would love your feedback on lectures: ***Feedback on Lectures.***
- Find all the lecture **content** in your **Lecture Backpack** on GitHub.
- If you are hearing impaired, kindly use your computer's function through Google chrome to enable captions.

# Safeguarding & Welfare

We are committed to all our students and staff feeling safe and happy; we want to make sure there is always someone you can turn to if you are worried about anything.

If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:

Ian Wyles
Designated Safeguarding Lead

Simone Botes

Nurhaan Snyman

Rafiq Manan

Ronald Munodawafa

Tevin Pitts

**Scan to report a safeguarding concern**

or email the Designated Safeguarding Lead:
Ian Wyles
safeguarding@hyperiondev.com

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# Skills Bootcamp Progression Overview

## ✅ Criterion 1 - Initial Requirements

**Specific achievements within the first two weeks of the program.**

**To meet this criterion, students need to,** by no later than **01 December 2024 (C11)** or **22 December 2024 (C12):**

- **Guided Learning Hours** (GLH)**:** Attend a minimum of 7-8 GLH per week (lectures, workshops, or mentor calls) for a total minimum of **15 GLH**.
- **Task Completion:** Successfully complete the **first 4 of the assigned tasks**.

## ✅ Criterion 2 - Mid-Course Progress

**Progress through the successful completion of tasks within the first half of the program.**

**To meet this criterion, students should,** by no later than **12 January 2025 (C11)** or **02 February 2025 (C12):**

- **Guided Learning Hours** (GLH)**:** Complete at least **60 GLH**.
- **Task Completion :** Successfully complete the **first 13 of the assigned tasks**.

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# Skills Bootcamp Progression Overview

## ✅ Criterion 3 – End-Course Progress

**Showcasing students' progress nearing the completion of the course.**

**To meet this criterion, students should:**

- **Guided Learning Hours** (GLH)**:** Complete the **total minimum required GLH,** by the **support end date.**
- **Task Completion : Complete all mandatory tasks**, including any necessary resubmissions, by the end of the bootcamp, **09 March 2025 (C11)** or **30 March 2025 (C12).**

## ✅ Criterion 4 - Employability

**Demonstrating progress to find employment.**

**To meet this criterion, students should:**

- **Record an Interview Invite:** Students are required to record proof of invitation to an interview by **30 March 2025 (C11)** or **04 May 2025 (C12)**.
  - **South Holland Students** are required to proof and interview by **17 March 2025.**
- **Record a Final Job Outcome :** Within 12 weeks post-graduation, students are required to record a job outcome.

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# Learning Outcomes

- **Define key principles in Human-Computer Interaction s**uch 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.

# Lecture Overview

- Introduction
- Theories
- Usability

# 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

D. The use of AI to predict user behaviour

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B. The speed at which a system loads a webpage

C. The process of encrypting user data

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# Creating Usable Systems

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

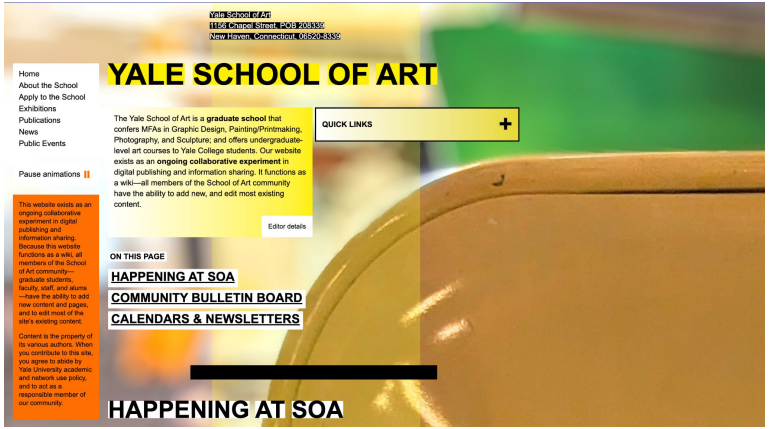
- *How can we create interfaces that are not only easy to use but also secure and accessible to all?*

# 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

# 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)

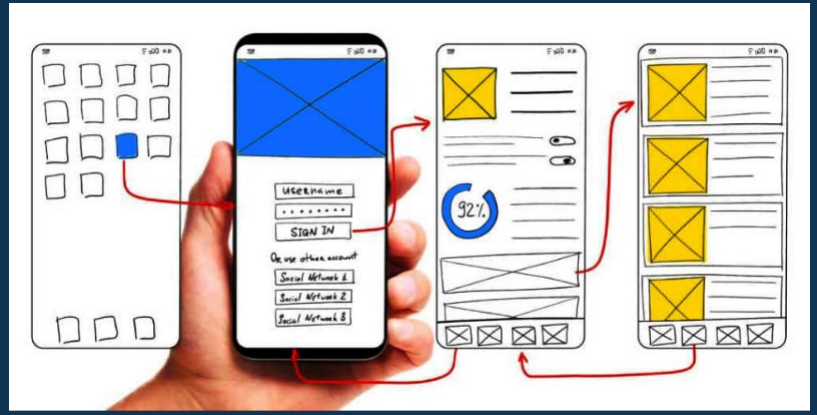
- These may seem to be insignificant details but our experience with these tools is very important!
  - **88% of online consumers** report that they are less likely to return to a site after a bad experience.
  - **90% of users** have stopped using an app due to poor performance.
  - Mobile users are **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:**
  1. User Research
  2. Wireframing
  3. Prototyping
  4. User Testing
  5. Implementation




**Source**: Wireframing and Usability Testing in UX Design

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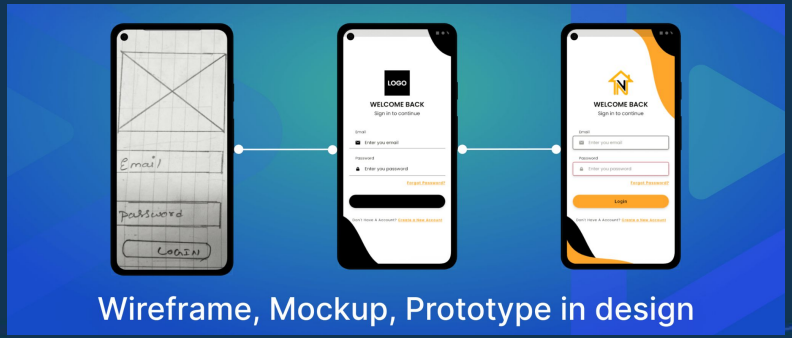
# Wireframing and Prototyping

- **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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# Let’s Breathe!

**Let’s take a small break before moving on to the next topic.**

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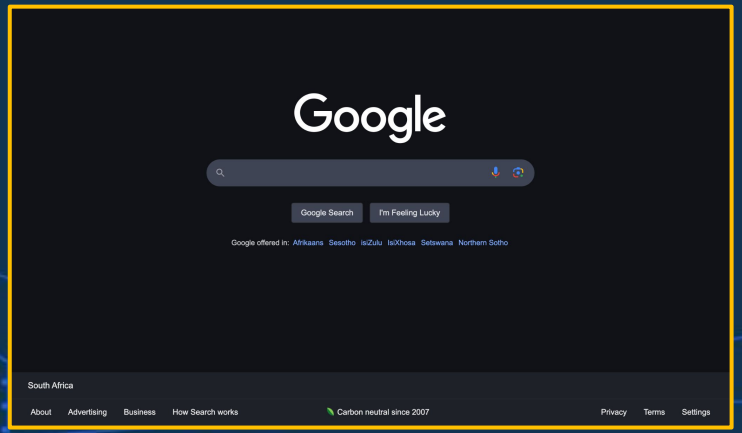
# Psychological Aspects of HCI

- **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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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
D. It determines how users process information

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A. By increasing website loading speed
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.

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# 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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SKILLS FOR LIFE
SKILLS BOOTCAMPS

Department for Education