Introduction to Human-Computer Interaction

COMP2044: Human-Computer Interaction (2024-2025)

Matthew Pike

Welcome!

What's going on here?

Figure 1: The image depicts a male student using hand gestures to interact with his laptop while seated in an office-like setting, surrounded by camcorders on tripods. A device is visible on the brow of his head, above his glasses, which runs across his forehead.

What is Human-Computer Interaction (HCI)?

- In groups of 2–4, discuss what you think HCI is.
- Share your ideas with the class using Mentimeter:
    - Keep your answers short and simple.
    - Each group should submit 2–5 suggestions.
    - This is a quick and fun activity—don't overthink it! There are no right or wrong answers.

*"Human-computer interaction (HCI) is a **multidisciplinary** field of study focusing on the **design** of computer technology and, in particular, the interaction between **humans** (the users) and computers. While initially concerned with computers, HCI has since expanded to cover almost all forms of information technology design." - Alan Dix*

Key Points:

- HCI is **multidisciplinary**, drawing on fields such as Computer Science, Psychology, Design, and Sociology.
- It involves the **design** of computer technology, including hardware, software, and their interaction.
- **Humans** are complex, as are their interactions with computers. HCI focuses on supporting users of all abilities, ages, and backgrounds.

- HCI is an essential but often overlooked aspect of computer science. While we train computer scientists to build complex systems, usability is not always a focus.
- This module will help you design and evaluate interactive systems by introducing simple techniques and a basic understanding of human cognition and behaviour.

Figure 2: A photo of Harold Thimbleby, taken from his website.

- **Name**: Prof. Harold Thimbleby
- **University**: Swansea University
- **Website**:
  https://www.harold.thimbleby.net/
- **Research Interests**: Healthcare, Human error, safety-critical systems, medical devices, and human-computer interaction.
- **Research Video**: https://www.youtube.com/watch?v=3LiGsPR34w8

Module Organisation

Figure 3: A (not great!) photo of Matt, the HCI module convener, taken by a professional(!) photographer in 2022.

- **Name**: Dr. Matthew Pike.
- **Email**: matthew.pike@nottingham.edu.cn.
- **Office**: PMB435.
- **Office Hours**: Mondays at 12:00-13:00 and 15:00-16:00.
- **Research Interests**: The use of brain-based measures to understand human behaviour when interacting with technology.
- **Industry Experience**: Formerly a User Experience Researcher at Huawei working on EMUI.

Figure 4: Huimin Tang, the HCI module teaching assistant

- **Name**: Ms. Huimin Tang.
- **Email**: huimin.tang@nottingham.edu.cn.
- **Research Interests**: Huimin's current research is centered on investigating the relationship between users' "Cognitive Style" and their brain data during the Information Retrieval process. This is performed using fNIRS - a brain imaging technology. The goal of this work is to provide valuable insights into future search engine interface design, ultimately enhancing user experience.

Module Syllabus and Provisional Schedule

Week	Week Commencing	Lecture	Workshop
Motivating HCI			
1	2025-02-17	Introduction to HCI	Future Challenges & Opportunities in HCI
Understanding Users			
2	2025-02-24	User Cognition	Gestalt Principles
3	2025-03-03	Cognitive Prediction Models	Hierarchical Task Analysis
4	2025-03-10	Participatory Design	Usability
Designing Interfaces			
5	2025-03-17	Designing GUIs: Ergonomics	Coursework 1 Overview
6	2025-03-24	Designing GUIs: Interface Components	Social and Organizational Perspectives
Evaluating Interfaces			
7	2025-03-31	Interface Evaluation	Cognitive Walkthrough and SUS
8	2025-04-07	Further Interface Evaluation	Coursework 2 Overview
9	2025-04-14	Experimental Evaluation	Coursework 2 Data Collection
Exploring the Ethics of HCI			
10	2025-04-21	Dark Patterns	Coursework 2 Data Collection
11	2025-04-28	Coursework 2 Data Collection	Coursework 2 Data Collection
12	2025-05-05	Contingency	Contingency

- There will be a one-hour lecture each week, held in person in PMB205.
- Lecture slides will be available on Moodle and uploaded 24 hours in advance.
- Lectures will be interactive, and you will be expected to participate through:
    - In-class discussions;
    - Mentimeter polls, quizzes, and other activities;
    - Moodle discussion forums;
    - In-class presentations;
    - And more.

Workshops

- There will be a one-hour workshop each week, immediately after the lecture, held in PMB205.
- Workshops will be in-person and involve practical activities such as:
    - Designing and prototyping interactive systems;
    - Conducting user studies;
    - Analysing data;
    - And more.
- Most workshops will require a submission, which will be graded and contribute to your final mark:
    - Each submission will be worth 1–3% of your final mark.
    - These may include short reports, videos, class presentations, etc.
   - General (class-wide) feedback will be provided for each activity.

Coursework

- This module is assessed entirely through coursework; there is no final exam.
- The assessment consists of:
  - **Coursework 1** – 50%
    - Low-fidelity prototype and written justification (1500 words).
    - Completed individually.
  - **Coursework 2** – 40%
    - Group based study and evaluation of a prototype (3500 words).
    - Completed in groups.
  - **Weekly workshop submissions** – 10% of your final mark.

The Elephant in the Room: Working in Groups

- You will have experienced both positive and negative aspects of working in groups.
- While challenging, group work is also rewarding and an essential skill for your career.
    - This is why we incorporate it throughout your degree.
- Groups will be allocated in Week 3, after the module change period ends.
- The teaching team will assign groups to ensure fairness and balance.
    - We consider factors such as academic performance, group representation, and other relevant criteria.
- In general, group changes will not be possible.
- Provisions are in place for members who do not contribute, which will be discussed in a future lecture.
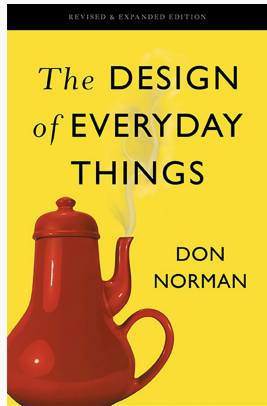
Module Textbook
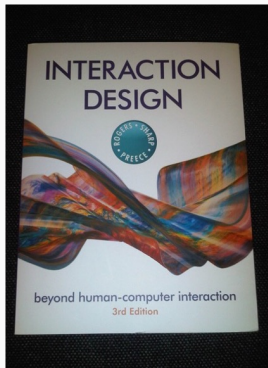
Figure 5: "Interaction Design: Beyond Human-Computer Interaction" by Jenny Preece, Helen Sharp, and Yvonne Rogers.

Recommended Reading

Figure 6: "The Design of Everyday Things" by Don Norman.

Continuous Improvement

QR code linking to the Module feedback form -
https://forms.office.com/r/5fED15Z6Un

- We want to make this module as good as possible for you and future students, so your feedback is important!
- You can provide feedback at any time during the semester. We will document, respond to, and act on it where appropriate.
  - Feedback will be submitted via Moodle and processed anonymously.
  - However, the feedback mechanism itself is not anonymous.
- A document summarising all feedback received, along with my responses, will be maintained on Moodle.

Figure 7: Your HCI Module Needs You!

- We are seeking 1–2 students to serve as HCI module champions.
- The role involves:
  - Acting as a point of contact for students on the module.
  - Providing feedback and suggesting improvements.
- At the start of each lecture, we will review any feedback received via the HCI module champion(s).
- In return, the module convener will provide a reference for their CV or future applications.

Norman, D. A. (2013). *The design of everyday things* (p. 368). Basic Books, Inc.

Sharp, H., Rogers, Y., & Preece, J. (2023). *Interaction design: Beyond human computer interaction* (6th ed., p. 720). Wiley.

Thimbleby, H. (2010). *Press on: Principles of interaction programming*. The MIT Press.

Thimbleby, H. (2021). *Fix IT: See and solve the problems of digital healthcare*. Oxford University Press.