Today

• Part I: About This Module
  – Staff
  – Lectures & Workshops
  – Assessment

• Part II: About HCI
  – What is HCI?
  – Interacting with computers – a history
  – Studying HCI – a history
Part I:
About this module
Staff: Dr. Khaled Bachour  
(module coordinator)

- MSc in Computer Science
- PhD in Human-Computer Interaction
- Research Interests: Games as a research methodology

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  - Email: kbachour@lincoln.ac.uk
  - Office: INB 2215
  - Surgery hours: Thursdays 15:00 – 17:00
    • Or by appointment (just email me)
Staff: Dr. Jussi Holopainen

- PhD in Game Development
- Research Interests: game design research, pervasive games, public play, digital cultural heritage
- Contact info:
  - Email: jholopainen@lincoln.ac.uk
  - Office: INB 2221
  - Surgery hours: Tuesdays 12:30 – 14:30 or by appointment.
Staff: Dr. Elisa Rubegni

- PhD in Computer Science
- Research Interests: User experience research, Interaction design, Children-computer Interaction, Technology in education
- Contact info:
  - Email: erubegni@lincoln.ac.uk
  - Office: INB3112
  - Surgery hours: Tuesday 15.30-17.30
Staff: Dr. Paul Baxter

- MEng in Electronic Engineering
- PhD in Cognitive Robotics
- Research Interests: social robots, human-robot interaction, user evaluations, cognitive modelling

- Contact info:
  - Email: pbaxter@lincoln.ac.uk
  - Office: INB 2219
  - Surgery hours: Mondays 11:00-13:00
    - If I have to rearrange, will put details on: http://paul-baxter.github.io/teaching.html
**Demonstrators**

<table>
<thead>
<tr>
<th>Grace Ataguba</th>
<th>Jake Harrington</th>
<th>Jaycee Lock</th>
<th>Liam Mason</th>
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<td><a href="mailto:gataguba@lincoln.ac.uk">gataguba@lincoln.ac.uk</a></td>
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About This Module

• 1 x 2 hour lecture
• 1 x 2 hour workshop

• You need to show up for the workshop you’re timetabled for (and only that workshop) – no swapping!
  – If conflicts, etc, speak to SoCS Admins

• You are expected to attend everything!

• You will be given reading to do between lectures/workshops on occasion – this should be part of your self-study

• Workshops start next week
Talking of Reading…

• A place to start…

Topics

• You will learn about
  – Human abilities and how they influence our interaction with technology
  – How to consider these abilities in your design
  – How to evaluate and analyse whether your solution meets the needs of users

• You will **not** learn about
  – Graphics design / interaction design
  – These in other modules
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Workshops

• Each week you will be asked to carry out a theoretical and a practical task in the workshop
  – Keep a log of what you have done, don’t just delete results once you’ve completed your work
  – Useful preparation for your exams!

• We expect you to attend all your allocated workshops
  – This is your time to ask your questions, get in some assessment prep time, and get support from lecturer and demonstrators
Workshops

• You must attend your assigned group!

• All in INB1102
  – Group A: Monday 15:00 – 17:00
  – Group B: Tuesday 10:00 – 12:00
  – Group C: Tuesday 15:00 – 17:00
  – Group D: Thursday 13:00 – 15:00

Bring Paper and Pen to all workshops!
Workshops

• Part I
  – On theory
  – Refer to lecture notes, any reading given, your own research, etc
  – Demonstrators to help you work through/consider the questions

• Part II
  – More practically-oriented
  – Treat as mini-experiments: note down observations and relation to the theory
  – Demonstrators to help with running the tasks, and to help you figure things out for yourselves!

Keep your notes – important for exam preparation!
Assessment

• 100% exam-based at the end of the module

• Workshop tasks reflect exam tasks & prep you for it – this is why you need to attend workshops!

• Part theory, part practical tasks – again, reflected in workshop design

• Check Blackboard for exam date
Reading List

• Access reading list through Blackboard
  – Link will take you to the library website
  – Can also access directly through the library page if Blackboard isn’t working…

• Many items on the reading list (27 in total!)
  – There are copies of each in the library (physical and/or digital)
  – You do not have to read all of the books! They are listed as reference points to further your exploration and understanding
Reading

• Core Concepts in HCI:

• Interaction Design: Beyond Human-Computer Interaction, by Sharp, Rogers, & Preece
Reading

• The philosophy and practice of user centered design

• Experience-Centered Design: Designers, Users, and Communities in Dialogue, by McCarthy & Wright
Reading

• Evaluation in HCI

• Experimental Human-Computer Interaction: A Practical Guide with Visual Examples, by Helen Purchase

• Available as online resource!
Part II: About Human-Computer Interaction (HCI)
What is HCI?

• What is HCI the study of?
  – Humans?
  – Computers?
  – Interaction?

• Why would we need to do this?
• How do we do it?
What is HCI?

• Basic definition: “The study, planning, and design of the interaction between people and computers.”

• Inherently multidisciplinary - involving computing, software engineering, psychology and cognitive science, social sciences.....
What is HCI?

“HCI is not fundamentally about the laws of nature. Rather, it manages innovation to ensure that human values and human priorities are advanced, and not diminished through new technology. This is what created HCI; this is what led HCI off the desktop; it will continue to lead HCI to new regions of technology-mediated human possibility. This is why usability is an open-ended concept, and can never be reduced to a fixed checklist.”

Conceptual Framework

Based on Norman (1998):

- **Designer’s Model**: Model of how the system should work
- **System Image**: How the system actually works as portrayed through interface, manuals, etc.
- **User’s Model**: How the user understands the system
HCI - A (brief) History

• We’re going to look at a number of eras of computing technology

• Number of questions for each of these:
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
- The Abacus
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
– Babbage’s Analytical Engine
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
– IBM Punch Card Tabulating Machine (1900s)
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
The “Bombe”

- What is this used for?
- Who is the expected user?
- What level of training / expertise is expected?
– ‘Valve’ Computers
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
- Transistor Computers
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
– Integrated Circuits / Microprocessors / Programming languages
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
- Desktop Computers
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
- Gaming Consoles
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
- Mobile Computing
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
– Ubiquitous / Pervasive Computing
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
- Wearables
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
- Social Media
  - What is this used for?
  - Who is the expected user?
  - What level of training / expertise is expected?
Welcome to Tesco Groceries

– Online Shopping
  – What is this used for?
  – Who is the expected user?
  – What level of training / expertise is expected?
HCI - A History (summary)

- Moving from expert systems to widely available technology
  - A closing of the gap between designer and user?
- Pervasive in daily lives, necessary to participate in society

- What are the emerging challenges?
- In terms of:
  - Who needs to use it?
  - What consequences if they can’t?
– Air traffic control
  – Who needs to be able to use this?
  – What are consequences if you can’t interact?
Register to vote

Use this service to:

- register to vote
- update your name, address or other details on the electoral register

You need to be on the electoral register to vote in elections and referendums.

Registering takes around 5 minutes.

You’ll need your National Insurance number (if you have one).

Start now

- Government services
  - Who needs to be able to use this?
  - What are consequences if you can’t interact?
– VR gaming
  – Who needs to be able to use this?
  – What are consequences if you can’t interact?
Blackboard

- Who needs to be able to use this?
- What are consequences if you can’t interact?
• Each of these assume access to computers capable of running the GUI/software

• Questions of *accessibility*, as well as usability…
  – Lecture 4!
Why study HCI?

• Regardless of how complex or useful a device is, you need to design it so that a user can use it to fulfill the functions it is supposed to fulfill.

• HCI is interested in aspects related to hardware, software, and different user groups.
Looking Back (again…)

• Rise of personal computing from the ‘70s
• Concurrently:
  – “cognitive engineering” in cognitive science
  – Human Factors in engineering
• Related developments:
  – Increasingly sophisticated documentation, taking into account human theories and user testing
  – Software engineering (non-functional requirements)
  – Developments in computer graphics (enabling GUI’s etc)
Human Factors & Ergonomics

• Understanding the human element in design of technology
  – Designing equipment and devices that fit the human body and its cognitive abilities

• NASA and IBM pioneered this work

• A lot of the concepts and methods in HCI are borrowed from engineering
Cognitive Ergonomics

• Related to Human Factors…

• Specifically the study of cognition in the HCI context:
  – Optimise human well-being and performance
  – Taking into account the human’s cognitive limitations
    • E.g. attention, memory, workload, etc.
  – User strategies, etc
Usability & Accessibility

• Started with the era of desktop computing, suddenly “usability” becomes a billion dollar industry
  – The design of interfaces that allow people to do their work without becoming frustrated
  – Based on cognitive psychology – understanding what people are capable of and comfortable with in terms of perception, memory, and cognition

• Accessibility addresses the need to make systems available to people regardless of disability, circumstance, background, etc
User Experience

• Putting the user at the centre of everything
  – Requirements, design, prototyping, dev & evaluation
  – Cognitive abilities, subjective experience, narratives, cultural impact

• Dialogue is the key – constant, constructive dialogue between designers, users and communities
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Date Picker Example

• A simple interface: pick a date…

• What could go wrong?

• What steps could be taken to resolve?
SatNav Example

• Following instructions to your destination

• What could go wrong?

• What steps could be taken to resolve?
VR Example

• An immersive experience: e.g. Oculus Rift, HTC Vive, etc

• What could go wrong?

• What steps could be taken to resolve?
(even more!) reasons to care about HCI...
### Your Final Year Project

**CMP3060M Project – Assignment 2**

#### Learning Outcomes

| LO2 | The intended project is evidenced and derived via a review and critical assessment of previous work in the domain of the intended project. (15%) |
| LO3 | Methodology chosen may not be entirely appropriate, justification for it may lack detail. A project solution which only partially fulfills the project aim. The reasons for this are either not given or may be unconvincing. A correctly structured report which may, however, struggle to adequately explain or fully justify the processes followed during the course of the project. (85%) |
| LO4 | The introduction, aim and objectives of the intended project are provided. With the aims and objectives appropriate for the project and the introduction providing good scope of the topic. (10%) |
| LO5 | The critical reflection dwells on issues related to the project and lessons (where identified) about not establishing (or adhering to) a realistic project plan. (10%) |

#### Citation

- A review of a small sample of the relevant literature. The majority of the review is descriptive, with only a small amount of critical assessment.
- A broadly descriptive review of appropriate academic literature is presented. Some critical assessment is made of the context of the work that has been reviewed.
- The methodology used is justified as best practice, with reference to appropriate academic literature. A project solution which clearly fulfills the aims of the project, but may lack some finesse in the manner in which this is done. A comprehensive evaluation of this solution has been given. A correctly structured report presented in an appropriate academic manner. Good detail, justification and explanation are provided at each stage of the design, development and implementation of the project solution.
- An impressive degree of critical analysis and assessment has been shown, establishing clear links to the aim and objectives devised for the project. The introduction clearly identifies the scope of the project which is ambitious, but fully worthy of a mark at this level.

#### Pass

- A broadly descriptive review of the relevant literature in the domain of interest. A considerable degree of critical assessment has been shown.
- The methodology used is comprehensively justified as best practice, with reference to an in-depth review of appropriate academic literature. A novel or particularly elegant solution to an ambitious aim set in a demanding project. A comprehensive and considered evaluation of this solution has been given. A very well written and correctly structured report presented in an appropriate academic manner. Full detail, justification and explanation are provided at each stage of the design, development and implementation of the project solution.
- A detailed critical reflection of all decisions made and processes followed. Lessons have been identified and discussed in an academically reflective manner. A fully detailed critical reflection of all stages of the project has been presented. This is presented in an academically reflective manner and deals methodically with specific problems that were encountered, identifying lessons learned from each of these.

#### 2:2

- A comprehensive and insightful review of the relevant literature in the domain of interest. An impressive degree of critical analysis and assessment has been shown in carrying out the literature review.

#### 2:1

- The methodology used in the project is comprehensively justified as best practice, with reference to an in-depth review of appropriate academic literature.

#### 1st

- The methodology used in the project is comprehensively justified as best practice, with reference to appropriate academic literature.
Job Market

Junior User Experience (UX) Designer

- Location: Birmingham, Halesowen (+ in-house relocation assistance available)
- Salary: £24,000 - £27,000 (neg) + comprehensive benefits (inc pension + flexible working hours + bi-annual salary reviews, free on-site gym etc)

Games Designer

- Location: Warwick
- Salary: £25k - £35k pa
- The Role

Interaction and User Research study Designer

- Location: Abingdon, Oxford
- Negotiable on level and experience
- Permanent

- September 24th 2017

- Also relevant industry experience in Interaction Design, HCI, Product Design, Industrial Design and an appreciation of Business Analysis, Software Development or Visual Design.
Next week:
Core Concepts - Cognition

See the Reading Material on Blackboard in preparation for this

In “Week A2” folder – under Workshop materials
Workshop

• Starts next Monday!

• Focus on foundations:

  – Exploring theoretical concepts from today
  – Exploring some old software in terms of user experience
    – It would help to do some background reading to prepare…
Due to Blackboard’s unfortunate circumstance, course material *for this week* can be found on:

http://paul-baxter.github.io/teaching-resources.html

- This includes the lecture notes, workshop tasks for next week, and the reading mentioned earlier
- They will be there after this lecture (later today)
- **Also on Blackboard**
Remember:

Please bring pen & paper to lectures and workshops!