Case Studies in Design Informatics 1 - INFR11094
Week 8 – 4th November 2024

Ageing, Care, Robots, Autonomous Systems + CW1.2 / 2.1

THE UNIVERSITY *of* EDINBURGH

design informatics

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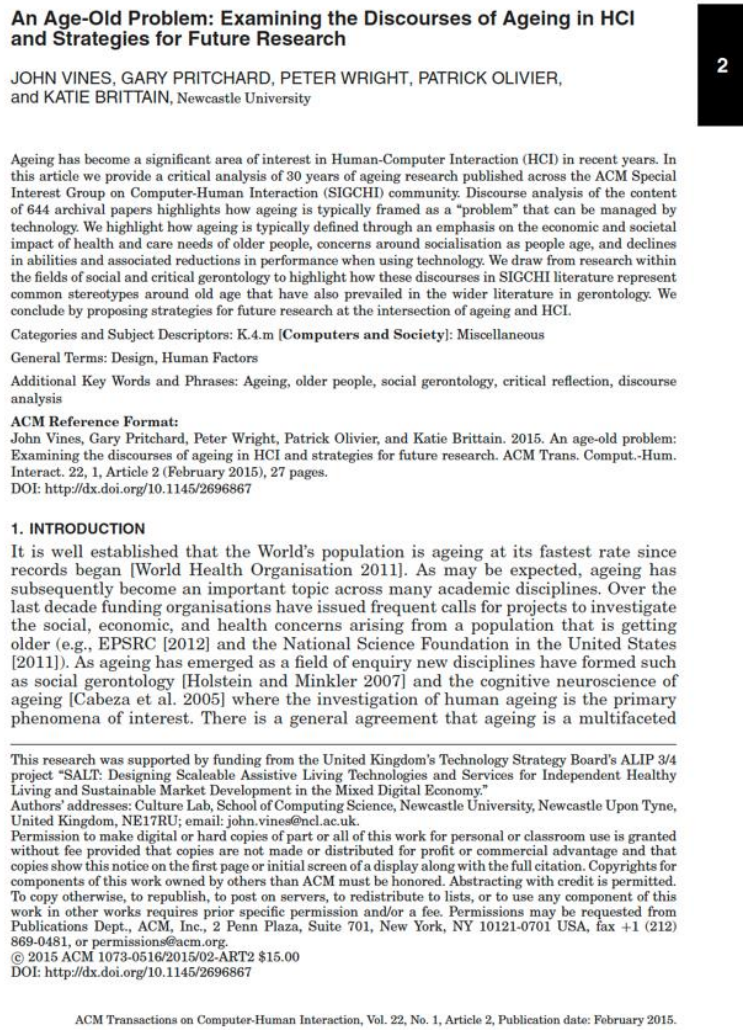
What we will do today

- A look at Ageing, Care, Robots…
- Break!
- Briefing on CW1.2 and CW2.1
- Questions
- Prep work for next week

Ageing and Technology Design: An Age Old Problem



An Age-Old Problem: Examining the Discourses of Ageing in HCI and Strategies for Future Research

JOHN VINES, GARY PRITCHARD, PETER WRIGHT, PATRICK OLIVIER, and KATIE BRITTAIN, Newcastle University

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Ageing has become a significant area of interest in Human-Computer Interaction (HCI) in recent years. In this article we provide a critical analysis of 30 years of ageing research published across the ACM Special Interest Group on Computer-Human Interaction (SIGCHI) community. Discourse analysis of the content of 644 archival papers highlights how ageing is typically framed as a "problem" that can be managed by technology. We highlight how ageing is typically defined through an emphasis on the economic and societal impact of health and care needs of older people, concerns around socialisation as people age, and declines in abilities and associated reductions in performance when using technology. We draw from research within the fields of social and critical gerontology to highlight how these discourses in SIGCHI literature represent common stereotypes around old age that have also prevailed in the wider literature in gerontology. We conclude by proposing strategies for future research at the intersection of ageing and HCI.

Categories and Subject Descriptors: K.4.m [**Computers and Society**]: Miscellaneous

General Terms: Design, Human Factors

Additional Key Words and Phrases: Ageing, older people, social gerontology, critical reflection, discourse analysis

ACM Reference Format:
John Vines, Gary Pritchard, Peter Wright, Patrick Olivier, and Katie Brittain. 2015. An age-old problem: Examining the discourses of ageing in HCI and strategies for future research. ACM Trans. Comput.-Hum. Interact. 22, 1, Article 2 (February 2015), 27 pages.
DOI: http://dx.doi.org/10.1145/2696867

1. INTRODUCTION

It is well established that the World's population is ageing at its fastest rate since records began [World Health Organisation 2011]. As may be expected, ageing has subsequently become an important topic across many academic disciplines. Over the last decade funding organisations have issued frequent calls for projects to investigate the social, economic, and health concerns arising from a population that is getting older (e.g., EPSRC [2012] and the National Science Foundation in the United States [2011]). As ageing has emerged as a field of enquiry new disciplines have formed such as social gerontology [Holstein and Minkler 2007] and the cognitive neuroscience of ageing [Cabeza et al. 2005] where the investigation of human ageing is the primary phenomena of interest. There is a general agreement that ageing is a multifaceted

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DOI: http://dx.doi.org/10.1145/2696867

- A detailed "discourse analysis" of 644 papers in HCI conference and journals on "ageing".

- Reveals how technology research and development (R&D) for later life is focused on:
  - Reducing the "health risks" of growing old
  - Issues of social isolation
- Makes generalisations about old age
- Emphasises the "deficits" of getting old and declining abilities

- What technology R&D rarely does is:
  - Focus on what is enjoyed by older people and how technology may help that
  - Consider what people get stronger at when we get older – skills, experience, expertise of people in later life
  - Involve older people directly in design processes

John Vines, Gary Pritchard, Peter Wright, Patrick Olivier, and Katie Brittain. 2015. An Age-Old Problem: Examining the Discourses of Ageing in HCI and Strategies for Future Research. ACM Trans. Comput.-Hum. Interact. 22, 1, Article 2 (March 2015), 27 pages. https://doi.org/10.1145/2696867

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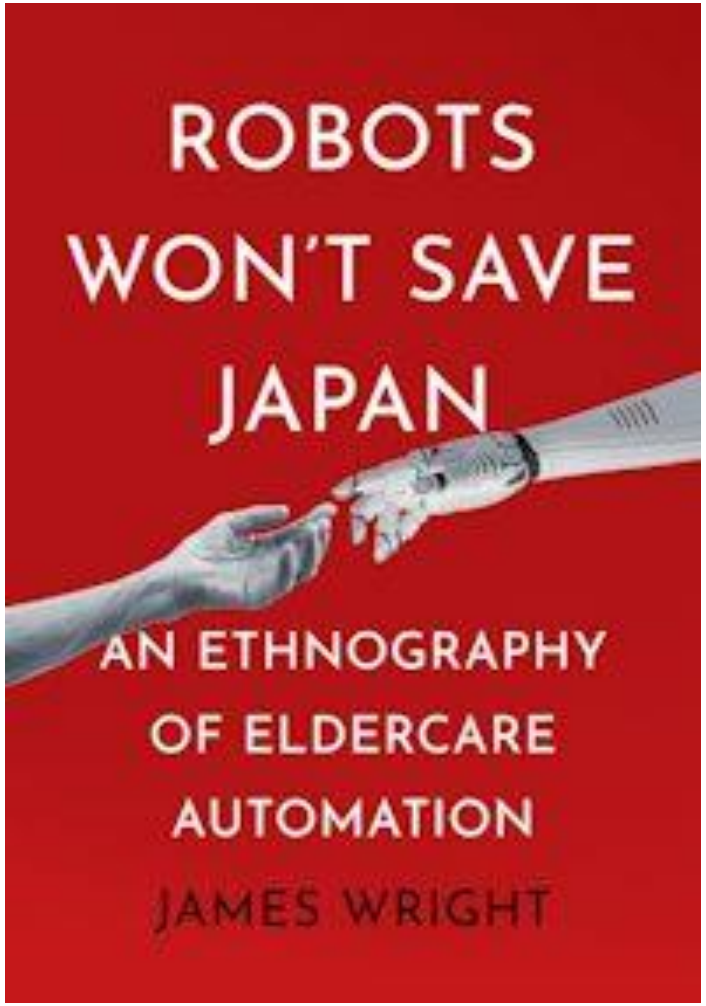
Ageing, Care and Robotic and Autonomous Systems



James Wright. Robots Won't Save Japan: An Ethnography of Eldercare Automation. Cornell University Press, New York, USA.

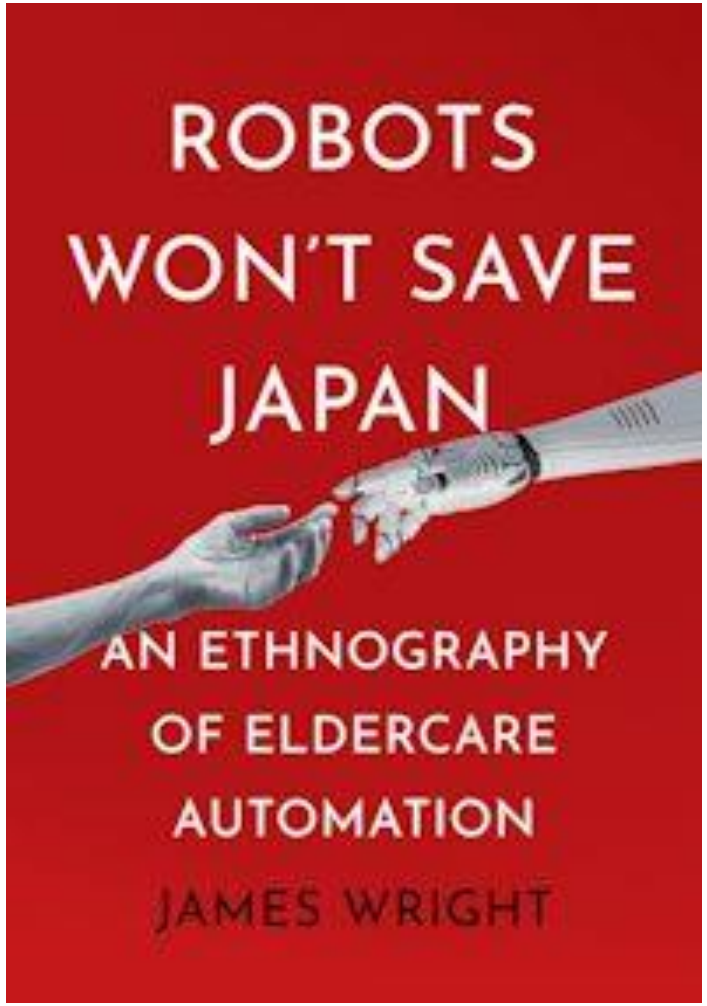
Ageing, Care and Robotic and Autonomous Systems

Japanese context is interesting because:

- Huge investment in robotics industry.
- Higher cultural acceptance, interest and inquisitiveness around robots.
- Identified ageing demographics earlier than many nations and placed research and development funding in this area sooner.

Therefore, the ”problems” with integrating robots into Japanese aged care services and to help older people is interesting to understand. The fundamental issues:

- These technologies create additional “work” or “labour”.
- The new work and labour they generate often requires a technical literacy which is not so common in care workforces.
- They are viewed as replacing the type of human work that can lead to social interaction and contact.
- The focus on “anthropomorphism” (mimicking human beings) can be viewed as infantilising and dehumanising older people.
- Emphasises that care is a “transaction” and not about “relations”



3,2,1 submissions this week…

Student question!

Does the robot in the first video look a little weird? When I saw him, I felt a little disgusted. As a robot that has no actual physical function and only uses to make sound, is it really necessary to make such a robot?

Let’s jump into Miro!

https://miro.com/app/board/uXjVLOamQ0s=/

Activity 1!: 15 mins

The year is 2080 ….

- *Write down five words that convey what you believe will be important to you in your 2080 life.*
- *Write down five words that convey how you **feel** about the robotics examples from the pre-work videos.*
- *Organise your words into the two final frames in pairs – one from green, one from pink.*
  - *These two are oppositional to each other…*
  - *These two are complimentary to each other…*

Student question!

Since robots nowadays cannot independently care for the elderly and mainly provide companionship, why not just have pets, which may offer even richer interaction?

(Related question from last year:

Why not research robots that can take care of cats and dogs, and then let these pets provide emotional care for the elderly?)

Student question!

But this raises an interesting question: why should we design robots specifically for the elderly? What unique considerations should we take into account when designing robots for older adults compared to a general-purpose robot?

Service Robots

Rosa - stair climbing service robot

https://quantumroboticsystems.com/products/rosa/

Gita – outdoor service robot

https://piaggiofastforward.com/

Social, Service Robots

Furhat – a “social” service robot

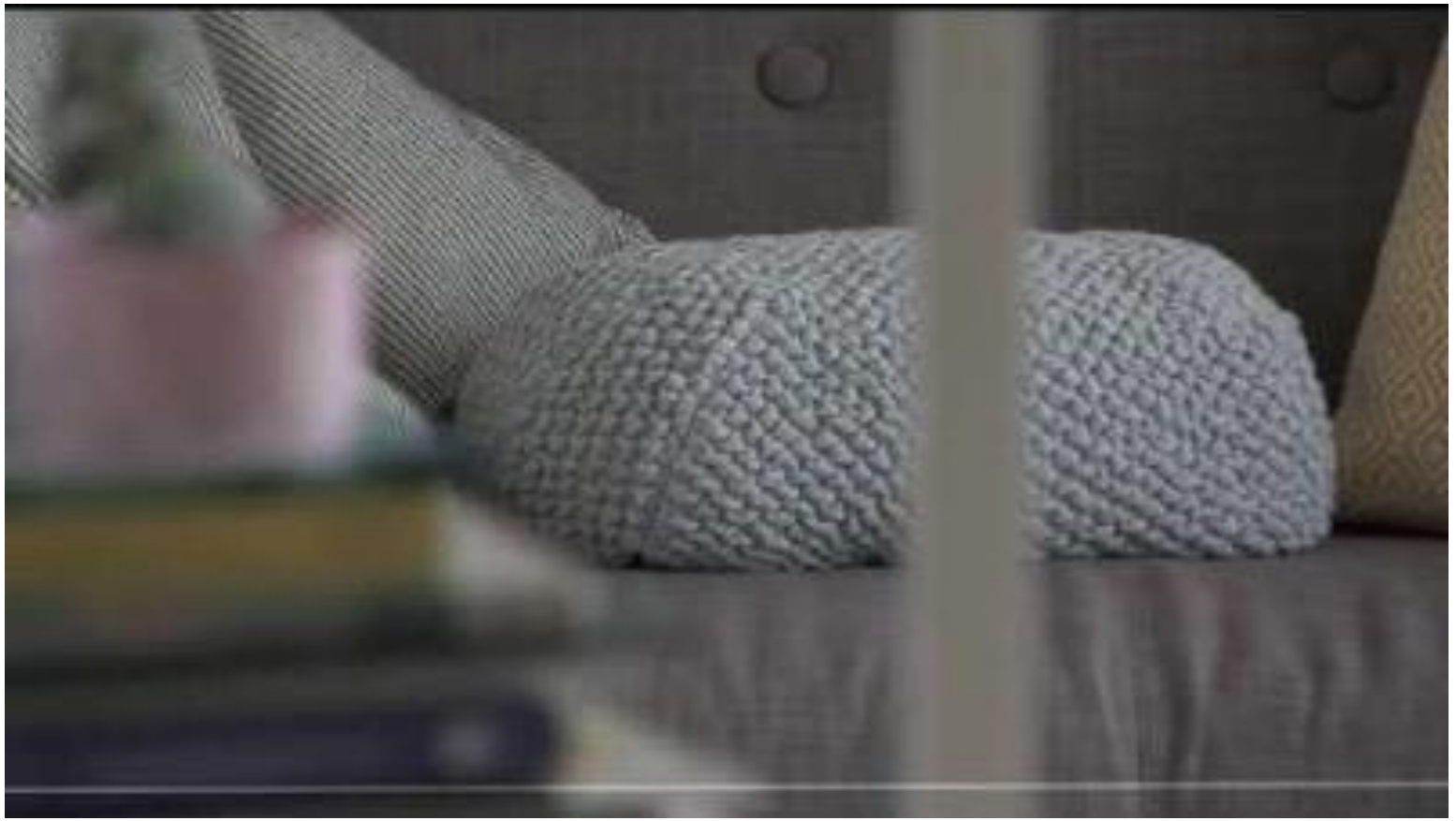
https://furhatrobotics.com/

Student questions!

One feature of the health related robots is that they always try to mimic human appearance, sound etc, while in reality these robots has way too far to reach the expectations shaped by their hyped-up image. Is there better way to design these robots instead of fooling users to believe they are human?

Why do caring robots imitate human shapes? Is this a human-centered design?

Social and Companion Robots



Maah - a social companion robot

https://konpanion.com/

Student question!

The video "uninvited guests" kind of made me feel like the robots can feel annoying or overwhelming at times. It's hard to find the right balance between engaging with the elderly person and leaving them alone; I wonder how the manufacturers find this balance.

Uninvited Guests: An example of critical design

- This video is a critical design – it is a critique of the way we treat older people and care in relation to technology design
- The video was designed to provoke discussion – and we've used this video a lot in projects working on ageing and care technology to generate discussion in project teams.

Let's re-watch the video – and watch it closely, thinking about the following:

- What is being shown and why is it being shown?
- How are visual and sound effects being used?
- What appears to be important to the character in the film?
- What appears to be important to the characters we don't see?
- What is the technology trying to achieve?
- Why is the character trying to stop the technology achieving what it is designed to do?

Uninvited Guests

Superflux / Thing Tank. 2015. Uninvited Guests.

Take a break!
Back at 16:10

CW1.2 and CW2.1

Assignment overviews are on LEARN

Post questions on CW1.2 and CW2.1 in Miro while I talk …

https://miro.com/app/board/uXjVLOamQ0s=/

Coursework 1.2: Case study analysis and reflection

Syllabus

Lectures

Week	Day	Who	Topic
1 (w/c 16th Sep)	Mon	SL/JL	Course Introduction + Introduction to Design Thinking
2 (w/c 23rd Sep)	Mon	JL	Research into, for and through Design
3 (w/c 30th Sep)	Mon	SL	Ethical Design Practice
4 (w/c 7th Oct)	Mon	SL	Case Studies in XR and Cultural Heritage
5 (w/c 14th Oct)	Mon	SL	Case Studies in LLMs and Creative Industries
6 (w/c 21st Oct)	Mon	SL	Case Studies in IoT and Sustainability
7 (w/c 28th Oct)	Mon	JL	Case Studies in Blockchain and Civic Participation
8 (w/c 4th Nov)	Mon	JL	Case Studies in Autonomous Systems and Ageing
9 (w/c 11th Nov)	Mon	SL	Probes in Design Research
10 (w/c 18th Nov)	Mon	JL	Co-Design in Design Research
11 (w/c 25th Nov)	Mon	SL	Q&A refresher session

SL: Susan Lechelt - **JL:** John Lee

Tutorials

Week	Tutorial
3 (w/c 30th Sep)	How to use the ACM Digital Library
4 (w/c 7th Oct)	How to analyse a case study
6 (w/c 21st Oct)	Analysis of a case study #1
7 (w/c 28th Oct)	Analysis of a case study #2
9 (w/c 11th Nov)	Cultural Probes
10 (w/c 18th Nov)	Co-Design

Block 1 – What is design (research)

Block 2 – Case studies of data and design

Block 3 – Applying a design (research) method

Coursework 1.2: Case study reflection and analysis

CW1 – Studying Case Studies (Individual) – 50%

- 1.1. - Comparing two different approaches to design research – 5% - 11th October 2024 (PASS/FAIL)
- 1.2. - Case study reflection and analysis – 45% - 9th December 2024

CW2 – Applying a Design Method and Weekly Engagement (Individual) – 50%

- 2.1 - Portfolio of materials for Probe study – 45% - 10th January 2025
- 2.2 - Evidence of weekly engagement in Course Notebook – 5% - each week throughout the course!

Coursework 1.2: Case study analysis and reflection

For this coursework, you are asked to write a 1000-word (+ / - 10%) report that analyses a case study of a **technology** that is of relevant to design informatics that is applied in a specific **domain**.

Do not exceed the word limit!

Coursework 1.2: Case study analysis and reflection

Choosing a technology and domain for your case study:

You can choose what the technology or domain is for the case study. However, you should consider the following:

The “technology” should be relevant to design informatics - i.e., a data-driven technology of some sorts. A sensible approach would be the consider the types of technologies we have discussed in the weekly lectures in CDI1 – such as: large language models, internet of things / connected devices, blockchains / distributed ledgers, virtual reality / extended reality, robotic / autonomous systems. But you can go beyond these.

The ”domain” should be a context, setting, sector, user group that the technology is currently applied in, or will be in the very near future. This means, you will need to evidence that the technology and domain are relevant to each other. Again, a sensible approach would be to consider the types of domains we are looking at through the weekly lectures in CDI1: sustainability, creative industries / cultural experiences, healthy ageing, etc. But, again, you can go beyond these.

Coursework 1.2: Case study analysis and reflection

The analysis of your case study:

Your analysis should focus on critically discussing **one of** the: (1) social implications; or (2) environmental implications; or (3) legal implications of the case study technology in relation to the domain**. Your analysis must primarily focus on one these areas** – although we are aware that it may be impossible to not briefly reference issues that relate to other implications as well**.**

In the analysis of the case study, you should find and clearly cite at least **five publications** and use them to critically discuss the case study in your own words. You may use unaltered brief extracts from these papers, but these must be in quotation marks with a clear reference of the source.

The limit for this assignment is 1000 words (+ / - 10%). This includes any quotes you include.

The publications you include can be from any reliable source. They **do not** need to only be from the ACM Digital Library. However, you need to include a reference list at the end that is in ACM format (the same format as requested for CW1.1).

Coursework 1.2: Case study analysis and reflection

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Block 1 – What is design (research)

Block 2 – Case studies of data and design

Block 3 – Applying a design (research) method

Coursework 1.2: Case study analysis and reflection

Recommended structure:

We recommend that you follow the following structure for the main text of your report:

1. Introduce the technology and domain of the case study (approximately 100 words).
2. Critical analysis of the implications of the case study technology in the case study domain (approximately 600 words).
3. Recommendations for future research and practice to manage / mitigate any identified issues with these technologies in this domain (approximately 300 words).

Coursework 1.2: Case study analysis and reflection

This assignment will have the following assessment criteria:

- A clear introduction of the case study, that explains the chosen technology and application domain that is being analysed, with reference to examples. – 15%
- A clearly stated and justified focus on one of the social, environmental or legal implications of the selected case study. – 15%
- Well justified (with references) critical analysis of the case study, demonstrating awareness of the ethical challenges associated with the technology in the chosen application domain. – 40%
- A clear conclusion, with well justified recommendation(s) for future research and practice. – 15%
- Correct referencing **in ACM format** of at least five publications. – 5%
- Quality of writing throughout (including spelling, grammar, structure). – 10%

Coursework 1.2: Case study analysis and reflection

Deadline: 12:00 (midday) 9th December 2024
Submitted via: Learn
Extension policy: Rule 1 – See: https://web.inf.ed.ac.uk/node/4533
Assessment value: 45% of final course mark

Coursework 2.1: Designing a fictional design research study

Syllabus

Lectures

Week	Day	Who	Topic
1 (w/c 16th Sep)	Mon	SL/JL	Course Introduction + Introduction to Design Thinking
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Block 1 – What is design (research)

Block 2 – Case studies of data and design

Block 3 – Applying a design (research) method

Coursework 2.1: Designing a fictional design research study

CW1 – Studying Case Studies (Individual) – 50%

- 1.1. - Comparing two different approaches to design research – 5% - 9th October 2023 (PASS/FAIL)
- 1.2. - Case study reflection and analysis – 45% - 8th December 2023

CW2 – Applying a Design Method and Weekly Engagement (Individual) – 50%

- 2.1 - Portfolio of materials for Probe study – 45% - 9th January 2024
- 2.2 - Evidence of weekly engagement in Course Notebook – 5% - each week throughout the course!

Coursework 2.1: Designing a fictional design research study

For this CW, we ask you to select a case study technology and application domain and design a "fictional" research study using Probes or Co-Design.

You will be introduced to these two design research methods in the final two lectures and two tutorials for CDI1. This CW gives you a chance to explore how you might use them in practice.

The idea behind CW2.1 is that you will look at how you might use Probes or Co-Design in a future project, in relation to exploring a technology and application domain that interests you.

We **do not expect you to run a study for this assignment** – the focus is on you creating some materials that demonstrate to us you understand what Probes are or what Co-Design is, and to write a convincing plan on how you will use these.

Coursework 2.1: Designing a fictional design research study

Choosing a case study:

For this CW, you can keep focusing on the case study you explored in CW1.2, which you should have already read extensively about and critically analysed. However, you are also welcome to move into a new technology and application domain should you wish to.

You will not be marked differently for these choices, but we do expect engaging with the same domain as CW1.2 as being simpler for students.

Coursework 2.1: Designing a fictional design research study

Choosing a design research method:

We have purposely limited your choice to using either Probes or Co-Design as part of your fictional study. You will have lectures and tutorials that focus on these specific design research methods. These are both very commonly used as part of the early stages of design research processes – but both Probes and Co-Design activities still need careful study design, materials design, and reflective use in practice. Therefore, it's not a simple as you just following a recipe for a method – you have to refine the method and make it distinct for you own fictional project.

You only need to choose one of Probes or Co-Design for your project. We **are not** asking you to design a project that uses both.

Coursework 2.1: Designing a fictional design research study

Option #1:

For this option, you need to submit a four page "annotated portfolio" of the materials that will be used to conduct a "fictional" design research study that uses either a Probe or Co-Design in your chosen design informatics application domain.

Your annotated portfolio should be primarily visual, comprising of images (which can include developmental sketches, inspirational images as long as they are correctly cited and credited). Your images should also include textual "annotations" that describe what is being shown.

You also need to submit a 500 word plan for how the materials will be used in a project (e.g., describes how you will run your Probe study, or run a Co-Design workshop).

You also need to submit a 500 word reflection describing the rationale for decisions made in the design of the materials and the plan.

Coursework 2.1: Designing a fictional design research study

Option #2:

A written report of 1500 words that describes how either Probes or Co-Design might help you generate novel insights when used in a chosen design informatics application domain.

The report should introduce the technology and application domain you are focusing on, what type of approaches to design have been primarily used in that domain in the past, and how using Probes or Co-Design might lead to new and different types of insights. You should also consider discussing whether projects in this domain have used Probes or Co-Design in the past, and what you have learned from them.

You also need to submit a 500 word plan for how you would then use a Probe or Co-Design in your fictional project (e.g., describes how you will run your own Probe study, or run a Co-Design workshop).

You should also then submit a 500 word reflection describing the rationale for decisions made in the design of this plan, and articulate what type of "materials" may be needed to facilitate it.

Coursework 2.1: Designing a fictional design research study

This assignment will have the following assessment criteria:

- A clear explanation of the domain (the technologies, the application context) that is the focus of the assignment. – 10%
- A clear plan for the use of Probes or Co-Design in the fictional project, with reference to prior examples. – 20%
- Well justified (with references) critical analysis of the choices made in the design and plan for using Probes or Co-Design in the fictional project. – 15%
- A clear reflection on how research ethics would be addressed (e.g., gaining consent, ensuring privacy, etc). – 5%
- Correct referencing in ACM format of at least five publications ***and appropriate acknowledgment of any use of AI tools, if applicable***. – 5%
- Quality of writing and visuals throughout (including spelling, grammar, structure, image clarity). – 5%

Acknowledgment of use of Generative AI

If you have used Generative AI to support your work (including for ideation, help with improving grammar, generating images, help with structuring your assignment, etc.) you should include a statement (up to 100 words) explaining how you have done this and with which AI tools. Please write "Not Applicable" in the corresponding box of the submission template if you have not used AI in any way. This statement does not count towards the 1000-word limit.

Guidance on acceptable use of AI at University of Edinburgh, and how to acknowledge its use, can be found here: https://registryservices.ed.ac.uk/sites/default/files/2024-10/Generative%20AI%20Guidance%20for%20Students%20October%202024.pdf

Coursework 2.1: Designing a fictional design research study

And then these option specific assessment criteria:

- For Option #1: A visually clear portfolio that visually communicates the materials to be used in the fictional project. – 20%
- For Option #1: Clear written annotations that describe the visual elements of the portfolio, and communicate to the reader some of the critical decisions made the creation of the materials. – 20%

- For Option #2: Well justified (with references) critical analysis of the domain chosen that demonstrates awareness of main design approaches used in this domain. – 20%
- For Option #2: A clear discussion (with references) of examples of projects in this domain that used Probes or Co-Design, and how you will learn from and build on these. – 20%

Coursework 2.1: Designing a fictional design research study

Deadline: 12:00 (midday) 10th January 2025

Submitted via: Learn

Extension policy: Rule 1 – See: https://web.inf.ed.ac.uk/node/4533

Assessment value: 45% of final course mark

Examples of design portfolios

- Examples of design portfolios can sometimes be found online
- For instance, the ACM Conference on Designing Interactive Systems (DIS) has submissions called “Pictorials” …
- Some nice examples of these can be found here: https://dis.acm.org/2024/pictorials/

Questions…

Tasks for the next 5 days:

1. Read: Gaver, B., Dunne, T., & Pacenti, E. (1999). Design: cultural probes. Interactions, 6(1), 21-29. https://www.researchgate.net/profile/William-Gaver/publication/224927574_Cultural_Probes/links/5422c9d00cf238c6ea6c8b68/Cultural-Probes.pdf
   Note: the HTML links from Interactions come out not very well formatted, but the ResearchGate link above should be accessible to all.

2. Skim: Wenn-Chieh Tsai, Daniel Orth, and Elise van den Hoven. 2017. Designing Memory Probes to Inform Dialogue. In Proceedings of the 2017 Conference on Designing Interactive Systems (DIS '17). Association for Computing Machinery, New York, NY, USA, 889–901. https://dl.acm.org/doi/10.1145/3064663.3064791
   Note: this paper can help you think through what a design portfolio for CW2.1 Option 1 might look like.

3. Complete your Class Notebook submission in MS Teams, as usual.

Any questions?

If you have any questions about this week's lecture, contact me at : j.lee@ed.ac.uk

For next week, ask Susan: susan.lechelt@ed.ac.uk