Prototype Design and Research Project

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Figure 1: Using non-standard interactions to enhance everyday sustainable living.

0.1 Outline

- **Due date**: 2025-10-27 23:59 AEST
- **Mark weighting**: 40%
- **Submission**: submit your assignment according to the instructions below
- **Policies**: Late submission is not permitted for this assessment. This is an individual assessment task.
- **Gitlab Template Repository**: https://gitlab.cecs.anu.edu.au/comp3900/2025/comp3900-2025-research-project

0.2 Description

The final project involves a complete design and evaluation process for a prototype interactive system. You must design a prototype system in response to a real-world problem. You will evaluate this system and report on the results using HCI research methods. Your design and evaluation challenge is as follows:

> **Sustainable living through technology**: You woke up this morning, checked your email, and found that you have a new job—*ANU Student Lead for Sustainable Living*! Your challenge is to help university students adopt sustainable behaviours in their everyday lives guided by the UN Sustainable Development Goals (SDG) which call for urgent action on climate change, responsible consumption, and sustainable communities. You will need to *choose a focus* (e.g., energy use, waste reduction, transportation, consumption), *prototype* and *evaluate* an interface to make sustainable living more accessible, engaging or effective. Your system should involve a level of non-standard interaction[1], either through unusual use of

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[1]Non-standard interaction is a bit difficult to define but should be something that goes beyond a standard web-application operated only by keyboard, mouse, or touchscreen. Your prototype can involve these standard technologies, it should also

standard computer IO hardware, or a novel interface.

To address this challenge, you will need to develop a specific **research question** that incorporates your area of interaction, a problem, and a justification. You will need to design a **testable prototype**[2], and create an **evaluation plan**. You will need to run an **evaluation** of your prototype with 3–5 classmates, **analyse data**, and **articulate findings** that connect to your research question.

Your work will be submitted as a portfolio including your prototype materials, research data, analysis, references, and a presentation. The presentation should cover the research question, design rationale, prototype demonstration, evaluation methodology, and results in the following sections:

1. **Research Question, Plan, and Conclusions**: explain why you chose the system you have designed, your study plan including data gathering strategies, analysis framework(s), and justification from HCI academic research, and summarise the overall conclusions from your data analysis.

2. **Prototype Design and Features**: explain your prototype design and features, including visual documentation and demonstration of how it can be tested. Explain how it meets the needs of users in this context of use.

3. **Research Data, Analysis and Findings**: present analysis of your data and your findings from this data, include excerpts from data, plots, tables, or other presentation approaches to help articulate your findings. **NB: in this project, you can choose to collect either qual, quant, or both types of data**.

4. **COMP6390 Only—Positionality Statement**: critically reflect on your presence and influence within the technology design process in a statement of positionality. This statement must reflect on your experiences and background and how this manifests in the design and research process. This section is required for postgraduate students to meet Learning Outcome 5 in COMP6390. Undergraduate students **should not** complete this section.

You will also include a written version of your presentation with the same headings. The written document may be a transcript of your presentation or may be slightly different text.

Note: your presentation video is the primary document for marking purposes.

0.3 Specification

- include documentation of a testable prototype, research question, evaluation plan, data collection, data analysis, and articulation of findings
- include a **video recording** of a presentation which follows the provided headings: `project-presentation.mp4`
  - presentation video must be in `.mp4` format using h.264 or h.265 video encoding
  - presentation video must be no larger than 1920x1080 pixels in resolution
  - must be a maximum of 5 minutes (300 seconds) + 10% acceptable buffer (i.e., no more than 330 seconds).
- include documentation in `project-documentation.md` which follows the provided headings (**N.B.:** this text may be a transcript of your spoken presentation with references and images, it may also be a slightly different text.)
  - include at least two references to external sources in ACM format
  - be written in markdown format meeting our standards
  - be a maximum of 1800 words + 10% acceptable buffer (i.e., no more than 1980 words)

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involve interaction beyond them in some way.

[2]A testable prototype should enable evaluation with a potential user. This can be achieved with different levels of fidelity but needs to enable a user to enact or imagine the specific process of an interaction in order to measure their experience.

- must be uploaded to *your fork* of the `comp3900-2025-research-project` repository on Gitlab by the due date

0.3.1 Presentation Video Format and Style

You must record a 5-minute presentation that articulates your work in the format of the above sections. Your presentation must:

- be clear and concise covering the section headings above
- audio must be clear and understandable and **spoken by you**
- you must include **video of your face** while presenting in the presentation. your face must be clear and identifiable in the video
- must include at least 5 but no more than 10 slides
- title slides, personal introductions, tables of contents, reference slides are not required (waste of time!)

The easiest way to create a five-minute presentation would be to use Microsoft Powerpoint, and record the presentation using the built in recording tool. Instructions for recording the presentation are here (link). Microsoft 365 applications are provided to all ANU students.

Important: Note that you **must not** use generative AI or text-to-speech software to create or record your presentation. It must be you presenting your research and you must be identifiable in the video recording.

Submissions that do not clearly meet these requirements may be aligned with the "N" standard in one or more rubric criteria and may be required to complete a supplementary presentation before grades are finalised.

0.4 Submission Process

1. Fork the template repository.
2. Follow appropriate prototyping, data gathering and analysis processes to address the research challenge.
3. Write your project documentation following the template in *your fork* of the template repository.
4. Upload data and project documentation as well as other relevant materials in *your fork* of the template repository.
5. record and upload your video as `project-presentation.mp4`
6. Don't forget to include at least two references to external sources in ACM format in your documentation.

0.5 Notes

Here's how to get started with the work in this assignment:

1. Develop a research question for the design and evaluation challenge using the RQ framework

2. Ideate and design a *testable* prototype as a solution to the design and evaluation challenge. Use your research skills to find examples of related systems (e.g., at CHI) and use them to inform your process.

3. Create an evaluation plan. Make sure your study plan is realistic.

4. Find participants – **they must be current COMP3900/6390 students**. Attend all classes and find 3–5 people in your tutorial who will participate in each others' studies. Don't leave this until the last minute!

5. Collect data with your participants. You could do this during a drop-in session. You will need to participate in other people's studies as well ask them to participate in yours. (don't make up the data).

6. Analyse your data. Use the analysis techniques covered in classes. Remember that you do not need to collect both quantitative and qualitative data in this assessment and can choose what data and analyses to perform depending on your design choices and interests.

7. Summarise your findings. Your overall conclusions should be supported by data and analysis.

8. Write up your project in the correct format in your fork of the gitlab repository. Make sure you are using correct markdown syntax and have included all data and analysis files in your repository.

9. Create and record a presentation following the instructions above. Ensure that the presentation video is in `.mp4` format, and is less than 330 seconds. Make sure that you record your own voice and include video of your face in the presentation video. You can do this using Microsoft Powerpoint (ANU-provided software). Upload your recorded presentation as `project-presentation.mp4` in your fork of the project repository.

10. Acknowledge your research participants by listing them in your *Acknowledgements* section.

Here's some general advice:

- Don't forget to ask for help or advice on the course forum: Ed Discussions
- Generative AI is not banned in this course, but should not be used to present your presentation (i.e., the voice and video in the presentation must be you). Submitted assignments are expected to be primarily your own work. Any use of generative AI must be explained in your *Acknowledgements* section including the scope to which it is applied. Use of generative AI without appropriate explanation and referencing comes under the *N* category in the marking rubric.
- You may use generative AI to help with aspects of data analysis (see lectures!) but you are responsible for the output and whether findings are justified or not, we may re-run analyses to check your data.

0.5.1 Congratulations! You finished the course! ⭐⭐⭐

Once you've uploaded your final presentation video, all materials, and have green ticks on the CI jobs for your GitLab repo you have completed all the assessment tasks for COMP3900/6390!

If you are curious about more learning and research in HCI here's a few options:

- Look at the coursework options for our Human Centred and Creative Computing specialisations (UG and PG), major, or minor. The classes offered within these change regularly so keep an eye on Programs and Courses to see what classes and topics are scheduled.
- Do an HCI-related honours/master project at ANU
- Opportunities for publishing HCI research would be late-breaking work tracks at OzCHI, CHI, or DIS, student design competitions, or graduate student symposiums at these and other conferences.

Whether you wish to learn more about HCI or are leaving us here, congratulations on completing your final project for this class! Thanks for coming on this journey with us!

0.6 Marking Rubric

- Sophistication and clarity of the design research plan in terms of HCI design and research methods. (**UG:** 10 marks, **PG:** 5 marks)
- Sophistication as a prototype of a new design idea. (10 marks)
- Sophistication of data collection, analysis and articulation of findings. (20 marks)

- **PG Only:** Sophistication of reflexive positionality statement and how this manifests in the design process. (**PG:** 5 marks)

(more detail TBA)