CPT208 Portfolio (Individual Work)

Module Name:	CPT208 Human-Centric Computing
Module Leaders:	Dr Yue Li and Dr Teng Ma
Marks:	15% of the module mark

Learning Outcomes Addressed

A. Recognize the issues involved in designing computer systems for people including an understanding of the relevant legal, social, ethical and professional issues.

B. Demonstrate an understanding of the basic formal methods and techniques for interaction design.

C. Develop technical skills required for the implementation of interactive systems.

D. Critically evaluate interactive systems.

E. Demonstrate an understanding of the methods and issues involved in deploying interactive systems to meet business goals.

Submission Format

- Individual submissions should be made for individual work.
- Naming formats and examples:
    - CPT208_Group01_StudentID_Portfolio.pdf
    - CPT208_Group01_StudentID_DemoVideo.mp4

Project Theme – **Generative AI in X**

Generative Artificial Intelligence (AI) has emerged as a transformative technology, capable of creating new content, designs, and solutions across a wide range of domains. From generating text, images, and music to designing complex systems and solving real-world problems, generative AI is reshaping how we interact with technology and approach creativity.

In this group project, please explore the theme of "**Generative AI in X**," where "X" represents a specific domain or application area that can benefit from the capabilities of generative AI. You will work collaboratively to design, prototype, implement, and evaluate a solution that leverages generative AI to address a human-centered problem.

The goal of this project is to create a system or tool that not only demonstrates the technical capabilities of generative AI but also emphasizes its potential to enhance human experiences, solve practical challenges, and improve accessibility, creativity, or efficiency in a chosen domain. You are encouraged to think critically about the ethical implications, usability, and societal impact of your solutions, ensuring that the technology aligns with human-centric design principles.

Here are some examples of "X" (Potential Domains for Generative AI Applications):

1. **Generative AI in Education**: Developing AI-powered tools to create personalized learning materials, generate practice questions, or design interactive educational content tailored to individual student needs.
2. **Generative AI in Healthcare**: Creating systems that generate appropriate motivations for people to keep healthy, assist in diagnosing conditions, or design personalized treatment plans.
3. **Generative AI in Cultural Heritage**: Developing tools that promote, restore, and reimagine cultural heritage in innovative ways, making it more accessible and engaging for future generations.
4. **Generative AI in Creative Arts**: Building tools that generate music, visual art, or storytelling content, enabling artists to explore new creative possibilities or collaborate with AI.
5. **Generative AI in Gaming**: Designing AI systems that create dynamic game environments, characters, or narratives, enhancing player immersion and engagement.
6. **Generative AI in Accessibility**: Developing solutions that generate alternative text for images, create sign language animations, or design accessible interfaces for individuals with disabilities.

Through this project, you will gain hands-on experience in applying generative AI techniques, such as large language models (LLMs), generative adversarial networks (GANs), or variational autoencoders (VAEs), to real-world problems. By focusing on human-centric design, you are expected to create solutions that are not only technically innovative but also meaningful and impactful for end-users.

Portfolio – PDF and Demonstration Video (15% of the module mark)

This is **an individual coursework** based on your group project.
Due Date: 2025.05.09, Friday, Week 12

Work independently to prepare a portfolio PDF (up to 10 pages) and a demonstration video (up to 3 minutes). These deliverables are designed to document your project's development, showcase your technical and creative skills, and communicate your findings effectively.

The portfolio PDF is a comprehensive document that provides a detailed overview of your project, from conception to evaluation. It should demonstrate your understanding of generative AI, your design and implementation process, and the human-centric impact of your work.

Your portfolio should consider including the following content. However, *you do not have to follow the exact sequence / structure.* For example, you could structure your portfolio based on the key requirements / system features / the design iterations you went through.

1. Title Page:
    - Include the title of your project, you and your team members' names, module information, and submission date.
2. Background and Introduction:
    - Describe the topic of "Generative AI in X" and the specific domain (X) you chose.
    - State the problem or opportunity your project addresses and its relevance to human-centric computing.
    - Summarize existing work or research in your chosen domain (X) and explain how your project builds on or differs from it.
3. Design and Methodology:
    - Give an overview of the design process, target users, and key requirements and issues.
    - Explain how you approached the problem, including any datasets, tools, or frameworks used.
    - Include diagrams, flowcharts, or pseudocode to illustrate your system architecture or workflow.
4. Prototyping and Implementation:
    - Provide a detailed overview of the prototyping and implementation process.
    - Highlight any challenges you faced and how you addressed them.
    - Include mockups, screenshots, code snippets, or other visuals to demonstrate your work.
5. Evaluation and Results:
    - Describe how you evaluated your solution (e.g., heuristic evaluation, usability testing, experimental design, field study, analytics, or expert feedback).
    - Present your findings, including quantitative results (e.g., graphs, tables) and qualitative feedback.
    - Discuss the human-centric impact of your project (e.g., improved accessibility, enhanced user experience, or societal benefits).
6. Discussion and Reflections:
    - Analyze the outcomes of your project in the context of your initial goals. Discuss the strengths and limitations of your solution, and compare it to existing approaches or benchmarks.
    - Reflect on the team's experience and your own contributions, including what you learned, what went well, and what could be improved. Consider the ethical implications of your project and how it aligns with human-centric principles.
7. Conclusion and Future Work:
    - Summarize the outcomes and limitations of your project.
    - Suggest potential future improvements or extensions.
8. Acknowledgement and References:
    - Acknowledge anyone that helped with your project.
    - List all sources cited in your portfolio using the IEEE citation style.

Tips for preparing your portfolio:

- Use clear and concise language, avoiding jargon where possible.
- Ensure the document is well-organized with headings and subheadings.
- Use visuals (e.g., diagrams, screenshots, graphs) to support your explanations.
- Proofread for grammar, spelling, and formatting errors.

The video is a concise and engaging demonstration of your project, showcasing its key features and functionality. It should be visually appealing and easy to understand, even for viewers unfamiliar with the technical details.

1. **Introduction**:
    - Briefly introduce the topic of "Generative AI in X" and the specific domain (X) you chose.
    - State the problem or opportunity your project addresses.
2. **Demonstration**:
    - Showcase the key features of your prototype or solution.
    - Include a live or recorded demonstration of your system in action (e.g., generating outputs, interacting with users).
3. **Conclusion**:
    - Summarize the outcomes and impact of your project.

Tips for preparing the video:

- Use screen recording and video editing software to create your video.
- Ensure the audio and voiceover are clear and the visuals are high-quality.
- Keep the video concise and focused, avoiding unnecessary details.
- Add captions or annotations to explain key points if needed.

Portfolio Marking Criteria

Criteria	Excellent (70+)	Good (60-69)	Satisfactory (40-59)	Needs Improvement (0-39)
Task Fulfilment (70% of 10)	Demonstrates an iterative design process; presents clear prototypes with comparisons; uses appropriate evaluation methods; rich data collection and analysis results; all design decisions are well informed by data and clearly justified; deep discussion on evaluation results; critical reflections on strengths and limitations.	Meets most requirements; shows some iteration and prototype comparisons; uses some evaluation methods; data collection is mostly valid and clearly explained; discussion and reflections are adequate.	Addresses some requirements; limited iteration or prototype comparisons; evaluation methods are unclear; data collection lacks validity or clarity; superficial discussion and reflections.	Fails to meet most requirements; lacks evidence of design process, evaluation, and critical reflection.
Clarity and Organization (30% of 10)	Clear to read, easy to follow, and visually appealing; diagrams, figures, and tables are clear and appropriately used; well-written arguments with no spelling or grammar errors; all sources cited properly.	Mostly clear and organized; minor issues with readability or visuals; some diagrams or tables are unclear; few spelling or grammar errors; most sources cited correctly.	Some clarity and organization; difficult to follow at times; visuals are poorly used or unclear; noticeable spelling or grammar errors; some sources are not cited properly.	Poorly organized; hard to understand; visuals are absent or confusing; frequent spelling or grammar errors; sources are not cited.
Demo Video (100% of 5)	Engaging, clear, and visually appealing; strong prototyping and implementation efforts; demonstrates complete and well functioning system; effectively showcases key features and the design process.	Good video quality; some prototyping and implementation efforts; demonstrates key features with minor issues.	Adequate video; some key features are unclear or poorly demonstrated.	Poor quality; fails to effectively demonstrate key features or the design process.

University Policy on Late Submissions

If you submit coursework after the deadline, you will be penalized:

- **5%** of the total marks available for the assessment will be deducted from the assessment mark for **each working day** after the submission deadline, up to a maximum of 25%;
- Coursework received **more than five working days** after the submission deadline will receive a mark of **zero**.

University Policy on Academic Integrity

The University aims to foster a learning environment which produces students who embrace academic integrity, understand that they must produce their own work, are able to acknowledge explicitly any material that has been included from other sources or legitimate collaboration, and to present their own findings, conclusions or data based on appropriate and ethical practice.

The University will support you to understand the standards of academic integrity, while you are responsible for learning and upholding professional standards of research, writing, assessment, and ethics in your area of study. Violation of academic integrity comes in many forms, including but not limited to the following:

- improper citation or referencing;
- unauthorised collaboration with another person in the preparation and production of a submitted work;
- copying directly from other persons without their knowledge as your own work;
- submitting all or part of the same academic work for two or more modules without permission;
- consciously representing another's work or concept as your own without proper acknowledgment and citation of the sources;
- altering data obtained by legitimate means or making up a portion or whole set of data and reporting them in your own assignment;
- requesting another party to prepare all or part of an assignment (with or without payment) on your behalf.

Any violation of academic integrity is a serious offence and is therefore subject to an appropriate penalty. According to the individual case and the seriousness of the offence, penalties applied will vary and may include one or a combination of the following:

- a written warning;
- a mark penalty or a zero mark for the assessment;
- a zero mark for the module;
- a note on student's records;
- suspension of studies;
- termination of studies.

In addition to the respective penalty imposed, you may also be given feedback on how to avoid further offence in future work.