AI UX & Data Visualisation Design Principles (CA6002)

Course Briefing

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Course Briefing

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Instructor

Who is my Teacher?

- Instructor for weeks #1 to #6.

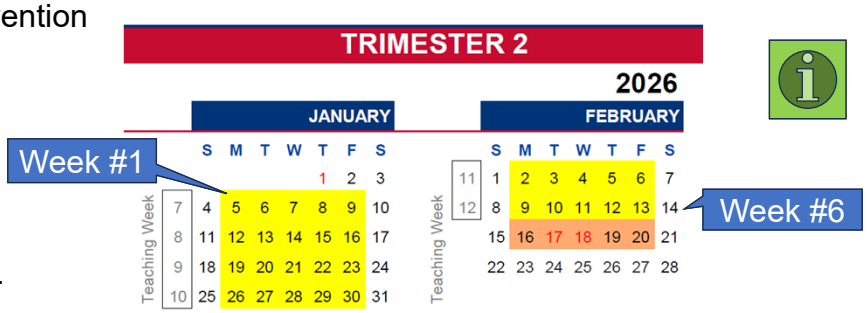
A/P Goh Wooi Boon
(Course Coordinator & Instructor)

Email: *aswbgoh@ntu.edu.sg*

Class Schedule

When to Show Up?

- Classes are on **Thursday** (**6.30pm-8.30pm**) at **LT20** (Wk1) and **LT19A** (Wk2-Wk6)
- On **Saturday** (**1.30pm-5.00pm**) at **LT1 - Von Lee Yong Miang LT** (Wk1-Wk6)
- My week naming convention for the 6-week course:
- Delivery schedule can be found under **Course Information** folder on the CA6002 NTULearn course site.



Course Assessment

What are the Graded Components?

	Weightage	
• **Group Assignment** (Group)	30%	Assignment
• **Mid-course quiz** (Individual)	35%	Quizzes
• **Final quiz** (Individual)	35%	
Total	100%	

- Assignment instructions and Powerpoint templates can be found in the **Assignment** folder in NTULearn.

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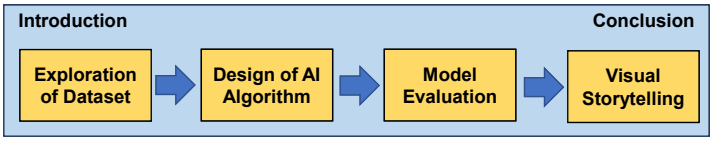
Assignment

Group Project

Putting Skills and Knowledge into Creative Practice

- Use a case study example (dataset) of your choice.
- Investigate, explore, design & develop appropriate **data visualisations** to tell the story of hidden insights that the AI algorithm uncovered in the dataset.



Deliverables

- **Powerpoint Slides** – a well-narrated (i.e. with notes) series of Powerpoint slides (**20 slides - max**) illustrating the **data visualisations** relevant to all stages of your investigative process.

Example of PPT with notes

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Submission Deadline Weeks #5 (Mon)

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Assignment

Assessment Rubrics

How to score well in the assignment

- **Appropriateness (25%)** - Use of most appropriate data visualisation techniques and plots at each stage of the process.
- **Correctness & Clarity (25%)** – Work done at each stage of the process are technically correct. Including analysis of dataset, selection of learning algorithms, evaluation of model and results, insights derived from investigation and they way these insights were communicated.
- **Apply HVP Principles (25%)** – Use appropriate human visual perception and psychological principles to make data visualisation more accessible and effective.
- **Originality (25%)** – Originality and novelty of problem addressed, dataset used, visualisation techniques, use of AI techniques and visual storytelling design.

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Submission Deadline Weeks #5 (Mon)

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Assignment

Group Members

Who am I working with?

- **Group Members** – Sorry, you don't get to choose your group members (like you don't get to decide who you work with at the office). The list of groups and members can be found in the **Assignment** folder.
- **Group Number** – Use your **Group No.** in the PPT filename when you upload your assignment (this helps me identify which group the PPT belongs to).
- **Group Leader*** – The first name in the group is the default group lead. You are **responsible to upload** the completed PPT file for your group. Groups are free to pick their own functional group lead (i.e. to coordinate work assignment, ensure progress & integration, practise presentation, etc)

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Submission Deadline Weeks #5 (Mon)

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Assignment

Selected Oral Presentations

Sharing Good Work

- Groups submitting presentation slides that are **evaluated** to be **outstanding** will be required to do an **oral presentation**.
- Not all groups will do oral presentation, only the **selected groups**. But all students must attend the oral presentation (after the final quiz).
- Students doing oral presentation can earn **up to 5 bonus marks**. All members of the team must be given a chance to present. Rehearse to stay within the maximum allocated **15 mins** (before presentation **stops!**).
- In short, to get top marks for your assignment, you need to submit an outstanding group project and do a good oral presentation.

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Assignment

Peer Review

Assessing Contributions of Group Member

- Group projects require a peer review component to ensure students have a means to **assess the contributions** of their group members.
- Peer evaluation is a useful mechanism to hold group members **accountable** to each other. Peer review gradings will **not be revealed** to members.
- This is the last responsibility you have to complete before the end of the course on **Saturday Week #6**.
- It carries 5% of the total assignment marks. Those who did not do their peer review by the deadline will get **zero marks** (for this component).

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Quiz

Mid-course Quiz

Gauge what you have learnt in the 1st half

- A mid-course quiz will be given after the halfway point to evaluate how well you have grasped the concepts taught in the **first half** of the course.
- Quiz will be done in **week #4** (**Saturday afternoon**).
- Duration will be 1 hour.
- Format and venue for quiz to be confirmed later.
- **Checkpoint** - Your general grade for the mid-course quiz will be revealed to you to help you gauge your understanding so far.

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Quiz Schedule | Weeks #4

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Quiz

Final Quiz

Wrapping up all that you have learnt

- A final quiz will be given at the end of the course to evaluate how well you have grasped **all the concepts** taught and if you are able to apply them to new scenarios and situations.
- Quiz will be done in **week #6** (**Thursday evening**).
- Duration will be 1 hour.
- Format and venue for the quiz to be confirmed later.

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Quiz Schedule | Weeks #6

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Brief Course Outline

What Will You Learn?

Final Quiz Coverage

- Data Attributes and Visual Encoding
- Basic Plots
- Correlation Analysis
- Visualisation for AI
- Time Series Analysis
- Applying Human Visual Perception
- Psychology of Effective Graphics

Mid-course Quiz Coverage

- Human-Centred AI
- Human and AI Centred
- Finding AI Opportunities
- HCAI UX Design - Usability
- HCAI UX Desing - Trust

Part 1
Data Visualisation Design

Part 2
Human-Centred AI UX Design

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Some Important Points to Note

1. **Prepare tutorials beforehand** – You should attempt all tutorial problems before the Mid-Week and Saturday sessions to get the maximum benefit from the tutorial discussion (see delivery schedule for tutorial question coverage).
2. **No solution handouts** – Slides used to discussed tutorial problems will not be circulated. Please don't ask for it. You are expected to take notes of pertinent points or snap of photo of the projected screen (if you wish). No tutorial solutions or Python codes will be handed out.
3. **Interleaved with lectures** – Tutorial discussions are interleaved with relevant lecture segments. Usually the "*Think and Apply*" slides in the lecture handout are points where the relevant tutorial questions will be discussed.
4. **Lecture notes** – only carry the main points of the lecture. Additional illustrations and examples are often shared during the lecture sessions.

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Course References

Where Can I Learn More?

- Several **textbooks** have been referenced in this course.
- Useful & interesting **weblinks**, blogs, online references are also used.

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Just a small sample of the textbooks cited in the course 15

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Course References

Where Can I Learn More?

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Accessing course references

- Relevant references have been inserted[1] into the lecture notes and tutorial handouts for you to consult further.
- Some of the **textbooks** are available online through **NTU OPAC**.
- **Web**-based references are **clickable**, so you can get there directly from the lecture notes.

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[1] Goh Wooi Boon, CA6002 – AI UX and Data Visualisation Design Principles - Lecture Notes - https://ntulearn.ntu.edu.sg 16

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References for Visual Encoding and Deconstruction

[1] Bertin's quote from: J. Bertin, graphics and graphic information processing (1981) - https://books.google.com.sg/books?id=csqX_xnm4tcC&printsec=copyright&redir_esc=y#v=onepage&q&f=false

[2] T. Munzner, Visualization Analysis & Design, CRC Press (2015)

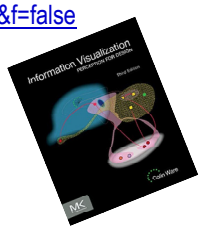
[3] J. Mackinlay, Automating the Design of Graphical Presentation of Relational Information (1986), https://dl.acm.org/doi/10.1145/22949.22950

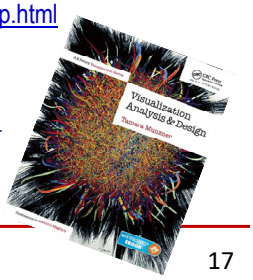
[4] C. Ware, Information Visualization: Perception for Design, 3rd Edition, Morgan Kaufmann (2013),

[5] William Playfair's image can be found at: https://upload.wikimedia.org/wikipedia/commons/5/52/Playfair_TimeSeries-2.png

[6] Martin Wattenberg's Map of the Market details can be found at: http://www.bewitched.com/marketmap.html

[7] Ben Fry's website for Salary vs Performance: https://benfry.com/salaryper





An Example

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Note: All online articles were accessible on 5 Nov 2025

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The End

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