COMP 4431 Lab 3

Lab 3 Generate PPT using ChatGPT

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Department of Computing
The Hong Kong Polytechnic University

Aim of Lab Session 3

- 1. Learn to give good prompts to ChatGPT
- 2. Learn to use ChatGPT to fetch information and generate content
- 3. Learn to use ChatGPT to prepare for a presentation

Today's Arrangement

- Prompting principles
- Content generation with ChatGPT
- Preparing a presentation with ChatGPT
- Generating PPT slides with ChatGPT
- Prepare your own course presentation

- Prompt engineering involves carefully crafting input prompts to guide the model toward generating the desired output.
- Prompting Principles
 - Principle 1: Write clear and specific instructions to guide the model effectively and reduce the likelihood of irrelevant or incorrect responses.
 - **Principle 2: Instruct the model to "think"** (e.g., step-by-step instructions or a chain of relevant reasoning) to prevent reasoning errors and premature conclusions.

- Principle 1: Write clear and specific instructions
 - Example: Generate expected content

Generate a blog that talk about 5 famous books.



A short prompt without clear and specific instructions

Generate a blog that talk about 5 top selling books of all time. Use the bullet list to give the author, year of publication, genre, theme and story outline of each book. Keep them under 100 words each.



A longer prompt with clear and specific instructions (leads to a more useful answer)

Principle 2: Instruct the model to "think"

Example: Evaluate a student's solution

Determine if the student's solution is correct or not.

Question:

11111

I'm building a solar power installation and I need help working out the financials.

- Land costs \$100 / square foot
- I can buy solar panels for \$250 / square foot
- I negotiated a contract for maintenance that will cost me a flat \$100k per year, and an additional \$10 / square foot

What is the total cost for the first year of operations as a function of the number of square feet?

The first prompt

Student's Solution:

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Let x be the size of the installation in square feet.

Costs:

- 1. Land cost: 100x
- 2. Solar panel cost: 250x
- 3. Maintenance cost: 100,000 + 100x

Total cost: 100x + 250x + 100,000 + 100x = 450x + 100,000

The first response of ChatGPT (Incorrect)



The student's solution is correct. They correctly calculated the costs for land, solar panels, and maintenance, and calculated the total cost as a function of the number of square feet.

- Principle 2: Instruct the model to "think"
 - Example: Evaluate a student's solution

Additional prompt instructing the model to work out the solution

Determine if the student's solution is correct or not. To solve the problem do the following: - First, work out your own solution to the problem. - Then compare your solution to the student's solution and evaluate if the student's solution is Don't decide if the student's solution is correct until you have done the problem yourself. Use the following format: Question: question here Student's solution: student's solution here Actual solution: steps to work out the solution and your solution here Is the student's solution the same as actual solution just calculated: yes or no Student grade: correct or incorrect

- Principle 2: Instruct the model time to "think"
 - Example: Evaluate a student's solution

The second response of ChatGPT (Correct)

Actual Solution: To calculate the total cost for the first year of operations as a function of the number of square feet, we need to sum up the costs of land, solar panels, and maintenance. 1. Land cost: \$100/square foot multiplied by the number of square feet. Land cost = 100 * x2. Solar panel cost: \$250/square foot multiplied by the number of square feet. Solar panel cost = 250 * x 3. Maintenance cost: Flat \$100,000 per year plus \$10/square foot multiplied by the number of square feet. Maintenance cost = 100,000 + 10 * xTotal cost = Land cost + Solar panel cost + Maintenance cost Total cost = $100 \times x + 250 \times x + 100,000 + 10 \times x$ Total cost = 360 * x + 100,000Is the student's solution the same as actual solution just calculated: No Student grade: Incorrect

1. Brainstorming ideas

Tip: Try prompting with a "role-playing" framing.

The prompt

You're a nutritionist. Can you write an outline for a blog post about healthy diet?



- I. Introduction
- A. Importance of a healthy diet for overall well-being
- B. Brief explanation of what a healthy diet entails
- II. Understanding Macronutrients
- A. Explanation of macronutrients (carbohydrates, proteins, fats)
- B. Recommended daily intake for each macronutrient
- C. Sources of healthy macronutrients
- III. Key Components of a Healthy Diet
- A. Whole grains and complex carbohydrates
 - 1. Benefits of whole grains
 - 2. Examples of whole grain foods

of ChatGPT

The response

- B. Lean proteins
 - 1. Importance of protein in maintaining muscle mass and repairing tissues
- 2. Sources of lean proteins
- C. Healthy fats
- 1. Differentiating between good and bad fats
- 2. Examples of foods rich in healthy fats
- D. Plenty of fruits and vegetables
- 1. Nutritional benefits of consuming a variety of fruits and vegetables
- 2. Ways to incorporate more fruits and veggies into daily meals
- IV. Importance of Hydration
- A. Exploring the significance of drinking enough water
- B. Tips for staying hydrated throughout the day

- V. Avoiding Processed and Sugary Foods
- A. The negative effects of processed foods on health
- B. Understanding the impact of excessive sugar consumption
- C. Suggestions for reducing processed and sugary foods in the diet
- VI. Portion Control and Mindful Eating
- A. The role of portion control in maintaining a healthy weight
- B. Tips for practicing mindful eating and recognizing hunger/fullness cues
- VII. Keeping a Balanced and Varied Diet
- A. The benefits of a diverse and balanced diet
- B. Ideas for incorporating new and different foods into meals
- VIII. Meal Planning and Prepping
- A. Advantages of meal planning and prepping for a healthy diet
- B. Tips for effective meal planning and prepping
- IX. Seeking Professional Guidance
- A. Reasons to consult with a nutritionist or registered dietitian
- B. Utilizing resources and professional advice for personalized dietary needs
- X. Conclusion
- A. Recap of the importance of a healthy diet
- B. Encouragement to make sustainable changes for long-term health benefits

2. Collect relative information

Give me some examples of whole grain foods.



Here are some examples of whole grain foods:

- 1. Whole wheat bread
- 2. Brown rice
- 3. Quinoa
- 4. Oats (steel-cut, rolled, or instant)
- 5. Barley
- 6. Whole wheat pasta
- 7. Buckwheat
- 8. Whole grain cereal (such as bran flakes or muesli)
- 9. Popcorn
- 10. Whole grain tortillas or wraps
- 11. Whole grain crackers
- 12. Whole grain couscous
- 13. Rye bread
- 14. Bulgur
- 15. Whole grain muffins or pancakes



These foods retain all parts of the grain, including the bran, germ, and endosperm, which provides more fiber, vitamins, and minerals compared to refined grains.

3. Organize the content

 Summarize long blog posts, books, or transcripts of videos. (Be careful about the hallucinations.)

Can you summarize the content of the novel "pride and prejudice"?



"Pride and Prejudice" is a classic novel written by Jane Austen, set in early-nineteenth-century England. The story revolves around the Bennet family, particularly the five Bennet sisters: Jane, Elizabeth, Mary, Kitty, and Lydia. The main focus is on Elizabeth Bennet, an intelligent and lively young woman with a quick wit.

The novel explores the themes of societal expectations, wealth, class, and love. Mrs. Bennet, the mother, is determined to marry off her daughters to wealthy men. When a wealthy young man named Mr. Bingley moves into the neighborhood, Mrs. Bennet sees an opportunity to secure a good match for one of her daughters. Jane, the eldest sister, develops a budding romance with Mr. Bingley.

Elizabeth, on the other hand, becomes acquainted with Mr. Darcy, Bingley's close friend and an aloof and proud man. Initially, Elizabeth develops a strong prejudice against him due to his cold and disdainful behavior. However, as she learns more about him, her opinion gradually changes.

Throughout the novel, various misunderstandings, miscommunications, and social norms complicate the relationships between the characters. Lydia, the youngest Bennet sister, elopes with Mr. Wickham, causing scandal and distress for the family. Mr. Darcy, who harbors genuine affection for Elizabeth, helps solve the situation by ensuring Lydia's marriage to Wickham.

Eventually, Elizabeth realizes her own prejudice and pride, and her feelings toward Mr. Darcy begin to change. The novel culminates in their eventual reconciliation and marriage, highlighting the theme of personal growth and overcoming societal expectations.



Overall, "Pride and Prejudice" explores themes of love, marriage, social hierarchy, and personal development, showcasing Austen's wit and social critique while providing a satisfying love story.

3. Organize the content

Summarize the given text.

I will provide you with an article, and your task is to summarize it into one paragraph.

The article:

The prompt (with an 800-word article)

...

In late 1946 or early 1947, three Bedouin teenagers were tending their goats and sheep near the ancient settlement of Qumran, located on the northwest shore of the Dead Sea in what is now known as the West Bank. One of these young shepherds tossed a rock into an opening on the side of a cliff and was surprised to hear a shattering sound. He and his companions later entered the cave and stumbled across a collection of large clay jars, seven of which contained scrolls with writing on them. The teenagers took the seven scrolls to a nearby town where they were sold for a small sum to a local antiquities dealer. Word of the find spread, and Bedouins and archaeologists eventually unearthed tens of thousands of additional scroll fragments from 10 nearby caves; together they make up between 800 and 900 manuscripts. It soon became clear that this was one of the greatest archaeological discoveries ever made.

The origin of the Dead Sea Scrolls, which were written around 2,000 years ago between 150 BCE and 70 CE, is still the subject of scholarly debate even today. According to the prevailing theory, they are the work of a population that inhabited the area until Roman troops destroyed the settlement around 70 CE. The area was known as Judea at that time, and the people are thought to have belonged to a group called the Essenes, a devout Jewish sect.

The majority of the texts on the Dead Sea Scrolls are in Hebrew, with some fragments written in an ancient version of its alphabet thought to have fallen out of use in the fifth century BCE. But there are other languages as well. Some scrolls are in Aramaic, the language spoken by many inhabitants of the region from the sixth century BCE to the siege of Jerusalem in 70 CE. In addition, several texts feature translations of the Hebrew Bible into Greek.

The response of ChatGPT



The Dead Sea Scrolls, discovered by three Bedouin teenagers in the late 1940s, are one of the greatest archaeological finds of all time. The scrolls, written 2,000 years ago by a Jewish sect known as the Essenes, consist of between 800 and 900 manuscripts found in 10 nearby caves. Most of the texts are in Hebrew, with some in Aramaic and Greek, and they include fragments from every book of the Old Testament except for Esther. The scrolls also feature sectarian regulations and religious writings not found in the Bible. One particularly intriguing scroll, called the Copper Scroll, is a treasure map of sorts describing 64 hiding places of gold and silver, though none of the hoards have ever been found. Some of the scrolls had interesting journeys before arriving in Jerusalem, including being offered unsuccessfully to various universities by a Syrian Orthodox archbishop. In 2017, researchers restored and deciphered one of the last untranslated scrolls, shedding light on the community that wrote it and their calendar system. Only one scroll remains untranslated.

3. Organize the content

Generate speech draft when given the slides outline.

The prompt (with the slides outline)

You are a student preparing to give a presentation in the lecture in front of your professor and classmates. Now generate a speech draft based on the slides below.

Ladies and gentlemen,

Good morning/afternoon. Today, I am here to talk about the applications of Artificial Intelligence (AI) in healthcare. All has the potential to revolutionize the healthcare industry by improving disease detection, enhancing patient outcomes, and optimizing healthcare delivery.

Let's start with an introduction to AI in healthcare. AI in healthcare refers to the utilization of algorithms and advanced technologies to analyze complex medical data, provide accurate diagnostics, aid in treatment planning, and support patient care. It involves the incorporation of AI in diagnostics and medical imaging, drug discovery and development, personalized medicine, and healthcare administration.

In terms of diagnostics and medical imaging, Al algorithms can analyze massive amounts of medical data to aid in accurate disease diagnosis and prognosis. They can learn from vast datasets using machine learning techniques, improving the accuracy and efficiency of diagnosis. Al is particularly useful in medical imaging, such as radiology and pathology, where it can assist in detecting abnormalities, classifying diseases, and identifying potential treatment options. For example, Al algorithms can analyze medical images and aid radiologists in screening mammograms for breast cancer, reducing both false-positive and false-negative results.

The response of ChatGPT

Moving on to drug discovery and development, Al can significantly expedite the process by analyzing vast amounts of molecular and biological data. Machine learning algorithms can efficiently sift through this data to identify potential drug candidates and predict their efficacy and safety. Al-based drug discovery platforms can accelerate the identification of target molecules, optimize drug design, and enhance clinical trial selection. By streamlining the drug development pipeline, Al has the potential to reduce costs, improve success rates, and speed up the availability of new treatments to patients.

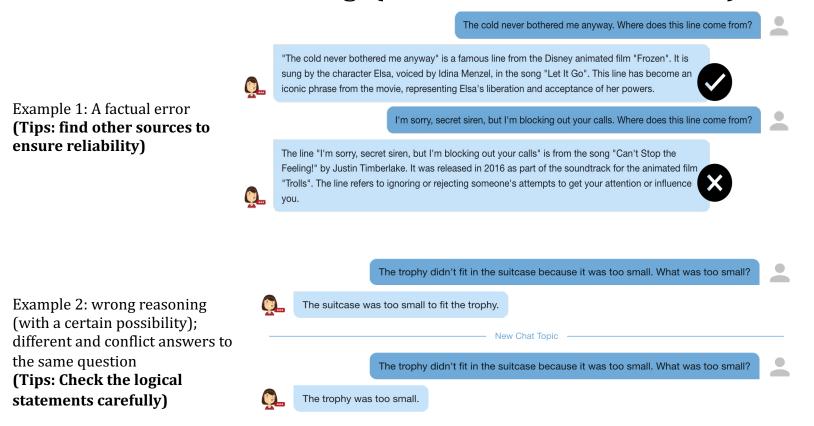
Next, Al enables the delivery of personalized medicine by considering patients' unique genetic, environmental, and lifestyle factors. Machine learning algorithms can analyze patient data, including medical records, genetic profiles, and real-time monitoring data, to assist in treatment decisions and predict disease progression. Additionally, Al can optimize healthcare administration processes, such as patient scheduling, resource allocation, and fraud detection. By automating administrative tasks and improving operational efficiency, Al can reduce healthcare costs, improve patient satisfaction, and enable healthcare professionals to focus more on direct patient care.

In conclusion, Al has immense potential in healthcare. Its ability to analyze vast amounts of data and generate insights can support healthcare professionals in improving patient outcomes, enhancing disease detection, and optimizing treatment plans. However, it is crucial for healthcare professionals to embrace Al technologies while ensuring patient privacy, ethical considerations, and maintaining human oversight in decision-making processes.



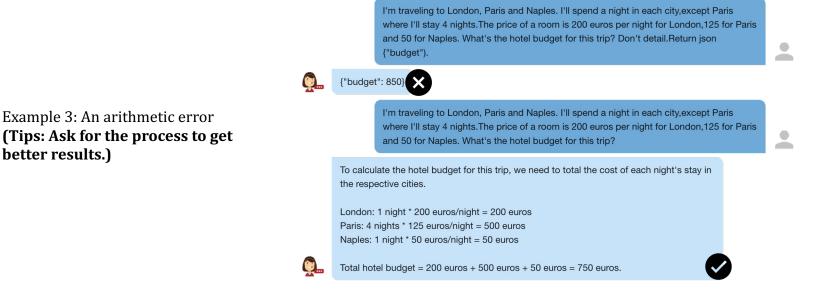
Thank you for your attention. I look forward to discussing this topic further and answering any questions you may have.

ChatGPT could be wrong. (Hallucination of ChatGPT)



better results.)

ChatGPT could be wrong. (Hallucination of ChatGPT)



Preparing a presentation with ChatGPT

Preparing a presentation with ChatGPT

- What ChatGPT CAN do for you when preparing a presentation
 - Content collection and organization
 - · Brainstorming for the structure and ideas
 - Gather related information on a specific topic (facts, examples, statistics, etc.)
 - Organize and summarize the content
 - Slides generation
 - Create slides (text content)
 - Offer guidance on design and visuals
 - Speech draft generation
 - Generating, proofreading, and revising the speech draft
 - Presentation practice assistance
 - Provide tips and strategies for engaging your audience.
 - Given the script or talking points, offer suggestions on pacing, tone, voice modulation, etc.
 - Help brainstorm potential questions and develop well-thought-out responses.

Preparing a presentation with ChatGPT

- What ChatGPT CANNOT do for you when preparing a presentation
 - Accuracy of content
 - Avoid errors of all kinds (factual errors, reasoning errors, etc.)
 - Avoid the outdated information
 - Ensure the accuracy of the references
 - Personalization
 - Create the content based on the presenter's own style
 - Design and visuals (Cannot directly do it for you)
 - Select appropriate visuals
 - Determine slide layouts
 - Organizing the content
 - Rehearsing and delivery
 - Practice and memorization
 - Time management in delivery

- Many approaches to create PPT slides:
 - 1. Ask ChatGPT to generate VBA (Visual Basic for Applications) code for slides creation
 - 2. Ask ChatGPT to generate HTML, and use some tool (such as Microsoft 365) to convert it to PPT slides
 - 3. (introduced in this lab) Ask ChatGPT to generate Markdown, and use some tool (such as Pandoc) to convert it to PPT slides

.....

 Besides the approaches using ChatGPT, there are also a few other AI tools (extensions, apps, etc.) for generating slides by AI. Search and try them yourself.

Markdown: a simple-to-use markup language

Can be used for websites, documents, notes, books, presentations, technical

documentations, etc.

Markdown Basics (Heading level 1) 3 ## Emphasis (Heading level 2) **bold** *italic* ## Paragraph (Heading level 2) 9 Markdown is a lightweight markup language that allows you to format text using simple syntax. 11 ## List (Heading level 2) 13 ### Unordered list (Heading level 3) 14 - Unordered list item 1 Markdown 15 - Unordered list item 2 File 17 ### Ordered list (Heading level 3) 18 1. Ordered list item 1 19 2. Ordered list item 2 21 ## Link (Heading level 2) [More of markdown basics](https://www.markdownguide.org/ basic-syntax/) 25 ## Image (Heading level 2) 27 ![ChatGPT](https://upload.wikimedia.org/wikipedia/ commons/0/04/ChatGPT_logo.svg) 28 30 img{width: 10%;} 31 </style>

Markdown Basics (Heading level 1)

Emphasis (Heading level 2)

bold italic

Paragraph (Heading level 2)

Markdown is a lightweight markup language that allows you to format text using simple syntax.

List (Heading level 2)

Unordered list (Heading level 3)

• Unordered list item 1

• Unordered list item 2

Ordered list item 1

2. Ordered list item 2

Link (Heading level 2)

More of markdown basics

Image (Heading level 2)

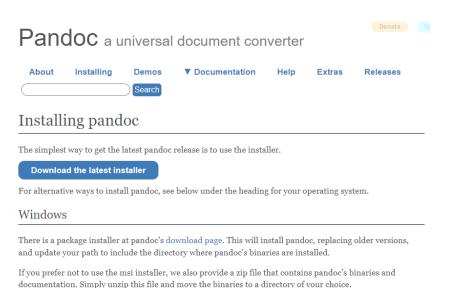
Rendered Output

Check more of the basic syntax: https://www.markdownguide.org/basic-syntax/

- Generate Markdown by ChatGPT and convert it to PPT via Pandoc
 - Pandoc: A free command-line tool, widely used for converting from one markup format to another
 - Step 1: Install Pandoc via https://pandoc.org/installing.html
 - Step 2: Ask ChatGPT to create markdown file representing the slides of a presentation with detailed requirements
 - Step 3: Copy and save the markdown file, then convert it to pptx file using a Pandoc command

• Step 1: Install Pandoc via https://pandoc.org/installing.html

After installing, test the availability in command-line interpreter.



C:\Windows\System32\cmd.exe

Microsoft Windows [Version 10.0.19045.3208]
(c) Microsoft Corporation. All rights reserved.

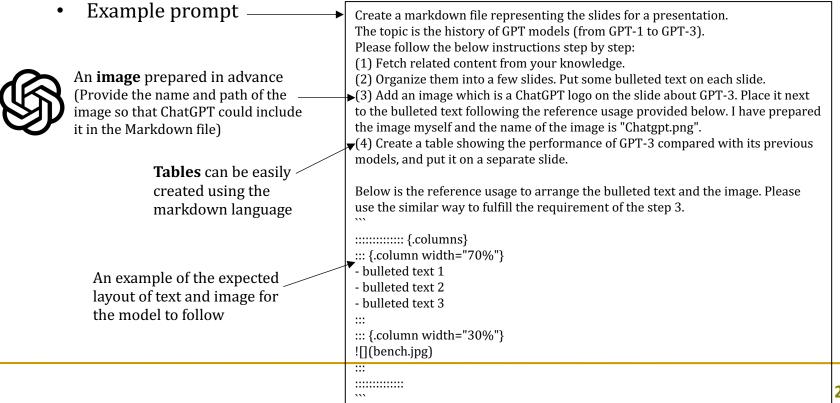
C:\Windows\System32>pandoc --version
pandoc 3.1.6.2

Features: +server +lua

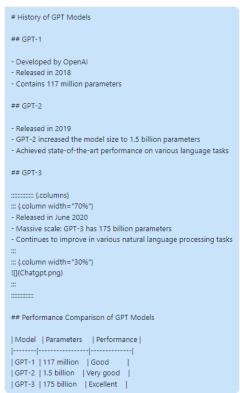
Scripting engine: Lua 5.4

User data directory: \\COMPDrive\staff2\\22039937r\COMProfile\AppData\pandoc
Copyright (C) 2006-2023 John MacFarlane. Web: https://pandoc.org
This is free software; see the source for copying conditions. There is no
warranty, not even for merchantability or fitness for a particular purpose.

- Step 2: Ask ChatGPT to create markdown file representing the slides of a presentation with detailed requirements
 - Specify the topic, number of slides, content (such as text, images, and tables), etc.

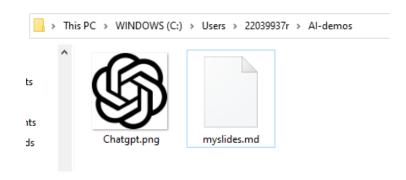


- Step 2: Ask ChatGPT to create markdown file representing the slides of a presentation with detailed requirements
 - Resulting Markdown file:



• Step 3: Copy and save the markdown file, then convert it to pptx file using a Pandoc command

Save the markdown file in the folder where the prepared image is located



Open the command-line interpreter and execute the following commands:

- 1. Change directory to the folder of the markdown file (Use the command cd)
- 2. pandoc myslides.md -o myslides.pptx

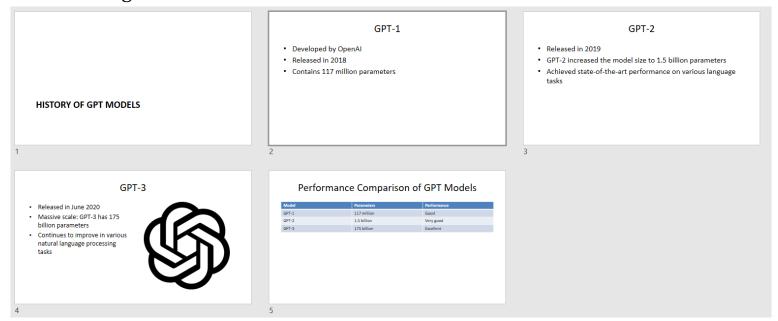
```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.3208]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>cd C:\Users\22039937r\AI-demos

C:\Users\22039937r\AI-demos>pandoc myslides.md -o myslides.pptx

C:\Users\22039937r\AI-demos>
```

- Step 3: Copy and save the markdown file, then convert it to pptx file using an easy command
 - Resulting PPT slides:



• We can further apply appropriate layout and visuals to the slides

Prepare your own course presentation

Prepare your own course presentation

Exercise: Practice the following tasks:

- 1. Use ChatGPT to brainstorm
- 2. Use ChatGPT to collect relative information
- 3. Use ChatGPT to organize and summarize the content
- 4. Use ChatGPT to create PPT slides
- 5. Use ChatGPT to create speech draft