

INTRODUCTION TO AI AND HOW TO UTILIZE IT PROPERLY



PREFACE

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ABSTRACT

It is an undeniable fact that artificial intelligence is becoming a part of our daily lives. Be it personal research, trying to receive help with a simple task, doing homework; its algorithm based learning and easy communication makes it a very effective tool to use in such circumstances.

However, once a quality-of-life convenience (applications, tools, anything within the matter) becomes, perhaps *too* widespread within our community, a general sense of misinformation starts taking over. Not only does that decrease the efficiency of the tool in question, but it also does more harm than good in terms of habits: Which is extremely severe in the case of artificial intelligence (AI). It deforms research habits, and in some cases, becomes a staple in people's lives by eliminating any other alternative.

The scope of this book to prevent the reader from misusing AI and unleashing, along with understanding, its true potential through introducing the reader to various methods.

OBJECTIVES

- Being able to define what A.I is,
- Knowing how to use certain A.I tools specialized in certain matters,
- Being able to prompt and generate content without hardships,
- Being able to utilize A.I in research without plagiarizing,
- Being able to nitpick relevant information from A.I generated content,
- Being able to extract the information log from the utilized A.I tool,
- Being able to cite the A.I program and its contents used in the research of a certain subject,
- Being able to come up with original research, bullet points backed by A.I.

GLOSSARY

Artificial Intelligence (AI): Technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity and autonomy.

Algorithm: a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer.

Prompt(ing): the process of interacting with an artificial intelligence (AI) system by providing specific instructions or queries to achieve a desired outcome.

ChatGPT: a generative chatbot developed by OpenAI and launched in 2022.

Grammarly: an AI assisted program with the purpose of correcting grammatical mistakes.

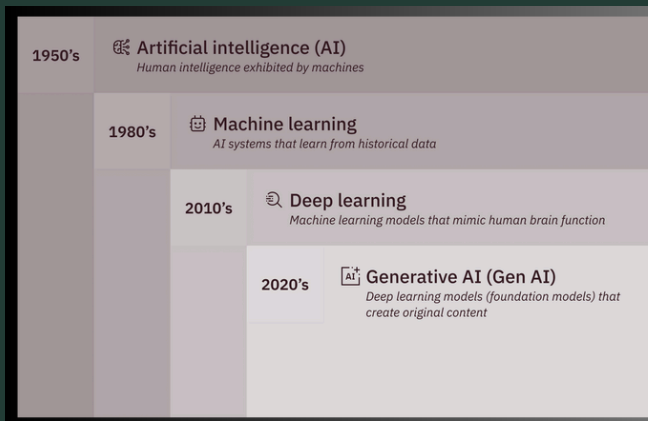
Notion AI: an AI chatbot for assisting the user in writing, summarizing and brainstorming ideas for paragraphs.

Tableau: data analysis assistant AI capable of comprehensive data sources, workbooks, tables, visualisers etc.

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1 – Introduction to Artificial Intelligence



A diagram of development of AI over the years.

Artificial Intelligence (AI) is the common name given any kinds of intelligence which has a nature very alien to all animals, including us humans. However, the specific kind of AI currently devastating the technological development of humanity has a different meaning. To be more

clear, the latter definition of AI is a system or a machine, specifically engineered to simulate human behavior.

Fundamentally, its infrastructural design is a human-like behaving algorithm that can learn, converse, generate content by nitpicking information from the accumulation of data and information gathered by humans, deal with tasks and complex problems.

AI has many places within our society: be it the medical sector, entertainment, transportation, and most importantly, education. What's more, there is a very high probability that you have seen AI generated or assisted content up until this point in your academic life.

Although very surface level, we now have an understanding about what AI is. But what good is it for education? Consider the scenario: You have a research paper to do. However, your (assumed) lack of research and information gathering experiences prove to be a big obstacle, standing between you and your objective. You have the resources and all the means of utilizing them. Normally, it would take an unnecessary amount of time to pinpoint your head topics to dig into. In this case, AI can be a big game changer by pointing out points of interest, providing you with some insight on where to begin, and will consult you into doing a healthy research.

On another note, it is very imperative to mention that getting your results directly from an AI application and using it for your paper is absolutely not the way to go. By doing this you:

- Prevent yourself from gaining research experience.
- Commit an act of academic dishonesty.
- Will not gather any information from the topic you're researching.
- Try to take an unfair advantage with no effort, letting your peers' efforts go into waste (in case if the instructor is oblivious to AI).

Not only is this straight up plagiarism, but unethical. To reinforce this point with an example, consider the following scenario:

“You are an artist with decades of experience. You have a unique artstyle, and trying your best to perfect your ways of drawing. One day, you stumble across an art contest and decide to give it a try. You give it your utmost effort, time and commitment, and come up with a pretty nice painting. You show up to the competition, and realize that an AI generated image won the first place.

You have spent days and countless hours into your creation. But in the end, a person who didn't even bring a canvas or painting tools won it by doing nothing but prompting to an AI tool.”

This scenario is exactly what happened in Colorado State Fair's annual art competition.



Jason Allen's A.I.-generated work, "Théâtre D'opéra Spatial," took first place in the digital category at the Colorado State Fair.

Of course, no one was happy about this situation. People who participated in this competition raised their voices to be heard, and this event officially became the staple in the AI fair use argument. In this material, you will learn how to do that.

2 - Introduction to AI Tools

Although we have defined Artificial Intelligence as a single entity, it is a term used for any algorithm designed within a standard level of being classified as an “Artificial Intelligence”. In short, there are many AI programs and algorithms, designed for various specific purposes. These purposes include grammar correction, general chatbots, generating images, task management, data analysis and many more. These tools are designed to make this technology more accessible and efficient for its users, regardless of technical expertise.

Before getting to use AI tools, however, you must consider the responsible use of them.

First of all, you need to understand the tool. You should know its field of expertise and its limits. For example, it would not be classified as “proper utilization” if you ask a data analysis tool for a chess game.

Secondly, you should always use it ethically. Avoid misuse, such as presenting AI-created work entirely as your own.

Finally, when gathering research data or the likes of it, always verify your output. No matter how devastating of a technology AI is, it is always prone to make mistakes. Even ChatGPT, one of the most used and frequently updated AI tools, has a disclaimer for this:

ChatGPT can make mistakes. Check important info.

Now that this matter is out of the way, here are some AI tools which will be very beneficial for you throughout your academic life, provided that they are used correctly.



Notion AI



ChatGPT



One of the most classical chatbots of all time. Answers your questions, gives you insight and advice. Sometimes its memory goes wild, but it is extremely useful for the most part. **WARNING:** Never show a copy-pasted GPT generated content as your own. Transform it, cite it.

Tableau AI

Extremely useful data analysis AI which can give a very detailed report of your uploaded data, no matter how much data you give. Incredibly useful AI tool in research when you're going off based on your own data.



Notion AI



Notion AI

This is a chatbot that can give insight on how you can make your essay better, do good placements and generally make it easy to read.

WARNING: Never copy a direct essay from Notion AI. See, study, learn and do it yourself.

Grammar.ly

Grammar.ly is an AI empowered background program which detects grammatical errors you make in any kind of text in your computer, as long as it is installed. **WARNING:** Use of grammarly is considered "unethical" in many educational institutions.



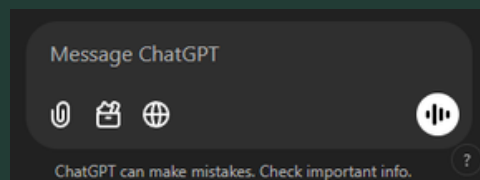
3 –Content Generation and Prompting

Content generation is when AI creates things like text, pictures, or other types of media based on what you ask it to do. AI uses huge amounts of information and learning algorithms to produce an answer for you, giving you ideas that make sense.

For example, tools like ChatGPT can help students brainstorm ideas or write a first draft of a school project. Imagine you're stuck on what to write for a research paper. You could ask an AI tool for ideas or an outline to get started. This can save time and help you focus on the main parts of your work.

On the important note, it's important to remember that AI shouldn't do all the work for you. If you simply copy what the AI creates and call it your own, you're not being honest. Plus, you're missing out on learning important skills like researching and thinking for yourself.

Of course, in many AI tools, you have to tell the AI what to do in order to generate content. This is when Prompting takes place.



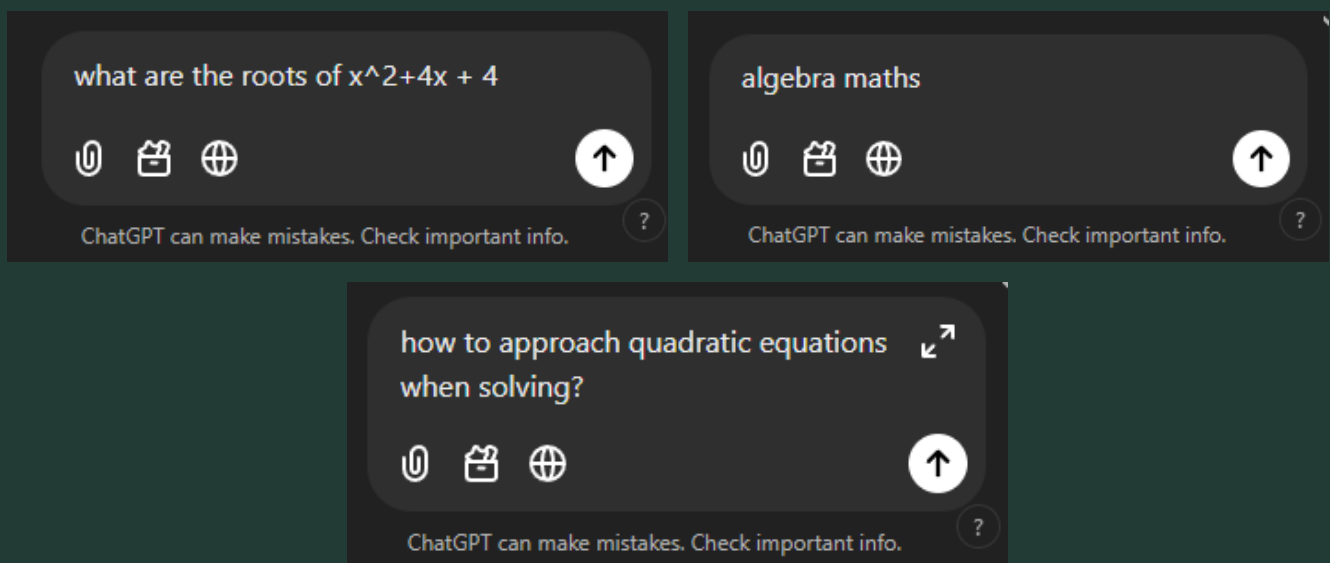
ChatGPT's Prompting Space.

Prompting is how you tell the AI what you want it to do. The better your instructions, the better the AI can help you. A clear and detailed prompt makes sure the AI gives you useful and accurate answers. For example, asking an AI, "Tell me about climate change," might give you a very general answer. But if you ask, "Write a short paragraph about how greenhouse gases cause global warming," the AI will give you a more focused response.

Given from the previous example, there are a few things you should consider when prompting:

- Be clear about what you need from AI.
- Give extra information. The more you give, more accurate your results are gonna be.
- Keep improving your prompts. Try different approaches if it doesn't work.

Now, consider the following prompts:



- Which prompt do you think will yield clearer results? Why?
- Which prompt is the most likely to help you with your problem, if we assume you're having trouble with quadratic equations? (Write your answers in the box below.)

4 – Plagiarism in AI

As stated in the earlier chapters of the book, Plagiarism means using someone else's work, words, or ideas and pretending they are your own. It is a serious issue in school, college, and professional settings. When using AI tools, it's especially important to avoid plagiarism and make sure all work is honest and original.

Not only is plagiarising with AI unethical, but it hurts your learning as well. Without being able to look back at your content, reflecting and correcting your mistakes, you leave very little room for improvement.

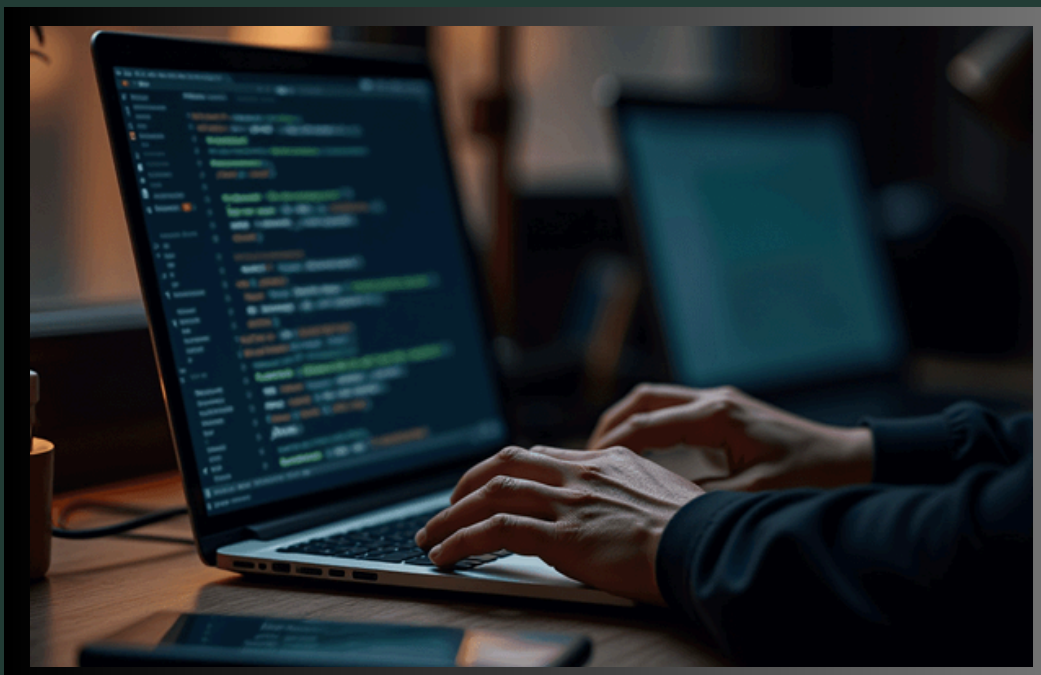
It also has several consequences. Schools and workplaces often have strict rules against plagiarism. Breaking them can lead to serious penalties, like failing an assignment or losing a job.

4.1 – Plagiarism Prevention

There are a multitude of ways to make your work. However, before content transformation techniques and styles, you should consider the fact that these techniques and methods are there so you can make it better yourself, not for you to transform the content in a way that cannot be distinguished without contributing anything yourself. AI is a guide, it is not the sole way. For example, when you get an idea or a bullet point from AI, don't just prompt the entire essay. Try to convey it with your own words.

Always take time to check your work and ensure it reflects your own ideas. Reviewing your writing will help you avoid accidentally including copied sentences. If you use information from books, websites, or AI tools, always give credit to the source. For example, you can mention that you used ChatGPT to help generate ideas or organize your thoughts.

Using AI tools responsibly also involves understanding their capabilities and limits. It's important to verify the accuracy of the information AI provides since it can sometimes give incomplete or incorrect answers. Combining the AI's suggestions with your own ideas ensures that your work is both creative and original.



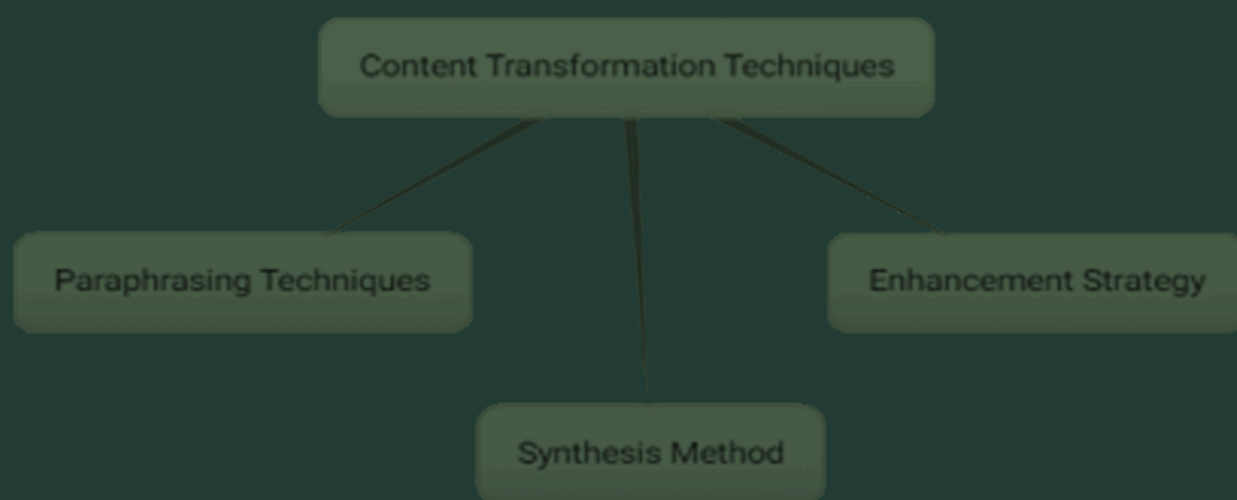
It is important to revise your findings.

5 - Content Transformation Techniques

Content transformation refers to changing the way information is presented while keeping its original meaning intact. This skill is important for improving your writing, ensuring originality, and avoiding plagiarism. By mastering content transformation techniques, you can take information from various sources and make it uniquely yours.

Content Transformation Techniques are one of the most effective way of avoiding plagiarism. It is transforming the content towards your own means. By adding in your ideas within a logical order, by replacing some parts with your own interpretation and making it over with your own writing style; not only is your paper your own accordance, but also it leaves room for improving your grammar, general knowledge, academic knowledge and various other things, now that you have experienced them.

There are various methods for Content Transformation.



5.1 – Paraphrasing

Paraphrasing is a key skill in writing that involves rephrasing other ideas while maintaining their original meaning. This ability is essential for creating unique content, avoiding plagiarism, and showing a deeper understanding of the material you're working with. Effective paraphrasing requires more than just changing a few words; it involves rethinking and reorganizing the information to make it your own.

The first step in paraphrasing is to fully understand the original text. Before attempting to rewrite it, read the content carefully and make sure you grasp the main ideas. If there are any terms or concepts you don't understand, look them up. Once you are confident in your understanding, set the original text aside. This ensures that you don't accidentally copy the structure or phrasing.

Next, focus on rewriting the information in your own words. To do this, start by identifying the main idea and supporting details. Then, think about how you would explain these points to a friend or classmate. For example:

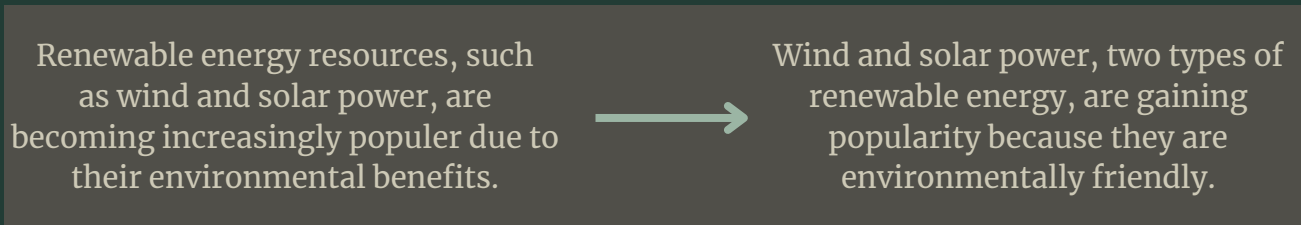
Photosynthesis is the process by which plants convert sunlight into energy.



Plants use sunlight to create energy in a process called photosynthesis.

Using synonyms is a common paraphrasing technique, but it's important to do more than just swap out words. Simply replacing words with synonyms can lead to awkward phrasing or a loss of meaning. For example, changing "important" to "significant" or "crucial" might work in some cases, but it won't always fit. Instead of focusing solely on word substitution, aim to revise the entire sentence or passage.

Changing the sentence structure is another effective paraphrasing method. This might involve breaking a long sentence into two shorter ones, or combining two ideas into a single sentence. For instance:



Adding your own voice is an important part of paraphrasing. While you want to stay true to the original meaning, try to add your own style and perspective. You may add phrases/observational points you frequently use in your papers in general for this purpose.

It's also helpful to compare your paraphrased version with the original text to ensure that it's sufficiently different while still accurate. If the two versions are too similar, continue paraphrasing. On the other hand, make sure you haven't altered the meaning of the original text.

Remember: Paraphrasing isn't about taking an idea from a source and make it look like your own. Instead, Paraphrasing is assessing an idea in your own words and adding your own flavor and observation into it.

Finally, always practice paraphrasing regularly. Like any skill, it improves with consistent effort. It requires a wide range of vocabulary, but if you keep practicing consistently, you will master it within the process.

5.2 – Synthesis Method

Synthesis is the process of combining ideas from multiple sources to create a firm understanding of a topic. This method is essential for developing well-rounded arguments, conducting thorough research with AI, and showcasing critical thinking. Unlike summarizing, which condenses a single source, synthesis integrates information from various places to form a unified perspective.

The first step in the synthesis method when researching with AI is gathering information. For example, let's say that you are preparing a research assignment for "Effects of nuclear power on a geopolitical stance". You have a firm idea on the current nuclear power developments from various countries, but you don't know where to begin with how this has anything to do with geopolitics. Ask the AI for ideas, research them thoroughly, come to a logical conclusion by brainstorming over these ideas, and finally, prepare your own arguments of their effects on each other.

It's important to maintain your own voice and perspective when synthesizing information. While you are drawing from various sources, your writing should reflect your understanding and interpretation of the material. Avoid simply listing what each source says; instead, weave the information together to create a narrative that flows logically and supports your point of view.

Citing your sources is crucial in the synthesis process. Always give credit to avoid plagiarism and to lend credibility to your work. Use proper citation formats, APA style.

5.3 – Enhancement Technique

Enhancement techniques are strategies used to improve the quality, clarity, and depth of your work. These techniques ensure that your content is polished, engaging, and simple, all at the same time. By focusing on enhancement, you can elevate your ideas and make your work stand out. Whether you're refining an essay, a research paper, or a creative project, enhancement techniques play a crucial role in achieving excellence.

One essential enhancement technique is revising for clarity. Clear writing ensures that your audience can easily understand your message. To achieve clarity, avoid using overly complex sentences or jargon that might confuse your readers. Instead, focus on presenting your ideas in a straightforward and logical manner. For instance: instead of saying, "The implementation of renewable energy systems has the potential to substantially mitigate environmental degradation," you might write, "Using renewable energy can significantly reduce harm to the environment."

The implementation of renewable energy systems has the potential to substantially mitigate environmental degradation.



Using renewable energy can significantly reduce harm to the environment.

Using varied sentence structures and vocabulary is also an effective way to enhance your writing. Monotonous sentences can make your work dull and uninteresting. Mix short and long sentences, and incorporate descriptive language to keep your audience engaged. For example, instead of repeating "important" throughout your paper, you could use synonyms like "crucial," "vital," or "essential."

Finally, always proofread your writing and AI generated content enhancement. Check for logical errors, along with grammatical errors and awkward phrasing. Although they are improving day by day, it is a high probability to come across awkward phrasing in AI generated content.

6 – AI Citation Methods

Citing AI tools is an essential part of using them responsibly in academic and professional work. Proper citations acknowledge the contributions of these tools, maintain transparency, and prevent misuse. This section will guide you through various methods for citing AI, organized into the following subtopics:

6.1 Why Cite AI?

AI tools, like ChatGPT or Grammarly, often play a significant role in creating or enhancing content. Recognizing their contributions through proper citation has several key benefits:

- **Acknowledging Contributions:** Citing AI tools credits them for the assistance they provided in tasks like generating drafts, analyzing data, or offering suggestions.
- **Maintaining Transparency:** Letting your audience know how and where AI was used ensures honesty and clarity in your work.
- **Preventing Misuse:** By citing AI appropriately, you demonstrate ethical compliance, avoiding any perception of dishonesty or plagiarism.

For example, if an AI tool provided ideas or generated a draft for your essay, noting this in your acknowledgments or citations helps others understand its role and avoids confusion about authorship.

6.2 How to Cite AI

Different citation styles have their own formats for referencing AI tools. Here are examples for common styles:

- APA Style:
- OpenAI. (2023). ChatGPT (September 2023 version) [Large language model]. Retrieved from <https://openai.com>
- MLA Style:
- OpenAI. ChatGPT. Version September 2023, OpenAI, 2023, <https://openai.com>.
- Chicago Style:
- OpenAI. 2023. ChatGPT (September 2023 version). Accessed [Date]. <https://openai.com>.

When citing, always include the tool's name, version, and the date of access. If possible, describe the tool's specific contribution to your work, such as “provided a summary” or “helped brainstorm ideas.”

6.3 Challenges and Best Practices

While AI tools are powerful, using them responsibly requires attention to detail.

- **Authorship Questions:** AI tools cannot be credited as authors since they lack creativity and intent. Instead, describe their role, such as “generated initial ideas” or “assisted with editing.”
- **Accuracy and Verification:** Always review AI-generated content to ensure it is accurate and aligns with your goals. AI tools can make mistakes or provide outdated information.
- **Institutional Policies:** Check the specific guidelines of your school or workplace regarding AI use. Some institutions may have strict rules about what constitutes appropriate usage.

Best practices for responsible AI use include clearly identifying where AI was used, refining its output with your own input, and always citing it in the required style. Remember, AI is a tool to assist you—not a replacement for your creativity and critical thinking.

ASSESSMENT TASK

You are required to do a research about the following prompt:

“Banach–Tarski paradox claims that, in ideal situations, infinite spheres can be extracted from one sphere. Why? How much credibility do you think Banach–Tarski paradox has?”

When writing down your essay, be sure to consider the following:

- You may use AI to gain some insight over your research.
- You may use grammar correction.
- Don't forget to use content transformation techniques when providing your argument. You may check them out from the booklet earlier in the chapters.
- Don't forget to cite your resources, along with prompts you used.

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