

# Supporting RESEARCH & WRITING with Generative AI

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Spring 2024*



**Generative AI offers powerful tools to support research and writing.**

**This workshop will help you explore these tools confidently, ethically, and safely.**



DISCLAIMER: The discussion of generative AI technologies and platforms, which may include external hyperlinks, does not constitute endorsement by NPS, DON, or DOD of any technologies, platforms, or websites.

**Large language models (LLM) use deep learning techniques and massively large data sets to generate, summarize, and predict new content.**

**LLM capabilities include:**



Generate  
text, code,  
images

Translate  
text

Summarize  
text

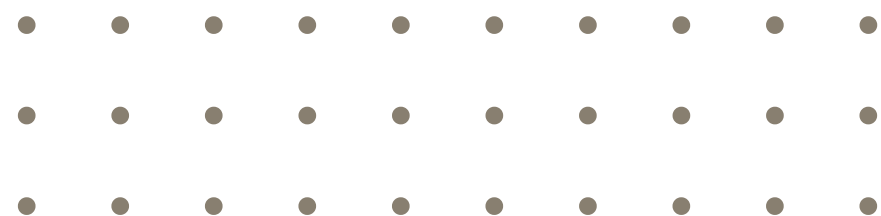
Chat

Sentiment  
analysis

Revise or  
expand text

- 01.** **ACADEMIC INTEGRITY**  
*Understanding the NPS Interim Guidance*
- 02.** **AI LITERACY & COMPETENCIES**  
*Being ready for the future of AI and innovation*
- 03.** **USE CASES**  
*Using generative AI for research and writing at NPS*
- 04.** **CITING AND DISCLOSING AI USE**  
*Being transparent with readers*
- 05.** **HOW TO LEARN MORE**  
*Resources and best practices*

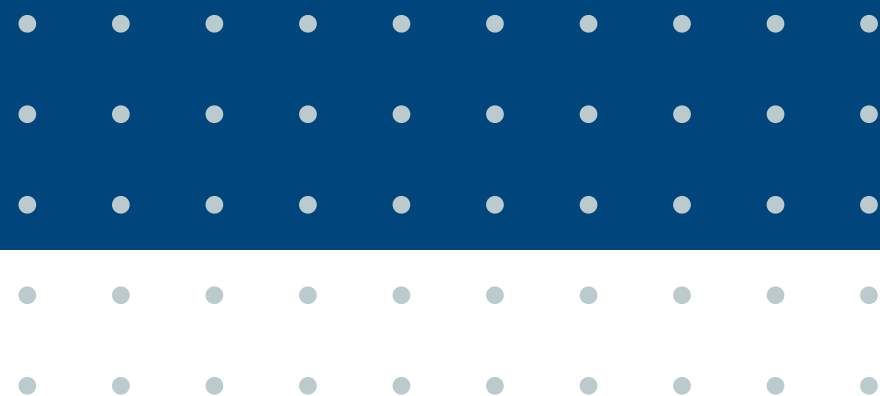
**NEXT**



01.

# ACADEMIC INTEGRITY

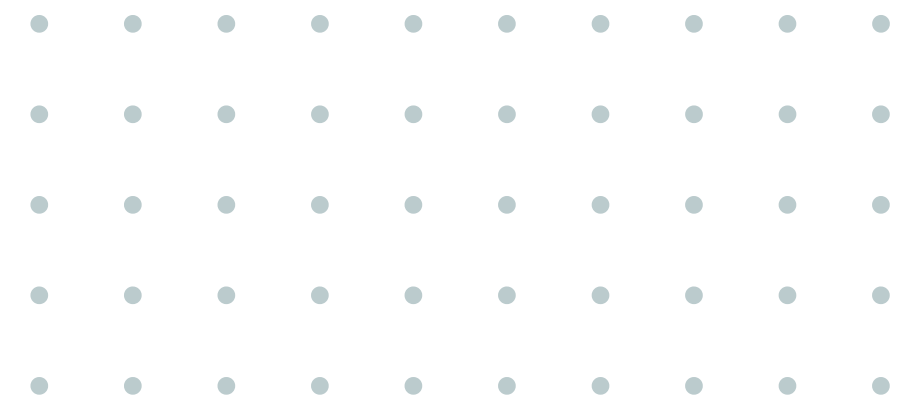
*Understand the NPS Interim Guidance on  
Use of Generative AI*



***Interim Guiding Principles for Use of Generative Artificial Intelligence (AI) Tools*** were released in March 2023 by the NPS Office of the Provost.

## PRINCIPLE 1

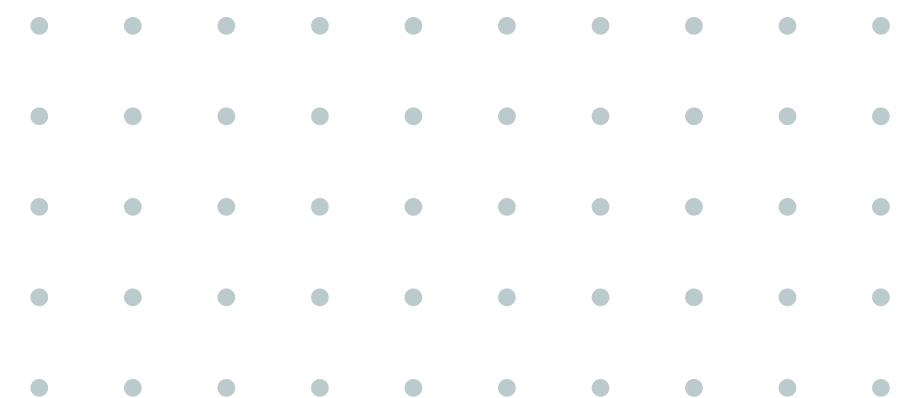
“**Exploration** of generative AI tools that support research, learning, and writing **is encouraged.**”



## PRINCIPLE 2

**“It is not acceptable to submit as one’s own work any text, code, image, or multimedia output by generative AI tools.”**

- NPS Academic Honor Code states that “work submitted in fulfillment of graduation requirements will be the student’s own.”
- Generative AI output included in one’s work (text, code, images) must be marked and attributed.



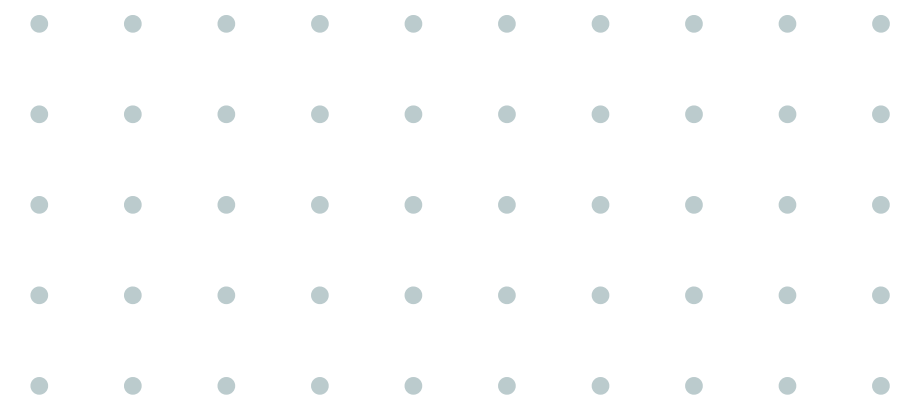


## PRINCIPLE 3

“The **writing** process **plays a key role** in learning and research.”

Don't “outsource” tasks to AI when doing so shuts down opportunities to:

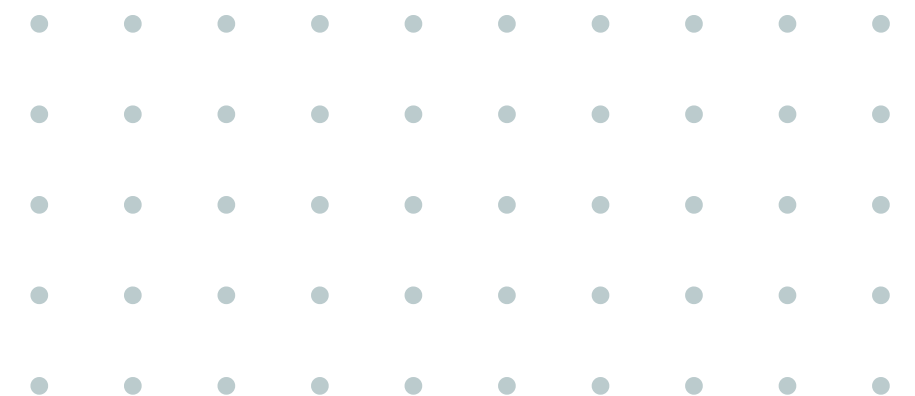
- engage deeply with subject matter,
- broaden your expertise,
- build language and critical thinking skills,
- and develop information literacy.



## PRINCIPLE 4

**“Learning to understand source and information integrity, including the limitations of generative AI, is a critical part of graduate education.”**

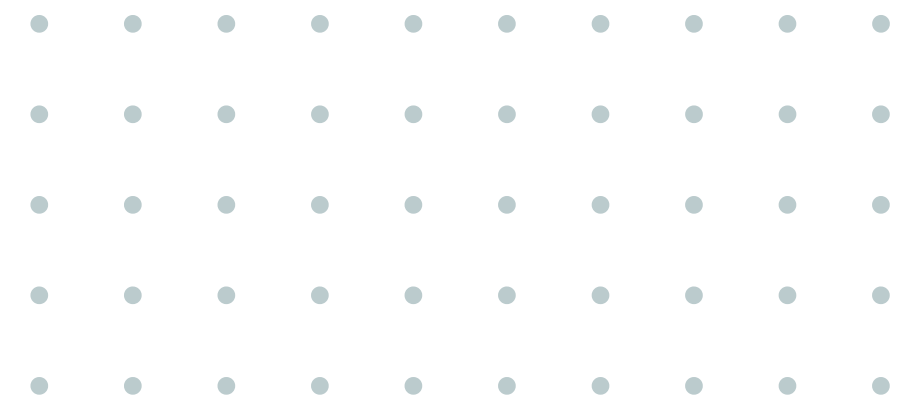
- Never assume that output from generative AI is credible or trustworthy, even if it cites sources.
- Don't cite it as a source of information in academic work.



## PRINCIPLE 5

**“Tools and techniques used in research methodology, including generative AI, should be acknowledged, documented, and discussed in one’s work.”**

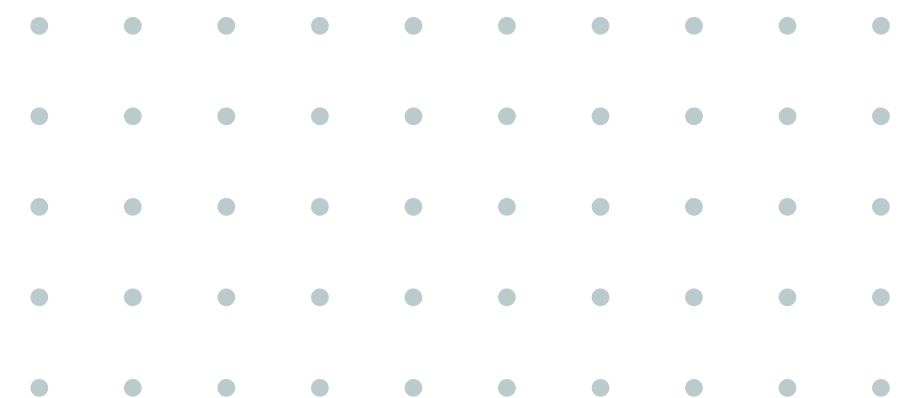
If you use generative AI as a research tool, disclose its use and explain how you used it.



## PRINCIPLE 6

“Faculty should provide students with **requirements, expectations, and guidance for use of generative AI** tools in the context of their courses and the theses they advise.”

NPS Academic Honor Code states that “clarifying what is permissible in the completion of academic course material is the responsibility of the student.  
**If in doubt, ask.**”

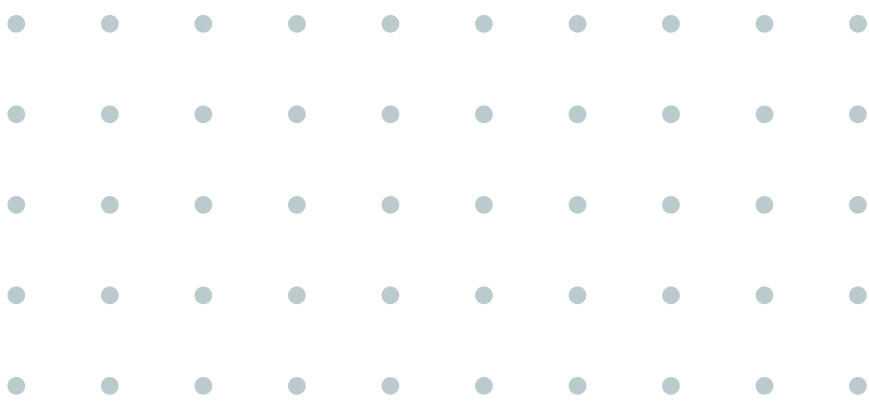


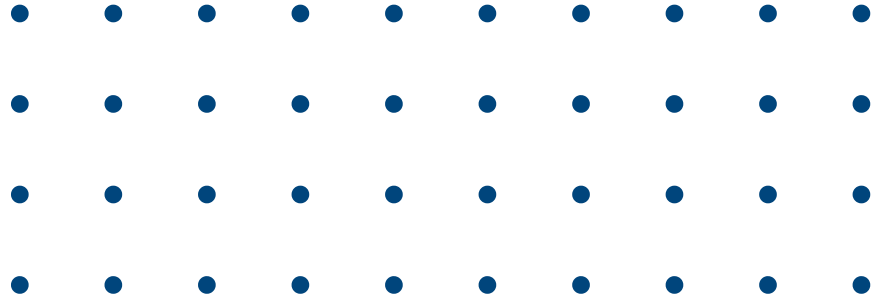
# PRINCIPLE 7

For security reasons, students, faculty, and staff **shall not input Controlled Unclassified Information (CUI), personally identifiable information (PII), classified information, or any otherwise restricted information** into generative AI tools.

# PRINCIPLE 8

**Accounts created with an NPS email address are for official use only.** When creating an account with NPS credentials, users must ensure they avoid any unauthorized commitments, such as personally accepting terms of use when registering for or accessing the services.





**Be aware:** In certain learning or publication contexts generative AI uses may be **prohibited, discouraged, or require disclosure.**

**Be proactive:** **Seek out and understand** restrictions or requirements for use.

In your *professional* life:

**Producing a more perfect product with less effort is success.**

In your *academic* life:

**Producing a more perfect product but learning less is failure.**



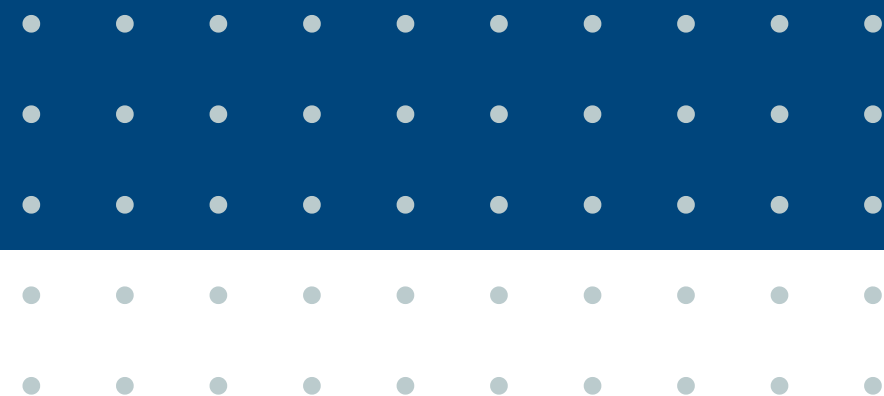
Your growth is the goal.

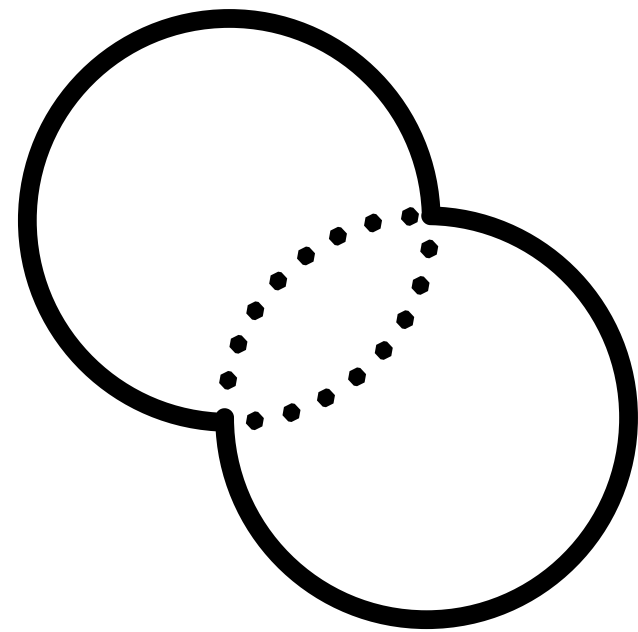


02.

# AI LITERACY & COMPETENCIES

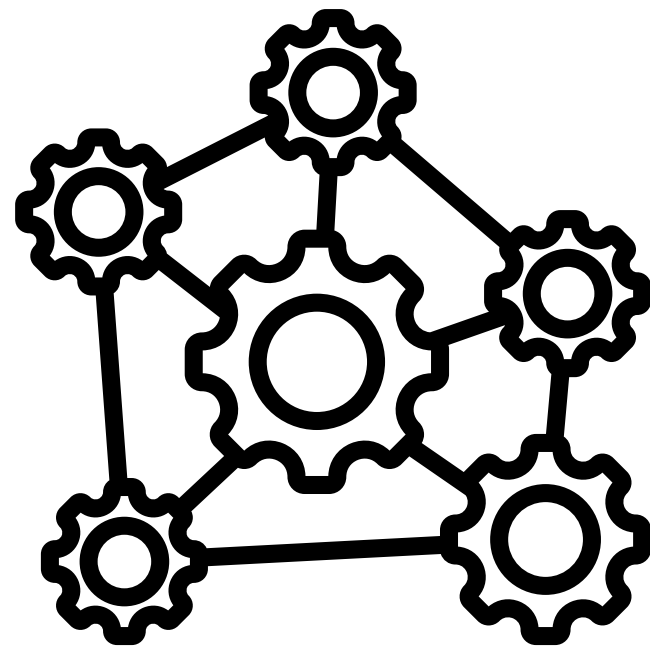
*Be ready for the future of AI  
and innovation*





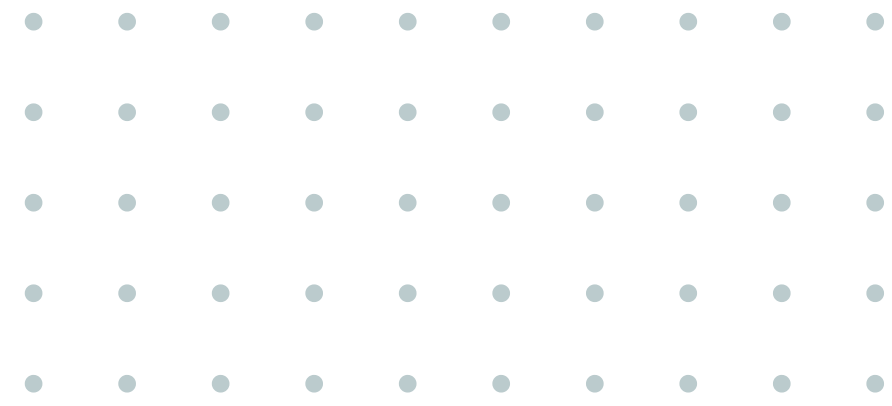
**Mick Ryan. Intellectual Preparation for Future War:  
How Artificial Intelligence Will Change Professional  
Military Education. (2018, July 3). War on the Rocks.**

“Military personnel will require basic literacy in artificial intelligence, including **knowledge of its application**, how to provide a level of assurance and **quality control**, and **how to optimally combine it with human intelligence.**”



**Michael Horowitz and Lauren Kahn. The AI Literacy Gap Hobbling American Officialdom. (2020, Jan 14). [War on the Rocks.](#)**

“AI education for end users” should “provide leaders with a firm grasp of the **basic underlying principles** of AI” and understanding of its **limitations**, and should enable leaders “to better envision **where AI can fit into existing institutions and systems.**”



## WHAT IS AI?

Do you recognize when you're using technology that uses AI?

What are the differences between human, animal, and machine intelligence?

What kinds of intelligent machines exist?

What's the difference between "narrow" and "general" AI?

## WHAT CAN AI DO?

What kinds of problems or tasks is AI good at solving?

When are human skills needed instead?

How might AI be applied in the future?

## HOW DOES AI WORK?

How can knowledge about the world be represented in a form a computer can use?

How do computers reason and make decisions?

How does machine learning work?

How do humans affect AI systems by programming, choosing models, and fine-tuning?

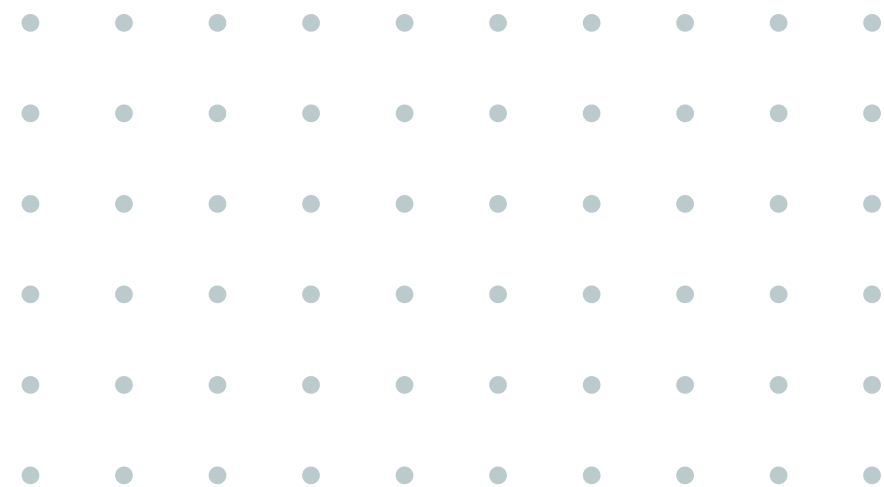
## WHAT SHOULD AI DO?

What are the key ethical issues surrounding AI? E.g.,

- privacy
- employment
- misinformation
- the singularity
- ethical decision making
- diversity
- bias
- transparency
- accountability

**Adapted from** Long, D., & Magerko, B. (2020). What is AI Literacy? Competencies and Design Considerations. Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 1–16.  
<https://doi.org/10.1145/3313831.3376727>

**CONSIDER:** How will you leverage your experience with “everyday” generative AI tools towards broader AI literacy?



## Consider and critically analyze generative AI tools you use.

What features make them “intelligent”? How do AI tools you have used fall short of general intelligence?

What are the tasks and problems AI seems to excel at? Which tasks is it challenged by?  
**Consider when using AI is appropriate and when human skills are needed.**

Imagine how the tool you are using could be applied in the future. What might the effects of such applications be?

Consider how the behavior of AI tools you have used reflects how the AI models were trained and the data used to train them.

What are the **ethical implications** of the AI tool you are using?

What are the **security implications** of the AI tool you are using?



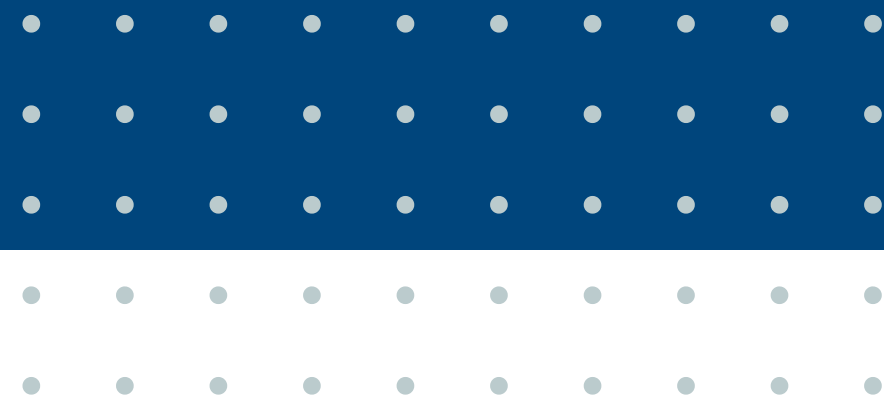
## Developing Today's Joint Officers for Tomorrow's Ways of War: the Joint Chiefs of Staff Vision and Guidance for Professional Military Education & Talent Management (2020)

Be able to “**anticipate and lead rapid adaptation and innovation** during a dynamic period of acceleration in the rate of change in warfare **under the conditions of great power competition and disruptive technology.**”

03.

# USE CASES

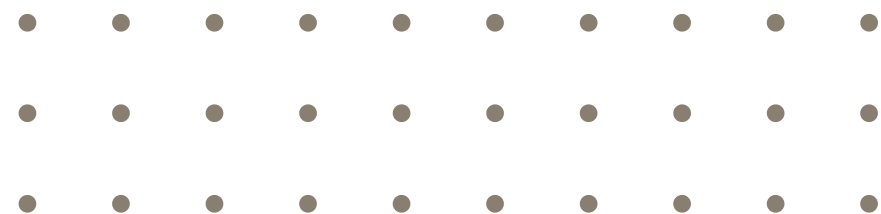
*Use generative AI for research  
and writing at NPS*





# WHEN TO PUMP (OR SLAM!) THE BRAKES

- 1 *AI can't* “do the thing.”
- 2 Using AI to “do the thing” could violate policy or academic integrity rules.
- 3 Using AI to “do the thing” might prevent you from developing critical competencies expected of you as a grad student or professional.



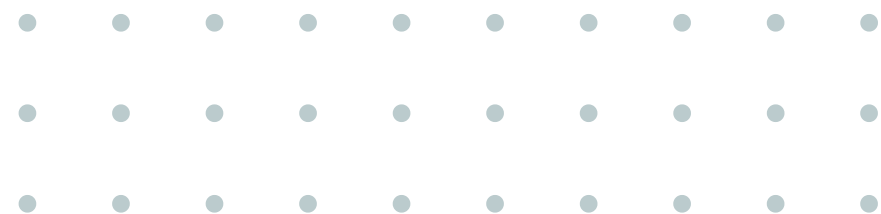


# AI Can't “Do The Thing”

There are some tasks to avoid simply because today's language learning models (LLMs) can't do them.

**LLMs like ChatGPT cannot be used for fact-checking. LLMs can't verify if something is true or really happened.**

**They don't recall facts from their interactions with sources like humans do.** Instead, they rely on patterns in training data to predict the most likely next word or phrase in a sequence. They may generate plausible but incorrect text and have no capability to check against real-world facts or data.



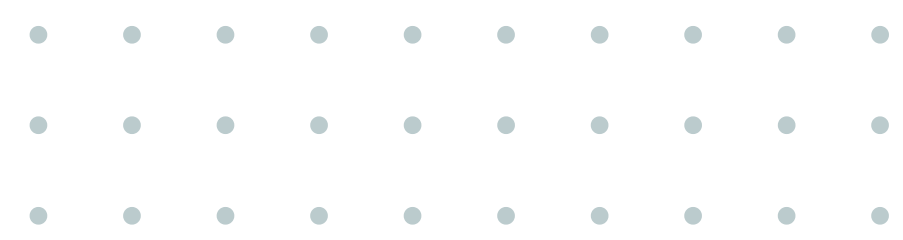


# AI Can't “Do The Thing”

There are some tasks to avoid simply because today's language learning models (LLMs) can't do them.

**LLMs like ChatGPT cannot be used for plagiarism checking.**

**LLMs do not have reliable “memory” of texts they have trained on and can't compare their training data against your text.** Plagiarism checking requires comparing a given text against a database of existing works to identify similarities. LLMs do not have access to such databases.



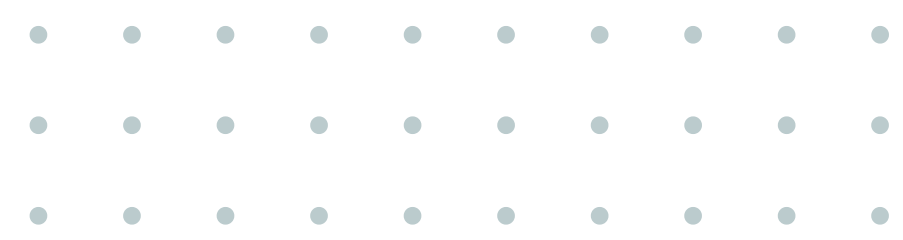


# AI Can't “Do The Thing”

There are some tasks to avoid simply because today's language learning models (LLMs) can't do them.

**LLMs like ChatGPT cannot consistently and reliably generate or format citations and references lists.**

Try the DKL citation guide and Zotero instead to support citing and source management.



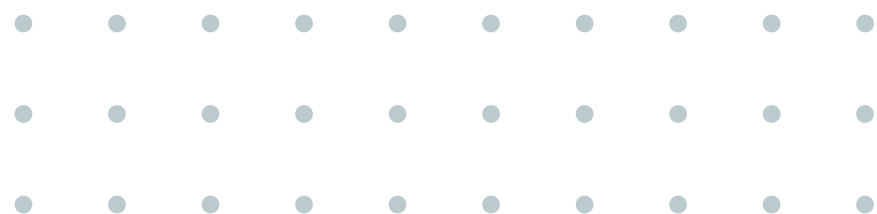


# AI Can't “Do The Thing”

There are some tasks to avoid simply because today's language learning models (LLMs) can't do them.

**LLMs like ChatGPT cannot consistently provide relevant or even real sources when asked for materials related to a topic.** They regularly fabricate citations of plausible-sounding but nonexistent works and pair names of real scholars with fictitious summaries of research interests.

\*There are some AI-powered academic search tools that are useful!  
Explore **Semantic Scholar** and **Elicit**, for example, to complement (not replace) your use of the library's search engine and Google Scholar.



# Using Generative AI to Suggest Content or Draft Text *Could* Violate Academic Integrity Rules



**Generating final draft text.** Including AI-generated text in your final draft without fully revising and editing it yourself.

**Suggesting content.** Asking AI to supply elements of argument and evidence (relevant facts and data) you include in your draft.

**Applying revisions directly to your text.** Inputting your text and asking an LLM to rewrite it for style and flow, or “fix” mistakes for you directly (rather than marking them).

**NPS guidance holds that it is unacceptable to submit AI-generated work as your own.**

Unless approved by your professor, these kinds of generative AI use may not be appropriate for NPS papers.

If you submit work that includes AI-generated text, include a detailed disclosure.

**BOTTOM LINE: Always ask first. Always disclose use.**





**Using AI to “do the thing” might prevent you from developing critical competencies expected of you as a grad student or professional.**



**RELEVANT  
ANALOGIES:**

**Training wheels are useful to support learning but should be removed after you learn how to ride a bike.**

**You should know how to drive a car before using self-driving technology.**





# Developing Working Knowledge of a Topic



**Generative AI can help you to develop a preliminary working understanding of a topic.** Asking a tool like ChatGPT or Bing for an overview of a topic or subject is like reading the Wikipedia page, but is more customizable and interactive.

## Why be cautious?

- **Generative AI is not a reliable source for academic work: devote adequate time to finding credible sources and ensure your work includes sufficient references.**
- LLMs may generate plausible but incorrect information. They should only be a starting point—not a stopping point—in developing your knowledge of a topic.



*Critical competency:* **You must be able to** find and interpret credible sources to develop knowledge in your subject matter and to verify facts and information.



# Summarizing Articles, Books, or Chapters



**Generative AI tools can help you create study materials or notes for a literature review by creating summaries of articles or chapters.** Tools like ChatGPT or Bing can create customized synopses of full-text documents you provide.

## **Why be cautious?**

- **Crafting notes in your own words is a powerful technique to reinforce learning and comprehension.** By outsourcing to AI, you miss out on a learning opportunity.
- **Ensure that the tool you're working with has access to the full text.** Providing only a title (or even a link when the tool cannot browse the web) can yield a plausible but totally fabricated summary.



*Critical competency:* **You need the skills to** concisely capture and distill the main ideas and key points from a source in your own words.

# Pre-Reading Notes or Simplified Versions



**AI tools can support strategic reading of an academic text you provide, offering pre-reading summaries, context, or simplified versions.** This can scaffold your interaction with the text, helping you anticipate main points to look out for and critically assess.

## Why be cautious?

- **Deciphering texts in one's field is a critical competency for grad students. Using AI can either help or hinder you in developing these skills.**
- Ensure that the tool you're working with has access to the full text to avoid a fabricated summary. Also, AI tools may offer off-target or biased interpretations of important points.



*Critical competency:* **You need to be able to** effectively engage with and interpret academic texts in your field.

# Identifying Where Citation is Needed



**Generative AI tools can help you consider and identify where citation is needed in your text.** You can input passages of your text and ask AI to mark sentences where citation is needed.

## Why be cautious?

- Learning how/when to cite sources in your work is a critical competency for grad students.
- **You need citation and attribution knowledge to effectively prompt the AI tool and to assess the quality of its output.** Without careful prompting, LLMs may do a poor job of identifying where and how often to cite.



*Critical competency:* **You must understand** how and when to cite sources in your work.

# Supporting Development of Research Questions



**Interacting with generative AI tools can help you formulate hypotheses or research questions.** You can ask a tool like ChatGPT for suggestions, ideas, or feedback on your research questions or hypotheses.

## **Why be cautious?**

- **Be an active agent in the design of your own research.** Use LLMs as a tool to think with, rather than relying heavily on AI-generated suggestions.
- To critically assess AI output, you need familiarity with your subject matter and the standards of your field.



*Critical competency:* **You must understand and recognize** the attributes of well-scoped research questions and hypotheses in your subject.

- **GETTING STARTED**
- **STRENGTHENING ARGUMENT**
- **RESEARCH AND READING**
- **CITATION AND ATTRIBUTION**
- **DRAFTING**
- **REVISION**



**Do you need to become an expert in  
“prompt engineering” to get useful results?**

**No.**

- **Do experiment with adjusting your prompts to get different results.**
- **Don't underestimate the value of intuitive play and trial and error.**
- **Don't get led down a time-sucking rabbit hole of prompt perfectionism.**
- **Don't get taken in by snake oil salesmen capitalizing on your uncertainty.**

# Getting Started

**Brainstorming initial ideas or topics.** Interact with generative AI tools to brainstorm topics or suggest options for approaching a topic.

- I'm brainstorming possible thesis topics for a graduate degree. What are ten very different approaches to studying the topic of the role of AI and machine learning in detecting cyber threats in naval networks?
- If I wanted to do more research on the topic of using AI algorithms to monitor user behavior on social media to identify automated bots, where could I start? What do I need to know about related fields and disciplines? What are some resources or cases that would be interesting?



# Getting Started

**Scoping and planning a research project.** Interact with generative AI tools to get ideas for how to narrow or expand a research project, and to develop a sense of what you'll need to achieve to meet your research goal.

- Help me brainstorm some ideas and approaches to my topic that would be appropriate for a 12-month master's thesis project. I want to study challenges related to international naval partnerships.





# Getting Started

**Understanding paper types and structural expectations.** Use AI to explain or model the expectations for how to format or organize a certain type of paper or document (e.g., a research proposal or policy memo).

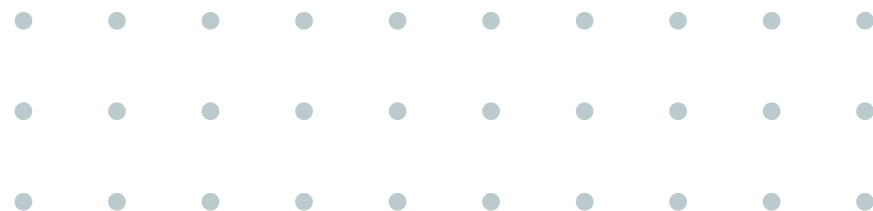
- I'm writing a research proposal for my graduate thesis at NPS. What are the expectations for how to format or organize a research proposal for a master's student?
- I need to write a policy memo for a class in my graduate program in homeland security and defense. What are the standard elements and the expected structure for a policy memo? What makes the difference between an ok and a great policy memo?



# Strengthening Argument

**Strengthening thesis statements.** Ask AI for feedback on thesis statements you've written.

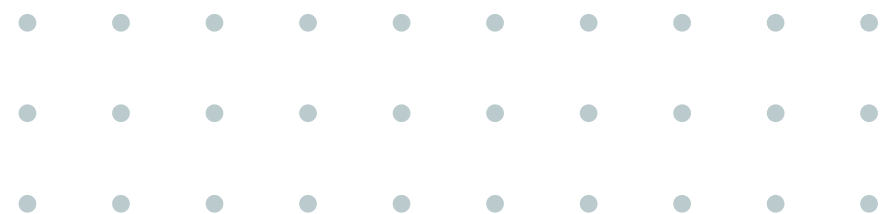
- What expectations does this thesis statement create in a reader? What does the writer need to do to address and support all aspects of the thesis statement? "While AI enhancements to surveillance and reconnaissance capabilities show potential to enable covert operations, AI-driven tools and technologies can also be used by adversaries to detect covert operations, introducing unprecedented ethical and operational challenges."



# Strengthening Argument

**Refining arguments or analysis.** Ask for AI feedback on how effectively your evidence and information supports your argument.

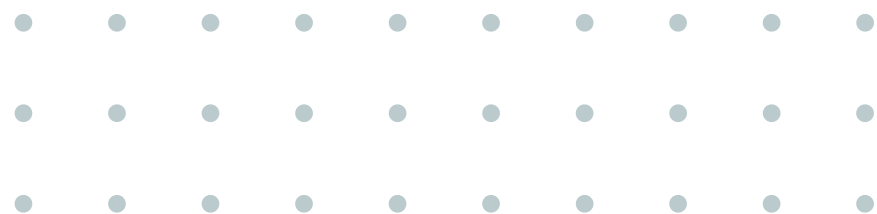
- Where could the argument in the following short essay response be strengthened or made more persuasive? How could the structure or organization of the argument be improved?



# Strengthening Argument

**Exploring different perspectives or counterarguments.** Ask AI to present various viewpoints or counterarguments related to your argument or topic to help you determine what evidence or explanations are needed to be persuasive.

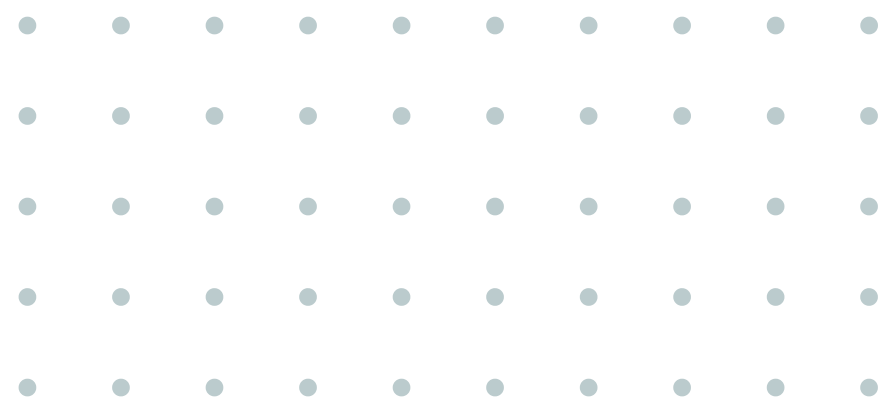
- In my chapter I argue that the Cuban Missile Crisis was a good example of gunboat diplomacy. What might the counterarguments be? Be detailed and specific.
  - (Note that if your assignment specifically asks you to include counterarguments, this might be an “orange” rather than “green” use of generative AI).



# Research and Reading

**Understanding the research landscape.** As a preliminary step (and keeping in mind its limitations) ask AI to summarize the themes or perspectives within the existing research on a topic.

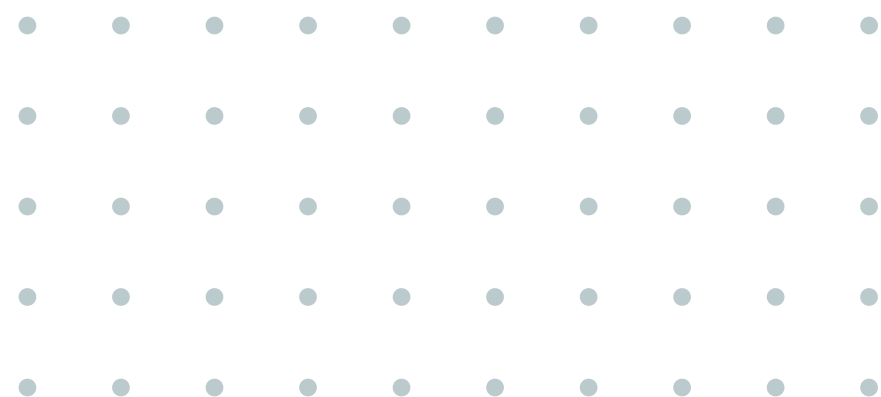
- Please discuss the existing research and perspectives related to the following premise: establishing naval bases in the Arctic region will be strategically vital for maintaining control over emerging sea routes and resources.



# Research and Reading

**Helping to generate relevant search keywords and search terms.** Interact with generative AI to create a list of relevant keywords to help you search for source material. Generative AI can also help you create Boolean search strings to try.

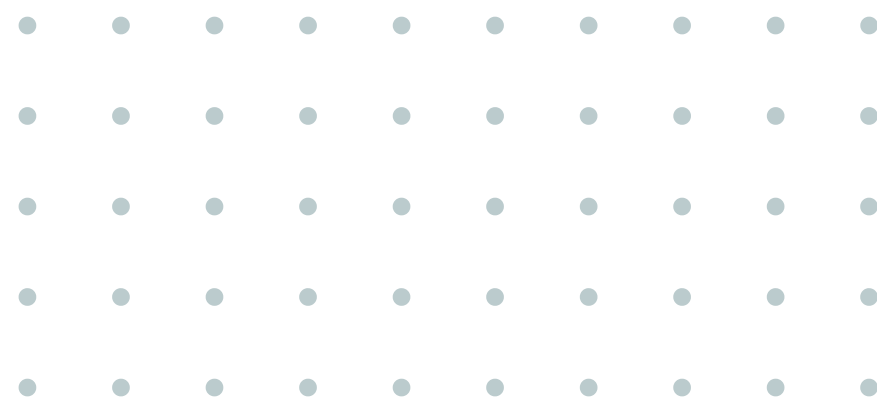
- I want to write a paper for a graduate level class on the topic of deepfake detection--what are some good keywords that I can use to find out more on library websites, databases, and Google Scholar?



# Research and Reading

**Developing ideas for a research strategy.** Interact with AI to get ideas for a strategy for completing research on your topic that is customized to your depth, scope, and available time for research.

- I need to conduct research on active debris removal (ADR) technologies in space for my master's thesis. Please help me customize a research plan to identify relevant sources.
- Please compile a comprehensive list of relevant keywords to this topic.
- How can I automate updates on sources relevant to ADR?



# Drafting

**Outlining the Paper.** Ask AI to create options for outlining or structuring your paper, or ask for suggestions to improve an outline you created.

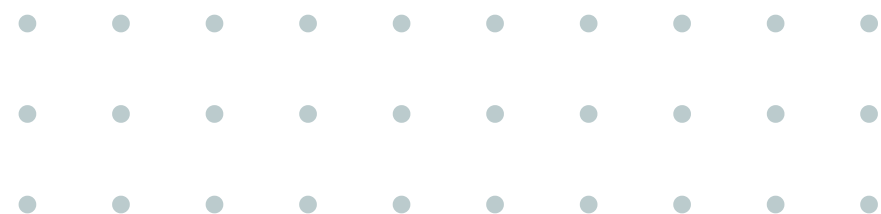
- Based on my rough notes on the topic so far, how might I outline this paper? What topics do I need to further develop?
- Give me several options for how I might outline this paper, based on my notes so far.



# Revision

**Improving coherence and flow.** Input text you drafted and ask AI for a list of suggestions to improve the coherence and logical flow.

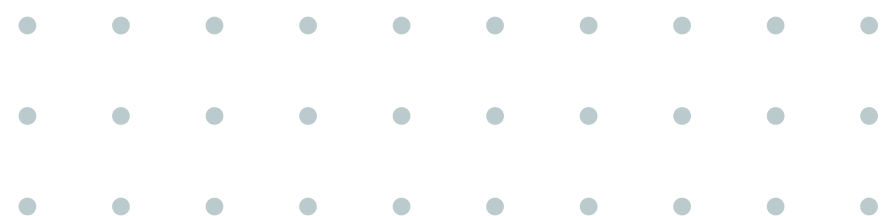
- Please compare the structure of my draft to standard academic writing structures in my field and suggest modifications for improved coherence.
- Please analyze the themes in my draft and suggest a better way to organize these themes for improved flow and coherence.



# Revision

**Checking language and grammar.** Input text you drafted and ask AI to identify needed corrections to grammar, spelling, and mechanics.

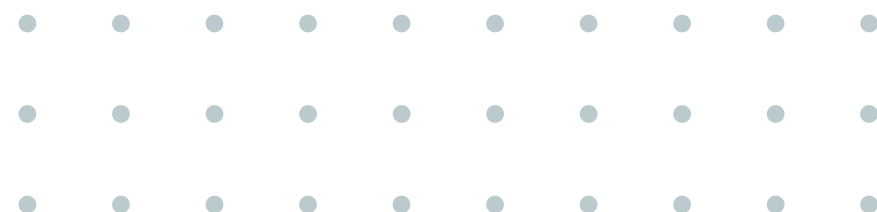
- Please review the following paragraph. Do not address or offer corrections for subjective issues related to style. Use a table format to provide a side-by-side comparison of the original text and a corrected version. Bold the errors in the original text and include a column to explain the corrected version.



# Revision

**Assessing and improving style and tone.** Input text you drafted and ask AI for feedback and suggestions on your style and tone (e.g., formality or academic style).

- Please review the following paragraph for academic tone and clarity. Identify any informal elements and suggest formal alternatives. Identify vague areas and propose more precise, scholarly language. Use bullet points and include examples and explanations from the text with each point.

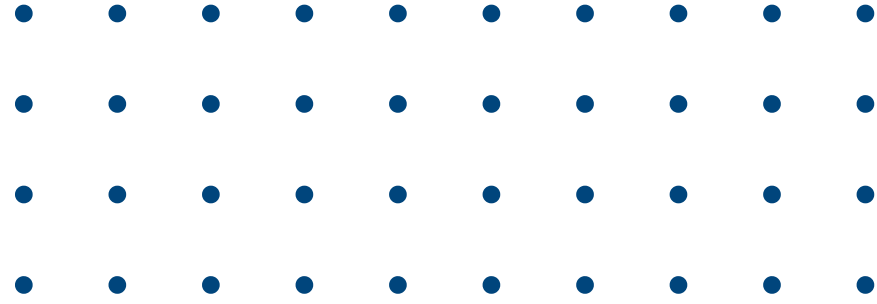


04.

# CITING AND DISCLOSING AI USE

*Being transparent with readers*





**Be aware:** In certain learning or publication contexts generative AI uses may be **prohibited, discouraged, or require disclosure.**

**Be proactive:** **Seek out and understand** restrictions or requirements for use.

**Be accountable:** **Cite** AI-generated material you include.


**Disclose use** of generative AI to stakeholders (e.g., professors, advisors, sponsors, editors, publishers).



# When to disclose use

**Ensure you understand stakeholder requirements or preferences.**

|                          |  |
|--------------------------|--|
| Writing for a class?     | Ask your professor.                                      |
| Writing a thesis?        | Ask your advisor and check with your department.         |
| Writing for publication? | Review guidance for authors and ask the editorial staff. |
| Writing a report?        | Check with sponsoring and regulating organizations.      |





# How to disclose use

**WHAT  
TOOL DID  
YOU USE?**

Specify what AI or  
AI-enabled tools  
were used.

**WHY  
DID YOU  
USE IT?**

Identify the reason  
you used an AI or AI-  
enabled tool.

**HOW  
DID YOU  
USE IT?**

Provide some info  
about how you used  
the tool.



## example 1:

**Elsevier, a large academic publishing company, offers the following guidance to prospective authors in their FAQ:**

**“We ask authors who have used AI or AI-assisted tools to insert a statement at the end of their manuscript immediately above the references or bibliography entitled ‘Declaration of AI and AI-assisted technologies in the writing process’. In that statement, we ask authors to specify the tool that was used and the reason for using the tool.”**

Elsevier. *The use of generative AI and AI-assisted technologies in writing for Elsevier: Policy for book and commissioned content authors.* (n.d.). <https://www.elsevier.com/about/policies-and-standards/the-use-of-generative-ai-and-ai-assisted-technologies-in-writing-for-elsevier>



## example 1:

**Elsevier, a large academic publishing company, offers the following guidance to prospective authors in their FAQ:**

“We suggest that authors follow this **format** when preparing their statement:

During the preparation of this work the author(s) used [NAME TOOL / SERVICE] in order to [REASON]. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.”

## example 2:

**Monash University, an Australian research university, offers the following guidance:**

**“When you have adapted material generated by artificial intelligence. . .you should add a declaration which:**

- Provides a written acknowledgment of the use of generative artificial intelligence
- Specifies which technology was used
- Includes explicit descriptions of how the information was generated
- Identifies the prompts used
- Explains how the output was used in your work.”

Monash University. (2024). *Acknowledging the use of generative artificial intelligence*. <https://www.monash.edu/student-academic-success/build-digital-capabilities/create-online/acknowledging-the-use-of-generative-artificial-intelligence#:~:text=A%20suggested%20format%3A>

## example 2:

**Monash University, an Australian research university, offers the following guidance:**

**“A suggested format:**

I acknowledge the use of [insert AI system(s) and link] to [specific use of generative artificial intelligence]. The prompts used include [list of prompts]. The output from these prompts was used to [explain use].“

Monash University. (2024). *Acknowledging the use of generative artificial intelligence*. <https://www.monash.edu/student-academic-success/build-digital-capabilities/create-online/acknowledging-the-use-of-generative-artificial-intelligence#:~:text=A%20suggested%20format%3A>

05.

# WAYS TO LEARN MORE

*Resources and best practices*





## GENERATIVE AI HUB

*The NPS location for guidance and resources on generative AI.*



## GENERATIVE AI TASK FORCE

*Join to help shape NPS response to generative AI. Presentations, hands-on experiences, community development.*



## GWC WRITING RESOURCES: GENERATIVE AI

*The GWC's page for guidance on generative AI.*



## NPS CITATION GUIDE: GENERATIVE AI

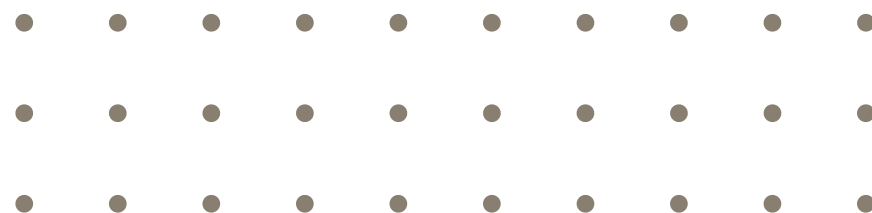
*Citation guidance on AI from Dudley Knox Library, the Graduate Writing Center, and Thesis Processing.*



## HARNESSING AI COURSE

*Offered by the NPS AI Group*

# WAYS TO LEARN MORE





# THANK YOU

questions?

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“International security is crucial in today's world, as it ensures the vital protection of nations nestled within a complex and interconnected global landscape. To embark on a journey to uncover the plethora of challenges facing the world, one must dive into the intricate tapestry of international relations. It is not just about safeguarding borders but also about discovering the unique blend of diplomatic strategies and military prowess that can elevate a nation's standing on the world stage. Whether you're a diplomat or a military strategist, navigating this daunting realm requires more than just style; it necessitates a game changer approach. In this world of ever-evolving threats, international security is more than just a way to unlock and unveil potential solutions; it's the key to unlocking a safer and more secure world for all. Look no further if you seek to delve into the realm of enhancing global stability, for it is a mission that stands out as vital for the well-being of nations worldwide.”

# Deterministic vs. probabilistic systems

Deterministic algorithms produce the same output for a given input every time they are run. Their behavior is predictable and repeatable.

Most daily-use technology, from calculators to traditional software, operates on deterministic principles.

Users have grown accustomed to expecting reliable and repeatable outcomes from technology.

Probabilistic algorithms incorporate randomness in their logic, leading to different outputs for the same input on different executions.

Unlike deterministic systems, generative AI can produce different outputs given the same input over different instances.

Users may favor decisions suggested by automated systems even when the suggestions are probabilistic and uncertain.





# Digging



# Delving



Merriam-Webster. "An Analysis of 'Delve' vs. 'Dig' vs. 'Dive.'" Accessed January, 2024. <https://www.merriam-webster.com/grammar/delve-vs-dig-vs-dive-usage>