



Task 10 Research skills 3

use of artificial intelligence tools in scientific research.

Field:
Cybersecurity

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Task 10 :Research Skills (3)

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In this presentation, I will demonstrate the use of artificial intelligence tools in scientific research.

More specifically, I will show how artificial intelligence can be used to

- 1. Formulate research hypotheses**
- 2. Design questions for an exploratory interview**

This approach allows improving the researcher's productivity while respecting methodological principles.



1. Use of AI to generate hypotheses

Chosen variables

- ☐ **Independent variable:** Use of artificial intelligence in cybersecurity
- ☐ **Dependent variable:** Ability to detect cyberattacks

Prompt used

"Generate three main research hypotheses and one secondary hypothesis about the relationship between artificial intelligence usage in cybersecurity and cyberattack detection capability. Use academic style and include statistical formulation."

Result generated by AI (hypotheses)

H1: There is a statistically significant relationship between the use of artificial intelligence and the improvement of the ability to detect cyberattacks.

H2: There is a statistically significant relationship between the use of artificial intelligence and the reduction of the time to detect cyberattacks.

H3: There is a statistically significant relationship between the use of artificial intelligence and the improvement of the accuracy of cyberattack detection.

H4 (secondary): The effectiveness of artificial intelligence in detecting cyberattacks depends on the quality of the data used.

2. Use of AI to generate interview questions

Prompt used

"Generate five open-ended interview questions for an exploratory study about the use of artificial intelligence in cybersecurity and its impact on cyberattack detection."

Generated result (questions)

1. How does your organization use artificial intelligence in cybersecurity operations?
2. What are the main benefits of using artificial intelligence in detecting cyberattacks?
3. What challenges have you faced when implementing AI-based security systems?
4. In your opinion, how does AI improve the speed and accuracy of cyberattack detection?
5. What improvements would you suggest for AI-based cybersecurity systems?

"Code" used (explanation requested)

In this context, the 'code' corresponds to the instruction given to the artificial intelligence tool, that is to say, the prompt.

Example:

Generate five open-ended interview questions for an exploratory study about AI in cybersecurity.

This prompt acts as a command allowing the automatic generation of questions.

Importance of using AI

The use of artificial intelligence in scientific research presents several advantages:

- ☐ Time saving in hypothesis formulation
- ☐ Helps in structuring questionnaires
- ☐ Improvement of academic quality

However, it is important to note that the researcher must always:

- verify the relevance of the results
- adapt the content to the context of the study

In conclusion, artificial intelligence is a powerful tool for assisting the researcher in different stages of scientific research.

Its use allows for improving the efficiency and quality of work, while respecting academic

Thank you for your attention ,Wa Billahi Tawfiq.

Reference Frameworks

- 1) Ibrahim Sarker, I. H. (2021).
Machine learning for intelligent cybersecurity: A comprehensive survey.
Journal of Big Data, 8(1), 1–27.
- 2) Ian Goodfellow, I., Yoshua Bengio, Y., & Aaron Courville, A. (2016).
Deep Learning. MIT Press
- 3) OECD. (2019).
OECD Principles on Artificial Intelligence
- 4) John Creswell, J. W. (2014).
Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.
SAGE Publications.
- 5) Uma Sekaran, U., & Roger Bougie, R. (2016).
Research Methods for Business. Wiley.



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