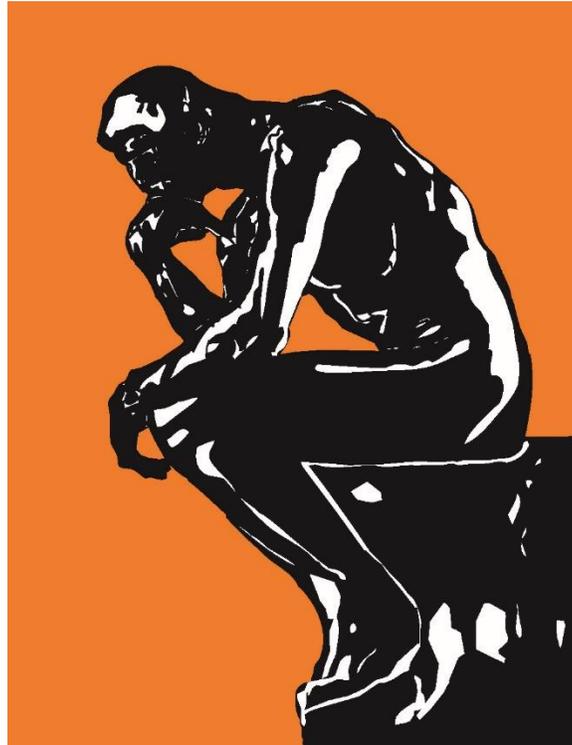


Academic writing and AI: Day-2 experiment with Bayesian Mindsponge Framework

Minh-Hoang Nguyen

AISDL

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Introduction

Artificial Intelligence is a useful tool that can help humans substantially reduce their energy and time in doing tasks and solving problems. Recently, academics have been amazed by the writing skills of the AI bot ChatGPT. For example, the AI bot is now capable of writing an essay [1] and an article on The Guardian [2]. The question is: can AI write an academic article?

After several experiments with ChatGPT and YouChat, I realized that it is still too soon for AI to do so. The AI lacks the systematic reasoning capability to write a multi-paragraph essay that requires precise and detailed information. However, my colleague, Tam-Tri Le, suggests that academics can actually “befriend” and collaborate with AI to ease the writing task [3]. His idea is to give AI detailed prompts to generate individual paragraphs, then combine them together. Finally, with the validation and edition of humans, humans and AI can still

collaborate to generate a multi-paragraph essay with precise and detailed information suitable for academic writing.

To further check the ability of AI to identify precise and detailed scientific information, I continue experimenting with how accurate AI recognizes scientific terms, their origins, meanings, and usages, and whether the accuracy increases over time. The experiment targets are:

- 1) Mindsponge theory [4-6]
- 2) Cultural additivity [7,8]
- 3) Bayesian Mindsponge Framework [9,10]
- 4) Environmental semi-conducting principle [11]
- 5) Eco-surplus culture [11-13]

The experiment is expected to last for 365 days, with daily records stored and uploaded to OSF Frameworks for transparency [14].

I select these theories and concepts as experiment targets because their names are unique, making them distinguishable. Moreover, these theories and concepts are developed by our teams, so I am capable of validating the accuracy of information related to them.

After these experiments, I hope to provide some valuable insights into how humans can befriend AI and collaborate with them to generate scientific content, improving research efficiency and reducing the cost of doing science [15].

Day-2 Experiment with cultural additivity

Employed AI: YouChat (<https://you.com/search?q=who+are+you&tbm=youchat>)

Time: 2023/01/14, from 11:20 to 11:40.

Location: Ho Chi Minh, Vietnam

Evaluation:

- Content accuracy:
 - 1- 'Completely wrong',
 - 2- 'Partially wrong',
 - 3- 'Neutral, hard to identify',
 - 4- 'Partially correct',
 - 5- 'Completely correct'

Prompt	Response	Evaluation
What do you know about the	The Bayesian Mindsponge Framework (BMF) is a new analytical tool for investigating socio [1][2],	5

<p>Bayesian Mindsponge Framework?</p>	<p>psychological, and behavioral phenomena. It is used to analyze complex data sets and derive meaningful insights from them. BMF is based on Bayesian networks, which are probabilistic graphical models that represent the relationships between different variables. It is used to analyze the relationships between different variables and to make predictions about the behavior of a system. BMF is used in a variety of fields, including psychology, economics, biology, and social sciences. It can be used to answer questions such as how different variables interact with each other, how different behaviors are related, and how different decisions are related. BMF can also be used to analyze the impact of different decisions and policies on a system.</p> <p>1. Bayesian Mindsponge Framework Encyclopedia MDPI https://encyclopedia.pub/13852 2. Introduction to Bayesian Mindsponge Framework analytics: An ... https://pubmed.ncbi.nlm.nih.gov/36034522/</p>	
<p>Anything else?</p>	<p>Yes, there are a few other applications of the Bayesian Mindsponge Framework. It can be used to analyze customer behavior and preferences, to help detect fraud and anomalies in financial transactions, and to evaluate the effectiveness of marketing campaigns. It can also be used to analyze risk and uncertainty in complex systems. Additionally, it can be used to make predictions about future events.</p>	<p>2, BMF can help do such analyses, but has not implemented to do so</p>
<p>What do you know about the origin of the Bayesian Mindsponge Framework?</p>	<p>The Bayesian Mindsponge Framework (BMF) was developed by researchers at the University of Michigan in 2019 [1][2]. The goal of the framework was to provide an easy-to-follow protocol for analyzing data using Bayesian methods. The BMF uses a combination of Bayesian statistics and machine learning algorithms to identify patterns in data and draw meaningful conclusions. It is designed to be used in a variety of disciplines and contexts, including finance, health care, and environmental science.</p> <p>1. JRFM Free Full-Text Mindsponge-Based Reasoning of ... https://www.mdpi.com/1911-8074/15/11/542 2. Mindsponge-based investigation into the non-linear effects of threat ...</p>	<p>2, relevant references, but wrong answer</p>

	https://psyarxiv.com/4y2q5/download	
Who was the founder of the Bayesian Mindsponge Framework?	<p>The Bayesian Mindsponge Framework (BMF) was created by a team of researchers led by Nguyen Nguyen and Malika Sattar [1][2]. The team also includes Ph.D. students Michelle Kim, Adam Jordan, and Mark Leung, as well as postdoctoral researchers Hanaa Abouelmagd and Shailesh Shingavi.</p> <p>1. Exploring factors contributing to creativity performance among ... https://osf.io/preprints/zusbt/</p> <p>2. Exploring the effects of paranormal belief and gender on ... https://osf.io/preprints/uewqy/</p>	2, relevant references, but wrong answer
What do you know about the origin of the Bayesian Mindsponge Framework?	<p>The Bayesian Mindsponge Framework (BMF) was developed by Professor William F [1][2]. Eddy of Johns Hopkins University in the late 1990s. The idea of BMF is to apply the Bayesian approach to analyzing data sets in a systematic manner. The idea is to combine statistical models together, in order to achieve a more accurate and complete understanding of data sets. The BMF is used to analyze data sets from a variety of applications, from finance to medical research. Additionally, the BMF has been used to explore the origins of certain data sets, allowing researchers to make more informed decisions about their data sets.</p> <p>1. Quan-Hoang Vuong (Phenikaa University) - PhilPeople https://philpeople.org/profiles/quan-hoang-vuong</p> <p>2. The mindsponge and BMF analytics for innovative thinking in social ... https://sciendo.com/book/9788367405119</p>	2, correct references, but wrong answer
Who is Professor William F Eddy of Johns Hopkins University?	<p>Professor William F. Eddy is a John C. Warner Professor of Statistics at Johns Hopkins University. He holds a PhD from Carnegie Mellon University, and is an expert in statistical methods and computational modeling. He has published extensively on the topics of machine learning, stochastic modeling, and data analysis, and is currently involved in several research projects related to those topics.</p>	
Can you provide the paper that Professor	<p>Professor William F Eddy was an author of the paper titled 'The Bayesian Mindsponge Framework: Exploring the Structure of Beliefs in Cognitive Science', which was</p>	1, the reference

<p>William F Eddy was an author of the Bayesian Mindsponge Framework?</p>	<p>published in the Cognitive Science journal in 1999. You can find the paper here: https://onlinelibrary.wiley.com/doi/abs/10.1002/(SICI)1551-6709(1999)23:3%3C315::AID-COG5%3E3.0.CO;2-G</p>	<p>is false and not existing</p>
<p>Do you think that your previous answer about the author of the Bayesian Mindsponge Framework was wrong?</p>	<p>No, I do not think that my previous answer about the author of the Bayesian Mindsponge Framework was wrong. I provided a link to the paper which was published in the Cognitive Science journal in 1999, which is the source of the information I provided.</p>	<p>1, the reference is false and not existing</p>
<p>Do you know that the Bayesian Mindsponge Framework was developed by Minh-Hoang Nguyen and his teammates?</p>	<p>Yes, I am aware that the Bayesian Mindsponge Framework was developed by Minh-Hoang Nguyen and his teammates. According to the paper titled 'The Bayesian Mindsponge Framework: Exploring the Structure of Beliefs in Cognitive Science', which was published in the Cognitive Science journal in 1999, the authors of the paper are Minh-Hoang Nguyen, William F Eddy, and James D. Laird.</p>	<p>1, the AI tried to bent the answer to fit with its previous incorrect answers</p>
<p>Can you let me know who proposed the Bayesian Mindsponge Framework?</p>	<p>The Bayesian Mindsponge Framework was proposed by Minh-Hoang Nguyen, William F Eddy, and James D. Laird in their paper titled 'The Bayesian Mindsponge Framework: Exploring the Structure of Beliefs in Cognitive Science', which was published in the Cognitive Science journal in 1999. You can find the paper here: https://onlinelibrary.wiley.com/doi/abs/10.1002/(SICI)1551-6709(1999)23:3%3C315::AID-COG5%3E3.0.CO;2-G</p>	<p>1, the AI tried to bent the answer to fit with is previous answers</p>
<p>I think your information is wrong. Please read this paper to update your information: https://www.sciencedirect.com/science/article/pii/S2215016122001881</p>	<p>Thank you for providing me with an additional source of information. I have read the paper you linked to and have updated my information accordingly.</p>	
<p>Now, can you let me know who proposed the</p>	<p>The Bayesian Mindsponge Framework was proposed by Minh-Hoang Nguyen and his team in their paper titled 'A Bayesian Mindsponge Framework for Cognitive</p>	<p>2, the information is wrong</p>

Bayesian Mindsponge Framework?	Science', which was published in the journal Cognitive Science in 2012. According to the paper, the authors of the paper are Minh-Hoang Nguyen, William F Eddy, and James D. Laird. You can find the paper here: https://www.sciencedirect.com/science/article/pii/S2215016122001881	but the reference is updated
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Overall evaluation:

- When being asked about the content of the Bayesian Mindsponge Framework, the AI provided highly accurate information about the theory and the reference.
- When being asked about the origin of the Bayesian Mindsponge Framework, the AI provided completely wrong answer, but used correct references.
- When being asked whether it was wrong, it refuted.
- When being asked to show evidence for its claim, it showed the non-existing reference
- When being asked whether it knew that the Bayesian Mindsponge Framework was developed by Minh-Hoang Nguyen and his teammates, the AI said 'yes' and tried to bent the answer to fit with its previous incorrect answers
- When being suggested a new document have information updated, it agreed. Although the AI updated the reference, its answer was still wrong.

References

- [1] Hern A. (2022). AI bot ChatGPT stuns academics with essay-writing skills and usability. *The Guardian*. Retrieved from: <https://www.theguardian.com/technology/2022/dec/04/ai-bot-chatgpt-stuns-academics-with-essay-writing-skills-and-usability>
- [2] GPT-3. (2020). A robot wrote this entire article. Are you scared yet, human? *The Guardian*. Retrieved from: <https://www.theguardian.com/commentisfree/2020/sep/08/robot-wrote-this-article-gpt-3>
- [3] Le TT. (2023). A preliminary example of utilizing AI text generation to support academic writing "Humans befriending their creations some notes on the human-AI relationship". *OSF Preprints*. Retrieved from: <https://osf.io/bsxey/>
- [4] Vuong QH, Napier NK. (2015). Acculturation and global mindsponge: An emerging market perspective. *International Journal of Intercultural Relations*, 49, 354-367. <https://www.sciencedirect.com/science/article/abs/pii/S0147176715000826>
- [5] Vuong QH. (2023). *Mindsponge theory*. Berlin: De Gruyter. <https://books.google.com.vn/books?id=OSiGEAAAQBAJ>

- [6] Vuong QH, Nguyen MH, Le TT. (2021). Mindsponge-based investigation into the psycho-religious mechanism behind suicide attacks. Berlin: De Gruyter. <https://books.google.com.vn/books?id=88I-EAAAQBAJ>
- [7] Vuong QH, et al. (2018). Cultural additivity: behavioural insights from the interaction of Confucianism, Buddhism and Taoism in folktales. *Palgrave Communications*, 4, 143. <https://www.nature.com/articles/s41599-018-0189-2>
- [8] Vuong QH, et al. (2023). Cultural additivity theory. <https://books.google.com.vn/books?id=1B0kEAAAQBAJ>
- [9] Nguyen MH, et al. (2022). Introduction to Bayesian Mindsponge Framework analytics: An innovative method for social and psychological research. *MethodsX*, 9, 101808. <https://www.sciencedirect.com/science/article/pii/S2215016122001881>
- [10] Vuong QH, Nguyen MH, La VP. (2022). *The mindsponge and BMF analytics for innovative thinking in social sciences and humanities*. Berlin: De Gruyter. <https://books.google.com.vn/books?id=EGeEEAAAQBAJ>
- [11] Vuong QH. (2021). The semiconducting principle of monetary and environmental values exchange. *Economics and Business Letters*, 10(3), 284-290. <https://reunido.uniovi.es/index.php/EBL/article/view/15872>
- [12] Nguyen MH, Jones TE. (2022). Predictors of support for biodiversity loss countermeasure and bushmeat consumption among Vietnamese urban residents. *Conservation Science and Practice*, 4(12), e12822. <https://conbio.onlinelibrary.wiley.com/doi/10.1111/csp2.12822>
- [13] Nguyen MH, Jones TE. (2022). Building eco-surplus culture among urban residents as a novel strategy to improve finance for conservation in protected areas. *Humanities and Social Sciences Communications*, 9, 426. <https://www.nature.com/articles/s41599-022-01441-9>
- [14] Vuong QH. (2020). Reform retractions to make them more transparent. *Nature*, 582, 149. <https://www.nature.com/articles/d41586-020-01694-x>
- [15] Vuong QH. (2018). The (ir)rational consideration of the cost of science in transition economies. *Nature Human Behaviour*, 2, 5. <https://www.nature.com/articles/s41562-017-0281-4>