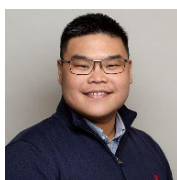


Human vs AI

An Example of the Use of ChatGPT in Research Result Interpretation



Illustrasjon: Image generation



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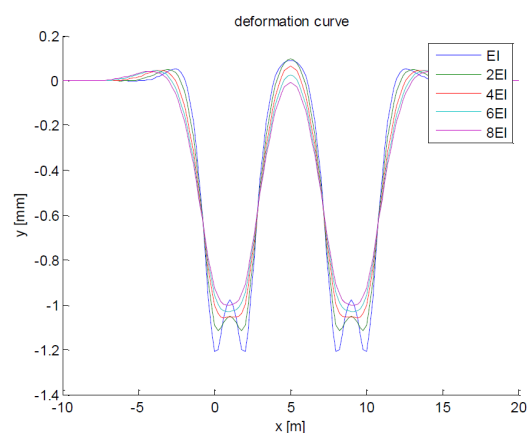
INTRODUCTION

Artificial intelligence (AI) is evolving faster than ever, and its use is becoming increasingly proficient in various fields, including research. There are many tasks that AI can assist with in research, such as language improvement, idea generation, gaining inspiration, etc. One of the most revolutionary functions of AI is its ability to help interpret results, which can often be time-consuming and challenging for researchers. Here is an example of how AI, specifically ChatGPT, is used to interpret results.



METHOD

Figure 1 illustrating railway track deflection (y) versus rail stiffness (EI) was first interpreted by a human railway engineer, who then documented the findings. The same figure was then input into ChatGPT 4 for interpretation. The request made in ChatGPT was simply "Interpret this graph" with the inserted figure, without any filtering. The results from both methods were then compared.



Figur 1: Railway track deflection (y) vs. rail stiffness (EI)



RESULTS

By Human

The deflection curves illustrate that as the flexural rigidity increases from EI to $8EI$, the maximum deflection decreases. Specifically, for EI , the maximum deflection is approximately -1.2 mm at around 5 meters and 10 meters. When the rigidity is increased to $2EI$, the maximum deflection reduces to about -1.1 mm. With $4EI$, it further

decreases to about -1.0 mm. For 6EI, the deflection is around -0.9 mm, and for 8EI, the maximum deflection is approximately -0.8 mm.

By ChatGPT 4

The deformation curve presented in the graph illustrates the impact of varying flexural rigidity (EI) on railway track deflection. The x-axis indicates the track position in meters, while the y-axis represents the deflection in millimeters.

- The graph compares deflection for different EI values:
- For a standard EI, the track shows a peak deflection of about -1.2 mm near the 5-meter and 10-meter marks.
- Doubling the rigidity to 2EI reduces the peak deflection to around -1.1 mm.
- At 4EI, the deflection decreases further to approximately -1.0 mm.
- With 6EI, the deflection is around -0.9 mm.
- Finally, increasing the rigidity to 8EI results in a peak deflection of about -0.8 mm.

This clear trend demonstrates that increasing the flexural rigidity of the railway track effectively reduces its deflection, suggesting benefits for track stability and longevity.



COMPARISON

Without any filtering of the results from ChatGPT, these are the comparisons:

1. Time:

The traditional method took about 20 minutes to read and write the results, whereas ChatGPT provided all the results in less than 10 seconds. This stark contrast highlights the efficiency of AI in processing and interpreting data rapidly, saving valuable time for researchers.

2. Language and Readability:

The traditional method's written form is more technical and formal, which might be harder to understand for non-experts and required several rounds of language checks. ChatGPT, on the other hand, used bullet points to highlight the main points, employing simpler language and a more conversational tone. This makes the initial understanding of the graph easier for researchers, with the flexibility to tailor the language to a more technical one if needed.

3. Key Insights:

The traditional method often misses the significance of the findings, focusing primarily on the raw data. In contrast, ChatGPT highlights the significance of the EI findings and their implications, making it clear that increasing the flexural rigidity reduces deflection, thus suggesting benefits for track stability. However, it is important to note that while ChatGPT provides a more insightful interpretation, some implications might require further refinement for complete accuracy.



CONCLUSION

A simple comparison was conducted on the result interpretation of a graph using traditional human methods and ChatGPT 4. It is indicated that ChatGPT can quickly interpret the graph and provide concise results and implications, using easier and more readable language and format. The traditional method, while very technical, may not be as readable and would require more time to improve compared to ChatGPT. This demonstrates that AI can be an important tool for result interpretation, offering a good possibility to ensure the results are correctly interpreted. Additionally, AI provides a valuable starting point for those who struggle to interpret the results and can serve as a source of inspiration.