

Assignment 1 - AI

CHEM 211 - Wednesday, Sep 13, 2023

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1. What is the most surprising thing that you learned from the 2 readings?

I was quite surprised by the stop-and-frisk policy adapted by some schools in response to GAI. I think that it is an appalling policy, and I couldn't imagine being subjected to it. Especially if someone is "caught" under false pretenses. I believe there are far better ways to handle the situation - if you MUST completely ban it.

2. What do you think are the "Pros" of Artificial Intelligence for Chemists?

Generative AI will be very useful for text that is accessible for the general public. Scientific communication is very difficult, and GAI can help by assessing your text against massively consumed text media and make comparisons.

Generative AI is not the best at creating new ideas, but I believe it may be useful for creating new lab experiment ideas. For example, organic chemistry is quite straight-forward. There are the standard reactions - hydroxylation, reduction of a carbonyl, redox, Friedel-Crafts, etc. The format of these reports is to report about the reaction and its conditions. GAI could be used to "spruce up" these reports. Require students to come up with possible applications of this reaction. GAI cannot replace a personal choice of interest!

Furthermore, writing good grants and letters is a learned skill for researchers. Its importance is irrefutable. However, when distilling it down to the core, the goal is to provide a good reason to fund your project. GAI is great for that, as long as it is thoroughly vetted by the author. This still means that the great writing skills are mandatory, but the process is greatly aided in terms of speed.

3. What do you think are the "Cons" of Artificial Intelligence for Chemists?

For educators, it will be difficult to generate good marking guidelines for a while. Lab reports have a lot of polyfill information that is not entirely based on the actual experiment, and that can easily be generated and vetted.

In addition, I cannot see any means for it to be a good tool at the moment for reviewing chemistry literature in a clear and concise manner. A GAI with access to a chemical drawing software could rival Reaxys or SciFinder.

4. How will Artificial Intelligence change your education?

I don't foresee much change to my day-to-day life as a student. I believe that the assumption of GAI being "glorified Google" is completely correct. In fact, it is even less helpful in scenarios involving locating files and images. For this reason, I have treated it as a resourceful engine of research, much like Wikipedia. Take everything with a grain of salt, but a quick face-value representation of what I want to know proves very useful. For example, I am not a statistician, nor do I enjoy math, but I used GAI to give me an overall picture of what certain algorithms do and how to implement them in different programming languages.

5. How will Artificial Intelligence change your career?

Along the same lines as my previous answer, I do not think that GAI will completely change my life in general. I find it often frustrating to use it for very niche things. For the fact that it is niche, the AI learning algorithm likely weighed it very low in its data analysis.

6. What do you want me to know about Artificial Intelligence?

I don't think I know more than you do, but I do want to make my own LLM one day for a very specific scientific writing purpose.

In lieu of any interesting facts, my opinion:

I do not think that AI complexity will stagnate, but I do think that the running cost right now is unfeasible for companies which do not operate for profit, like OpenAI. Furthermore, the diversity of LLMs will continue to broaden such that choosing between them will be as trivial as choosing a TI-84 instead of a Casio. I impugn GAI's capacity to destroy academic integrity, but it is quite a bit more difficult to regulate than other similar tools of the past.