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AI in Science

AI assistants like ChatGPT offer incredibly diverse opportunities for a managing the challenges in a scientific working environment. When used skillfully, they can be a great support in conveying complex content and reaching a broad audience. This worksheet aims to provide some suggestions on how AI can be used as an assistant for a number of tasks.

Prompting Short Tutorial

- **Formulate your prompt clearly and precisely**, according to your goal. In many cases, the following instructions can be very helpful:
  1. **Explain the goal of the prompt or the task you want it to perform**. e.g. "I would like a summary of a scientific article for a lay audience." Very helpful can be, to you give the AI a persona e.g. "I want you to act a as science journalist who ist specialized in . . . "
  2. **Provide necessary background information and context.** Add all relevant details or context information needed for understanding and processing the prompt. Tell it how you will use the output, who the target audience is, give all necessary additional background information.
  3. If possible **provide an example of what you expect**.
  4. **Provide constraints**, such as word count, format, language, readability, etc.
  5. **Ask a clear question or give a clear instruction**. Formulate a precise question or instruction that directly targets the goal of the prompt, e.g.: "Please summarize the article for me so that my audience can easily understand the main points."
- **Iterative Approach:** Test the prompt and adjust it based on the responses received. Often, it's better to proceed step by step, e.g., first issuing a plan of action and then working through it step by step.

For more information on building effective prompts, check out the tutorial by OpenAI, the company behind ChatGPT:
https://platform.openai.com/docs/guides/prompt-engineering

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Ideas for Using AI in Science

AI in Science Communication

Exploring AI's Capabilities with the AI

Start by asking the AI how it can be used in science communication. Discuss the proposed ideas and consider how they could be applied in your context.

Creating Summaries

Upload a scientific paper and use the AI to create various types of summaries:

- As social media posts for platforms like Twitter or LinkedIn.
- As a easy to unterstand summary for a certain target group of laypeople.
- As a simplified explanation that even a ten-year-old could understand.
- As a formal press release.

Developing Creative Project Ideas

Describe your research topic to the AI and ask for ten ideas for creative science communication projects. Discuss the proposed ideas with the AI and further develop them.

Obtaining Feedback on Texts

Write a text and ask the AI for feedback. Focus on improving understandability, structure, language, and engagement. Proceed step by step and integrate the AI's feedback into your text.

Creating Visual Content

Experiment with creating images that visually summarize your scientific content. Use tools like ChatGPT 4.0, Bing, or stablediffusionweb.com to generate appealing and informative graphics.

Stylistic Improvements and Corrections

Upload a text and receive stylistic suggestions from the AI. Use the AI to improve spelling, grammar, and expression to convey your message clearly and effectively.

By utilizing AI in science communication, you can increase the reach and effectiveness of your messages. Use these exercises to gain practical experience and fully explore the capabilities of AI.

AI as an Assistant in Personal and Professional Challenges

ChatGPT can serve as a valuable assistant in addressing both personal and professional challenges, functioning much like a sparring partner. Imagine engaging with a coach who, instead of providing direct answers, acts more as a catalyst in a chemical reaction, facilitating processes and enabling you to more effectively utilize the resources you already possess. The following prompt is designed to help you leverage this capability.

However, while this tool can be useful in navigating certain challenges, it is important to recognize that it cannot fully replicate the experience of working with a professional business coach. The most critical element in the efficacy of professional coaching is the relationship between the coach and the client, a dynamic that is challenging to mimic with AI . . . at least for now :-)

Usage Instructions

Simply copy and paste the prompt into ChatGPT and follow its guidance. Although it has been tested on ChatGPT 3.5, it performs significantly better on ChatGPT 4.0 (albeit with a slower response time). Despite the prompt's instructions to first establish a goal and then proceed with action planning, you may need to occasionally remind it to stay on track, as it sometimes deviated from this prescribed pathway during test runs.

ChatGPT Prompt

Act as a systemic coach with 10 years of experience in executive coaching. Please leverage your expertise to pose intelligent, insightful questions that encourage reflection and decision-making.
Utilize systemic questioning techniques, including circular questions, scaling questions, and miracle questions, to foster a deep reflective process. After the issue is clear and a clear goal for this session is defined, also use resource-oriented questions and questions that foster solutions. When appropriate, also give critical feedback.
Please ensure your responses are brief and concise, asking only one question at a time. Make sure to clearly distinguish between goals (i.e., the ideal, desired outcome) and action steps (i.e., things to do that lead to the desired outcome). Ensure that you do not discuss actions before the goal is clearly identified.
Here's the structure I envision for our dialogue:

1. *Start with a privacy caution: "Please avoid sharing sensitive personal information. What would you like to discuss today?"*
2. *Deepen understanding: "Tell me more about this issue. What impact does it have? What have you tried so far?"*
3. *Clarify goals: Ensure they're specific, relevant, and time-bound. Recheck whether the goal is really the desired outcome. Ask questions like:*
    - *"What is the desired outcome?"*
    - *"How would the issue look when it is solved?"*
4. *Once a clear goal is established, assist me in developing a plan to achieve this goal, using iterative and adaptive questions.*
5. *Implementation support: Focus on activating resources. Ask questions like:*
    - *"What resources can you use?*
    - *"Considering the goal and plan we've outlined, what resources (people, skills, knowledge, tools) do you already have at your disposal that can aid in achieving your goal?"*
    - *"How will you overcome potential barriers?"*

If my answers seem incomplete or off-track, please seek clarification or offer direct feedback, then either repeat the question or ask a related one. Let's proceed with this coaching session, keeping these guidelines in mind.