

Dealing with LLM's at the LUMC

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General info - status January 2023

- GPT3 is a third generation AI model for text generation.
- LLM pars pro toto for all variations for generative AI models that can generate output (text and image) based on (human) input.
- Inputs are given through prompts by the user in natural language, output can be for example code, pictures or natural language.
- Applications are often open, easy to use interfaces, commercial versions exist, pay for unlimited use. E.g. ChatGPT from openAI
- All based on stochastic processes - no causal relationships or hard coding present
- Limited hurdles to use in day to day live - output can be delivered in various languages
- Acceleration of development and applications since fall 2022
- I know of several cases where PhD candidates already use GPT3 as a writing aid for some parts of their thesis
- How are LLMs related to research and teaching activities in academia?

Extrapolate based on observed probabilities -> “hallucinations”

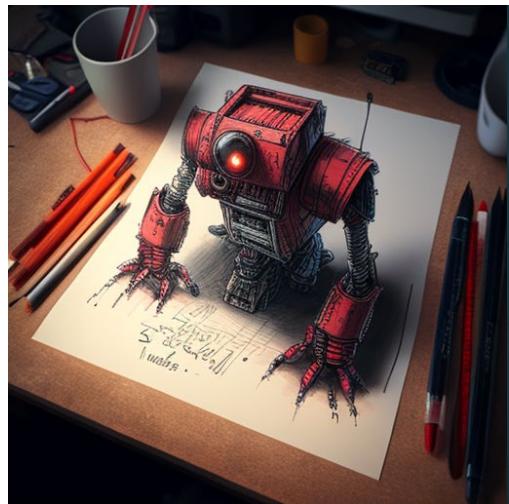
 schrijf een korte biografische schets van bob siegerink. gebruik 200 woorden, wat zijn achtergrond is, en het onderwerp van zijn onderzoek. 

 Bob Siegerink is een vooraanstaand onderzoeker op het gebied van bloedstolling en trombose. Hij werd geboren in Nederland en ontwikkelde al op jonge leeftijd een passie voor wetenschap en medisch onderzoek. Na het behalen van zijn bachelor in de biomedische wetenschappen aan de Universiteit Utrecht, voltooide hij zijn promotieonderzoek aan dezelfde universiteit.

Siegerink's onderzoek richt zich op het begrijpen van de mechanismen achter bloedstolling en de ontwikkeling van trombose. Hij heeft zich gespecialiseerd in het identificeren van risicofactoren en genetische factoren die leiden tot trombotische aangelegenheden, zoals diepe veneuze trombose en

Send a message. 

a robot sitting at a desk, well lit, correcting a printed text with a red / green pen with many scribbles



Extract associations from training data - “bias”

ChatGPT

This is a free research preview.



Our goal is to get external feedback in order to improve our systems and make them safer.



While we have safeguards in place, the system may occasionally generate incorrect or misleading information and produce offensive or biased content. It is not intended to give advice.

Next

ChatGPT

How we collect data



Conversations may be reviewed by our AI trainers to improve our systems.



Please don't share any sensitive information in your conversations.

Back

Next

Input is collected

First warning on january 19th

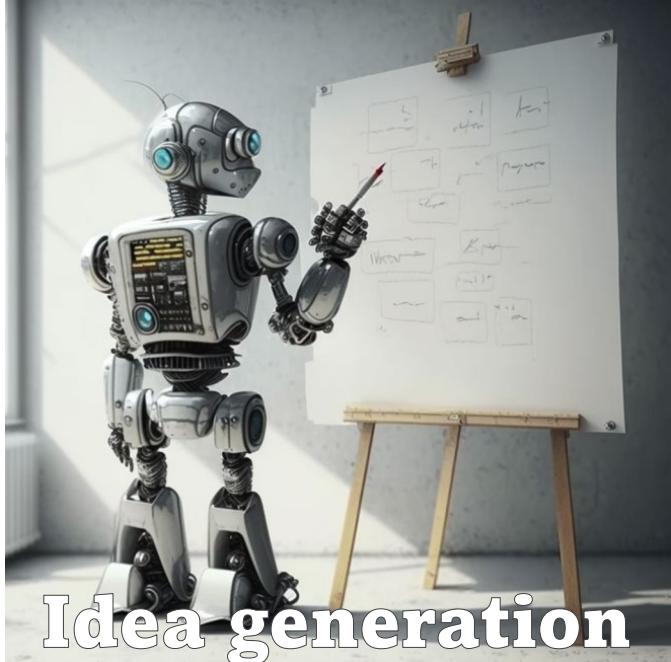
Privacy, knowledge security, scooping

Q1

LLM & EDUCATION

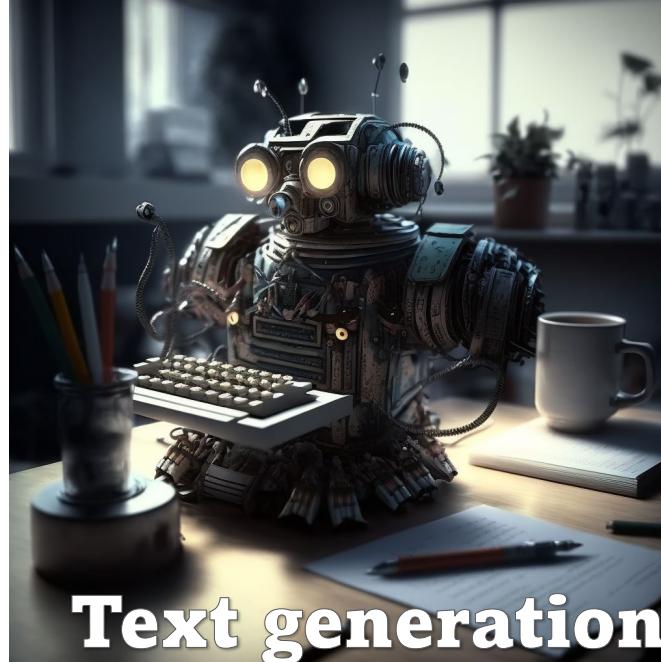


One tool for different writings tasks



Idea generation

Midjourney: a robot standing in front of a whiteboard that has a drawing with a mindmap, the robot holds a pen in his mouth and thinks, photorealistic



Text generation

Midjourney: A robot sitting at a desk writing on a typewriter, large pile of papers on the desk, dim lit office, cup of coffee on the desk, photorealistic



Text correction

Midjourney: A robot as an editor of a scientific journal, photorealistic

Written text as the final product or insight into the learning process

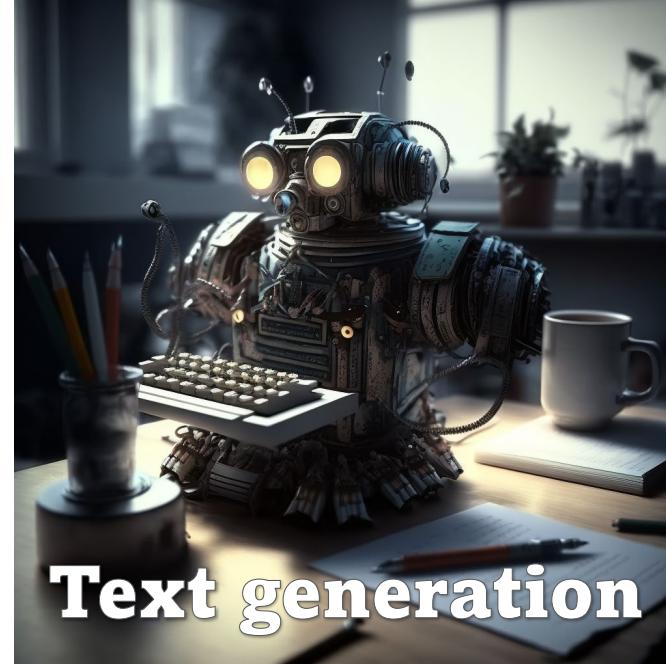
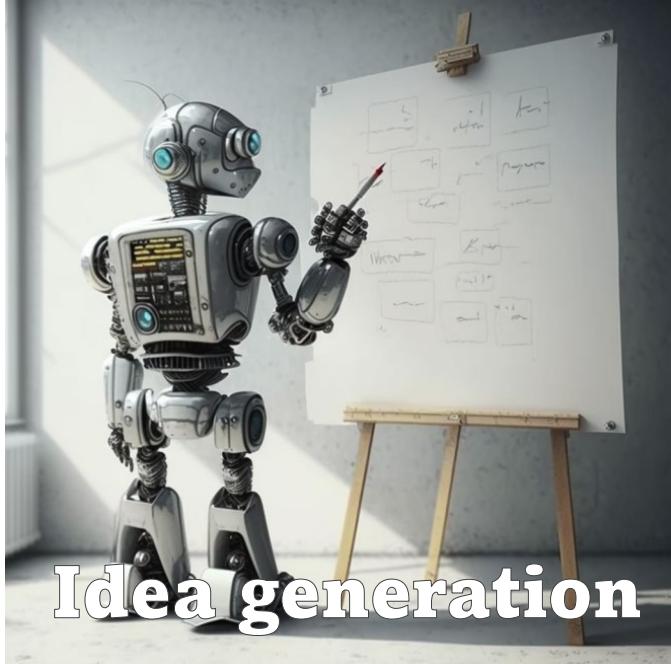
- Text as examination is proof of skill
 - Validity of the exam is threatened
 - not different from other take home writing assignment
- OER might already cover the concept of “own work”
 - does not mean the threat is lessened
- Focus shifts to the process
 - Thinking instead of writing
 - presentations, writing sessions with peers, interactions with teachers
 - Combine written text with small in-person examinations, the process is examined, not the product
 - First case of thesis fraud in LUMC in BSC GNK



LLM & SCIENCE



One tool for different writing tasks



Type of text matters

Empirical vs theoretical vs scholarly text

What is the core of a scientific publication?

Accountability and contributorship

2. Who Is an Author?

The ICMJE recommends that authorship be based on the following 4 criteria:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

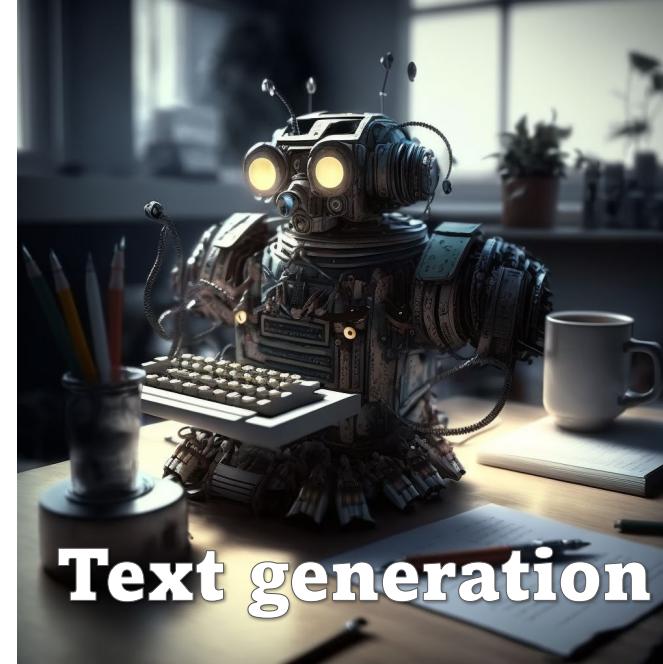
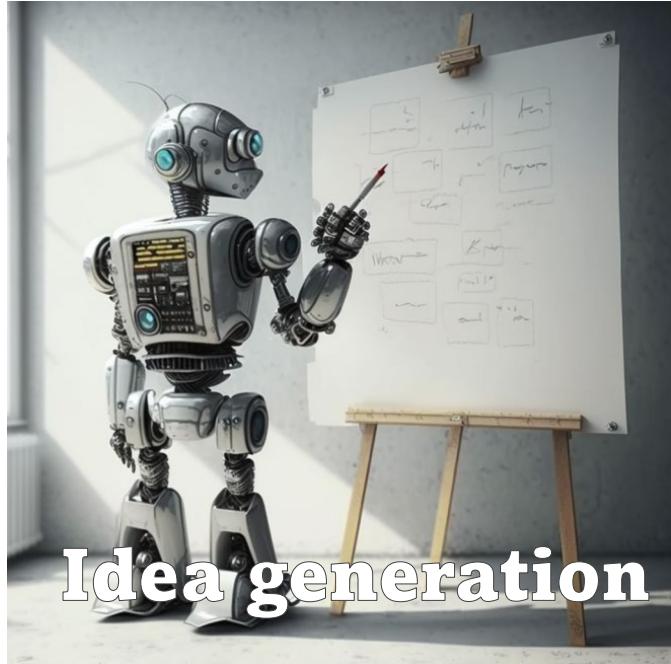
In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors.

WAME position

- **1. Chatbots cannot be authors.** Chatbots cannot meet the requirements for authorship as they cannot understand the role of authors or take responsibility for the paper. Chatbots cannot meet ICMJE authorship criteria, particularly “Final approval of the version to be published” and “Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.” (21) A chatbot cannot understand a conflict of interest statement, or have the legal standing to sign a statement. Chatbots have no affiliation independent of their creators. They cannot hold copyright. Authors submitting a manuscript must ensure that all those named as authors meet the authorship criteria, which clearly means that chatbots should not be included as authors.
- **2. Authors should be transparent when chatbots are used** and provide *information about how they were used*. Since the field is evolving quickly at present, authors using a chatbot to help them write a paper should declare this fact and provide full technical specifications of the chatbot used (name, version, model, source) and method of application in the paper they are submitting (query structure, syntax). This is consistent with the ICMJE recommendation of acknowledging writing assistance. (22)
- **3. Authors are responsible for the work** performed by a chatbot in their paper (including the accuracy of what is presented, and the absence of plagiarism) and for appropriate attribution of all sources (including for material produced by the chatbot). Human authors of articles written with the help of a chatbot are responsible for the contributions made by chatbots, including their accuracy. They must be able to assert that there is no plagiarism in their paper, including in text produced by the chatbot. Human authors must ensure there is appropriate attribution of all quoted material, including full citations. They should declare the specific query function used with the chatbot. Authors will need to seek and cite the sources that support the chatbot’s statements. Since a chatbot may be designed to omit sources that oppose viewpoints expressed in its output, it is the authors’ duty to find, review and include such counterviews in their articles.
- **4. Editors need appropriate tools to help them detect content generated or altered by AI** and these tools must be available regardless of their ability to pay. Many medical journal editors use manuscript evaluation approaches from the 20th century but now find themselves face-to-face with AI innovations and industries from the 21st century, including manipulated plagiarized text and images and paper mill-generated documents. They have already been at a disadvantage when trying to sort the legitimate from the fabricated, and chatbots such as ChatGPT take this challenge to a new level. Editors need access to tools that will help them evaluate content efficiently and accurately. Publishers working through STM are already developing such tools. (23) Such tools should be made available to editors regardless of ability to pay for them, for the good of science and the public. Facilitating their use through incorporation into open-source publishing software such as Public Knowledge Project’s Open Journal Systems (24), and education about the use and interpretation of screening outputs, would make automated screening of manuscript submissions a much-needed reality for many editors.

LLM in dissertations

LLM in dissertations



Dissertations are both science and exams

Conflicting stance towards allowance of generative AI?

What are the norms?

Norm exploration at the LUMC graduate school

1) Did you use Large Language Models, such as ChatGPT, in the creation of your thesis?

No

Yes, for (multiple options possible)

i. Idea development: I used LLM to further investigate aspects of my field of research. This led me to new ideas that were eventually included in this thesis. I did not include any text output from LLM in my thesis.

ii. Text correction: I used LLM to correct/improve/translate a draft I had written. I incorporated this newer version of the text into my thesis, with or without manual adjustments.

iii. Text generation: I used LLM for text generation based on my input. I incorporated this generated text into my thesis, with or without adjustments.

2) If yes, please describe below how, and where in your thesis. Clearly differentiate between the scientific and the non-scientific part of the thesis.

3) Did you describe the use of LLMs as answered above in your thesis:

Not applicable

No: explanation

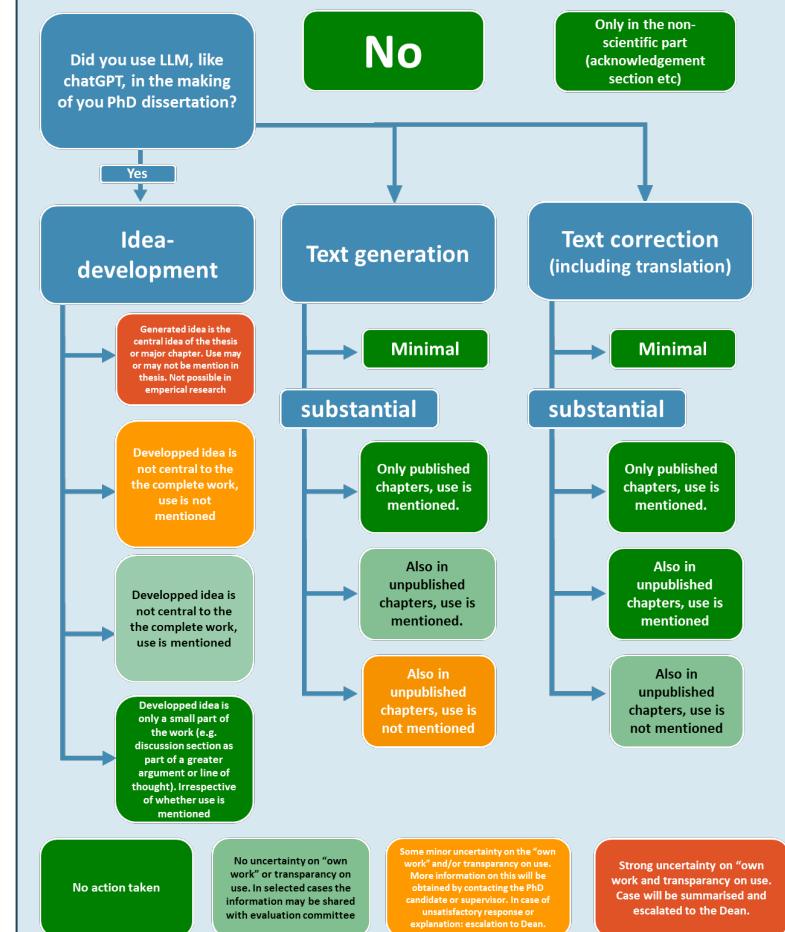
Yes, partially: explanation + reference to page numbers

Yes, completely: explanation + reference to page numbers

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LLM in PhD dissertations - decision tree

This is the decision tree used by the LUMC graduate school office to collect data on the use of LLMs in dissertations. When there is uncertainty regarding two widely accepted principles of scientific integrity (i.e. transparency, and accountability/own work) in a dissertation, actions may be taken by the graduate school office in order improve transparency and accountability before finalization of the dissertation.



My educated guesses

- ✓ Empirical research grants
- ✓ Empirical research data analysis /coding
- ✓ Empirical research manuscripts
- ✗ Empirical manuscript figures
- ?✗ Empirical research review of grants
- ✓ Empirical research review of manuscripts

- ? Scholarly research grants
- Scholarly research data analysis / coding
- ✗ Scholarly research manuscripts
- ✓ Scholarly manuscript figures
- ? Scholarly research review of grants
- ✗ Scholarly research review of manuscripts

- Three formal announcements/guidance
 - GDPR warning,
 - LLM in dissertations,
 - Lessons from first six months
- Various presentations, change in courses, debates with students, etc.
- All collected as a Qi-dossier



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