Responsible AI for Occupational Physicians

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Learning Goals

To understand how to responsibly integrate GenAI tools into work practices to help increase critical thinking skills, knowledge, and reduce workload.

- MA and PhD in Late Medieval/ Early Modern History (medical history, social history, economic history, religious history)
- Assistant Professor in the BMS department at the Graduate School of Life Sciences UMC Utrecht
- PhD supervisor for Life Science Education researchers
- Research, Writing, and Argumentation Specialist
- Co-coordinator for the Argue Better Publish Smarter PhD Course
- Coordinator for History of Medicine and Biomedical Sciences MA course UU &UMC
- Project Leader for the Generative Education Initiative (policy making, educational design, student and teacher tutorials, research)
- Lead the UU/UMCU SIG on GenAI in HE (100+ members)

- **Disclosure of (Potential) Conflicts of Interest**
- **Conflicts of Interest:** None
- **Relevant relationships with companies:** None
- **Institutional affiliation:** UMC Utrecht
- **Sponsorship or research funding:** None
- **Advisory roles or honoraria (including speaker fees > €500):** Not applicable – no remuneration received for this workshop
- **Equity interests/shareholding:** None
- **Other relevant relationships:**

This presentation was independently developed. I received assistance from ChatGPT (OpenAI) in drafting and structuring some of the content.

Outline

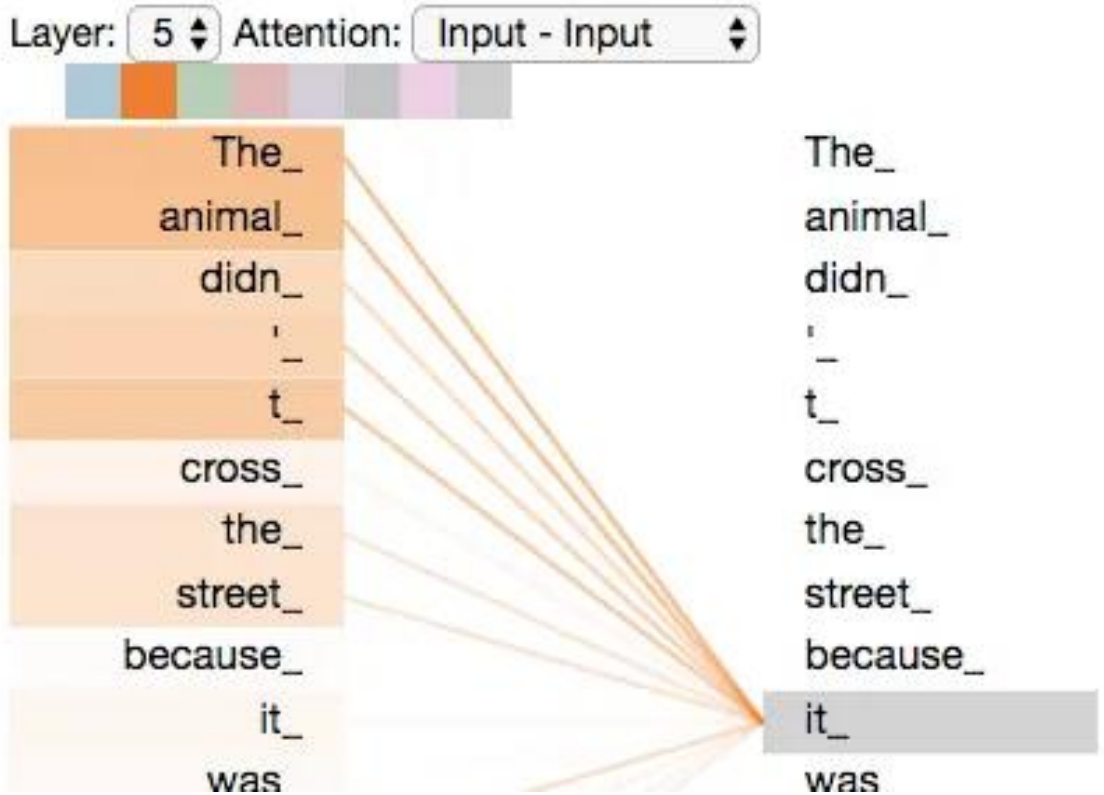
- Intro to GenAI
- Opportunities and Challenges
- Prompting for responsible use and critical assessment
- Activity 1: Help understand a topic (team activity)
- Activity 2: Case Management (team activity)
- Tool recommendations

How LLMs Work

Image credit: New york Times Games

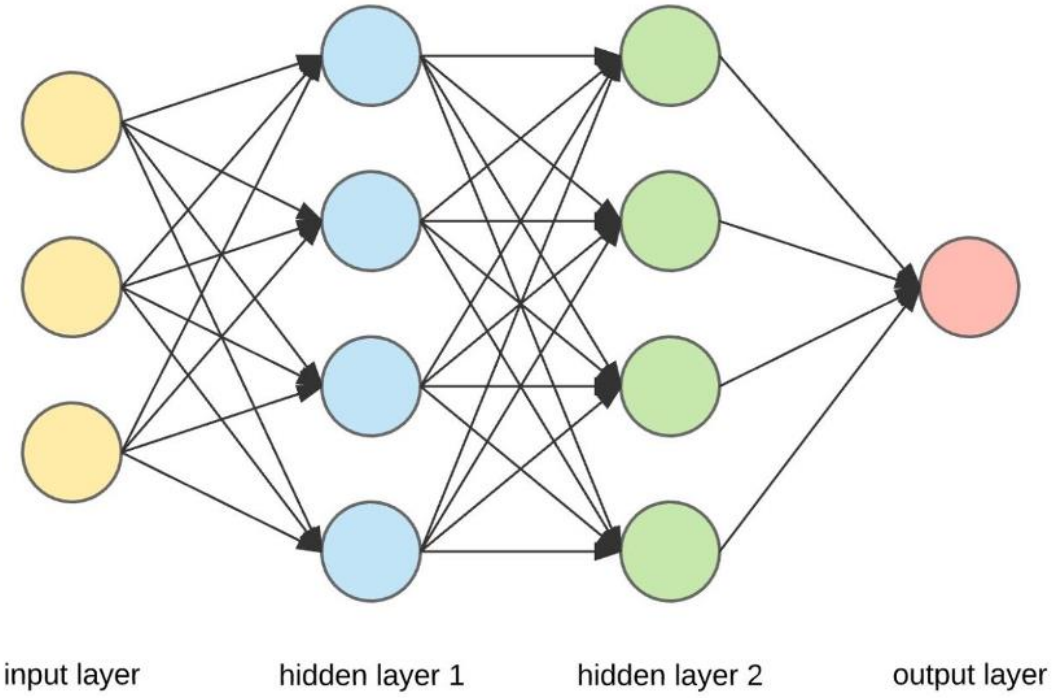
Tokenisation and Transformers: Prediction not common sense

Image credits: https://ig.ft.com/generative-ai/ and https://gigazine.net/gsc_news/en/20230407-tokenizer-open-ai/



DATA, COPYRIGHT, BIASES, and THE BLACK BOX

- Image credits: DALL-E December 2023 and https://medium.com/@gian.filice/from-fundamentals-to-functions-an-approachable-primer-on-the-layers-of-ai-and-llms-a388908b5633



Hallucinations

Image Credit: DALL-E January 2024 online google search images

ESGs

Image: DALL-E June 2024

DATA SECURITY

Image credit: DALL-E December 2023

Equity

- Personalised Tutor
- Accelerating Innovations
- Beneficial to People with Learning Support Needs
- Digital Divide
- Reinforing Biases
- Co-depedencs

Image credit: DALL-E September 2024

Examples of how GenAI can be used to help Occupational Physicians

Help	Workplace risk assessments (e.g., summarizing hazards, literature searches, and mitigation strategies)
Help	Health surveillance and identifying trends in data (in a secure system)
Help	Drafting patient case documentation (ensure no patient-identifiable data is shared in a secure system)
Help	Translating and summarizing safety guidelines (ensure no sensitive or unpublished data is included)
Help	Developing health promotion materials (e.g., posters or guides)
Help	Assisting with regulatory compliance (e.g., reading, summarizing, and drafting reports)
Help	Supporting research by synthesizing literature on workplace health trends (NotebookLM and voice notes)
Help	Generating slides or visuals for employee training sessions
Help	Providing coaching on best practices in workplace safety or ethical compliance

Questions?

me after giving chatgpt the same prompt 20 different ways and it still doesn't understand

Prompt Engineering: BRAVE(R) Framework

B: Boundaries

Set limits on the format, length, or any other constraints.

R: Role

Identify the role or perspective you want the AI tool to take.

A: Audience

Specify who the output is intended for to determine the appropriate tone and style.

V: Variables

Highlight key details, variables, or points that should be included in the response.

E: Expectations

Clearly state what you expect the AI to do and how you want the task done.

R): Refine

Provide feedback to improve the output and guide future interactions.

Teams: Help with exploring concepts

Can you help guide me to better understand (concept or topic) by asking thoughtful, open-ended questions [Expectations]. Keep questions clear, concise, and avoid giving direct answers [Boundaries]. Act as a (subject) tutor for a master's student [Role]. Questions should challenge but be understandable for someone with basic knowledge of (subject) [Audience]. Focus on (specific topic or concept). Start broad and get more specific to explore different angles [Variables]. Aim to develop my critical thinking and lead me to deeper insights [Expectations].

Evaluating and Critically Assessing The FACTS Framework

F: Focus	Focus on the AI's response by breaking it down into its main points and arguments.
A: Authenticate	Authenticate the AI’s output by verifying it against current research and empirical data.
C: Critique	Critique the response's accuracy, relevance, and depth in the context of the topic.
T: Think	Think about the response from various perspectives and its potential impact.
S: Scrutinise	Scrutinise the AI's conclusions by critically questioning and exploring alternative hypotheses or interpretations.

Activity 1: Help with exploring concepts/topics

Objective

Use generative AI tools (ChatGPT, Claude, Gemini, Perplexity, EvidenceHunt) and the BRAVE(R) Framework to help you understand a concept/topic better.

Teams

3-5 people

Example prompt: Can you help guide me to better understand (concept or topic) by asking thoughtful, open-ended questions [Expectations]. Keep questions clear, concise, and avoid giving direct answers [Boundaries]. Act as a tutor for an occupational physician in the XXX field [Role]. Questions should challenge but be understandable for someone with basic knowledge of (subject) [Audience]. Focus on (specific topic or concept). Start broad and get more specific to explore different angles [Variables]. Aim to develop my critical thinking and lead me to deeper insights [Expectations].

Discuss

Discuss in your group the responses and refine prompts using team feedback.

In Class Discussion

- Did the BRAVE(R) framework improve the AI outputs?
- Which platform provided the best initial results? The best refined results?
- Did the AI introduce any biases, omissions, or irrelevant suggestions?

Activity 2: Case Management with AI Support

Objective

Use generative AI platforms (ChatGPT, Claude, Gemini, Perplexity, EvidenceHunt) to assist in managing a workplace health case.

Teams

3-5 people

Scenario

A 50-year-old male, no co-morbidity, BMI 30, works full-time as a Field Service Employee assembling solar panels. In the last two years, he has been on short sick leave 4 times (max two or three weeks) for shoulder and backpain. His symptoms tend to occur during periods of high physical demand or in colder winter months. He has recently gone on sick leave again with backpain. The employer has asked you to see him and help the worker getting back to work.

Tasks

1. **Identify a possible diagnosis**
   Use GenAI to explore work-related musculoskeletal conditions. Evaluate evidence quality using: **Consensus**, **Scite_**, **Semantic Scholar**, **Perplexity**, **ChatGPT, EvidenceHunt**
2. **Plan a rehabilitation scheme**
   With tools like **ChatGPT**, **Claude**, **Gemini**, or **Perplexity**:
   1. Summarise the condition and its impact
   2. Suggest workplace accommodations
   3. Propose a timeline to return to work in 3 months
   4. Draft a professional **report or letter** for the employer
3. **Develop preventive strategies**
   Design a checklist or set of recommendations to prevent future injuries using GenAI.

In Class Discussion

- Did you find the GenAI tools useful (compared to PubMed/Scopus)?
- Which platform provided the most accurate and actionable recommendations?
- Were there any biases or ethical concerns in the outputs? How did you address these?
- How might AI tools save time in tasks like case management?
- What risks do GenAI tools introduce in OP tasks?
- How can OPs incorporate AI tools into their practice responsibly?

GenAI Tool Recommendations

Learning Assistant:
- OpenAI ChatGPT
- Google Gemini
- Perplexity
- Claude
- Notebook LM

Research tools:
- Consensus
- Elicit
- Scite_
- Semantic Scholar
- Litmaps
- Petal
- ASreview
- Notebook LM
- EvidenceHunt

Image creators:
Adobe Firefly
Canva
DALL-E 3
Stable Diffusion
ideogram

Translation tools:
DeepL Translator
QuillBot

Project Organisation:
Notion
Monday.com

Coding:
ChatGPT
Microsoft Copilot
Github Copilot
Codium AI