

Tools for teaching: from tacit knowledge to efficient use of Generative AI

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1 Starting point

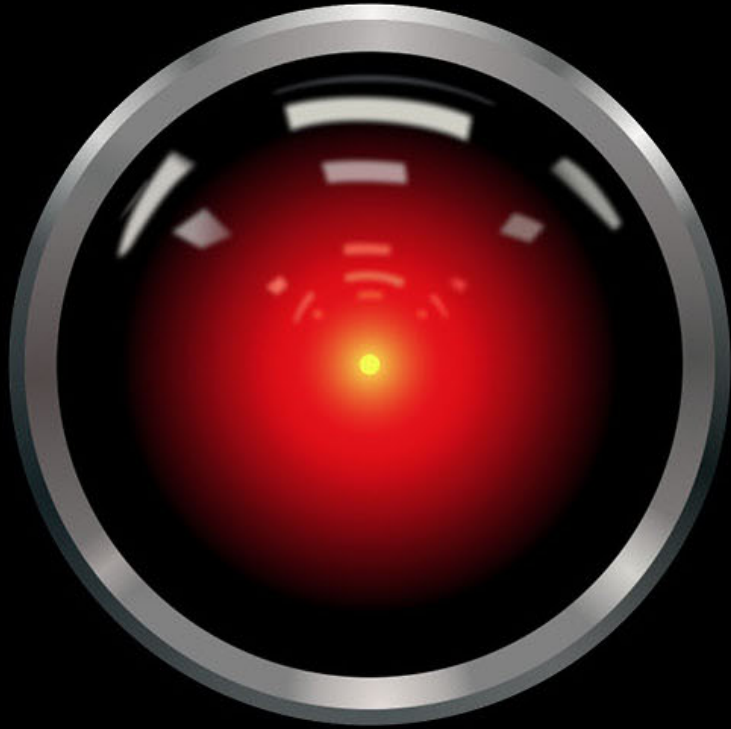
Digitalization
revolutionizes
the education industry



ChatGPT **creates** and **solves** exercises

You are an assistant to a university professor and you create the full text for a short exercise on descriptive statistics (with data) for first-year economics students.

ChatGPT



Digital assistants:
Language
increasingly important





Make space for
tools
in the curriculum.

2 Programming errors

Warning

A computer will do
what you tell it to do,
but that may be much different
from what you had in mind.

Joseph Weizenbaum

Informatica II exercise

In a dataset of firms, the location is encoded as 1 = EU, 2 = US and 3 = CH
Write the R command to extract all European firms

```
firms$region == 1 | firms$region == 3
```

- 50% of students did not include Switzerland as part of Europe
- Neither did GPT4 \leftrightarrow because it was trained on the misconception of EU=Europe

3 Tacit knowledge

Example: grading an essay

- You are an economics professor and you **grade the homework** of a student on the topic "Remote work". The **task was** to write a one-page document in a concise style, using correct academic language.
- You grade the submission according to five **criteria**:
 - i. completeness and breadth of the answer
 - ii. own thoughts or own contribution by the student
 - iii. structure and readability of the text
 - iv. use and correct referencing of scientific literature
 - v. correct use of the English language.
- Give a score from 0 to 100 for each of the four criteria.
- Additionally, create a short table summarizing the scores.

Problems and solutions

- Stochastic answer, but small variance
 - Run three times, average
- No literature gives 40-50% in "literature"
 - For criterion (iv) this means if no literature is mentioned, 0 points are awarded.
- Output given in different structures
 - Structure your answer as follows:
 - First provide a verbal assessment of each criterion.
 - Provide a summary in the following form: Name: xxx, Score 1: xxx, ...
 - Using your experience with European names, extract the full name of the student.
- Off-topic reports are not flagged (work in progress)
- No horizontal comparison (yet)

Surprises

- Sometimes writing a letter to the student
- Very polite
- Sometimes giving feedback on possible improvements

What is "prompt engineering"?

Provide context ...

- Cultural
- (codified) rules
- Organizational background
- Tacit knowledge
 - Best practises
 - Grading scales

→ **render tacit knowledge explicit**

→ **collect explicit organizational knowledge**

4 Conclusion

- Precise use of (English) language is key for using GPT
- Use of correct vocabulary equally important
- Programming → prompt engineering
 - Less formal
 - Still requires precise expression of the requirements
- Need to specify organizational and cultural context

→ **prompt engineering is not that different from programming**