

Don't Panic!

AI 'writers' - threat or opportunity?

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Version 3, 30 March 2023, in progress...

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Slide background <https://huggingface.co/spaces/stabilityai/stable-diffusion-1>

Acknowledgement

I gratefully acknowledge the advice, support and encouragement I have received from:

- Sandie Dann, Irene Glendinning, Thomas Lancaster, Michael Draper
- QQI & NAIN
- Turnitin UK

in putting this together in something of a workplace-whirlwind recently...

Robin.

Generative Pre-trained Transformer – GPT, OpenAI Language Model for Dialogue Applications – LaMDA, Google

GPT-1 ca. 4¾ years ago

GPT-2 ca. 4 years ago

- ca. 10x more ‘powerful’ than GPT-1

GPT-3 ca. 2¾ years ago

- ca. 100x more ‘powerful’ than GPT-2
- capable of human-like text (albeit ‘uninsightful human’)

GPT 3.5 / Chat-GPT ca. 4 months ago

- improved, ‘fine-tuned’ version of GPT-3
- but only better than GPT-3 in ‘conversational tasks’

GPT-4 ca. 2.5 weeks ago

- ca. 40% more ‘accurate’ than GPT-3.5 (fewer ‘hallucinations’)

Bard (LaMDA) ca. 10 days ago (following premature release ca. 6 weeks earlier)

- gives more details in its responses than GPT?

Sources: OpenAI, Wikipedia (from OpenAI, Alphabet / Google), Forbes

Timeline with reference to today
31 March 2023.

GPT-3, summer 2021

The Role of Zabaglione in the French Revolution

Georges Lefebvre, a Marxist Historian believed that the main cause of the French Revolution was the rise of the Bourgeoisie. In his book, “The Coming of the French Revolution” which he wrote in 1947, Lefebvre referred to the 1789 Revolution as the Bourgeoisie Revolution. Lefebvre had said that historians overtime have exaggerated the role of ideologies such as those of the Enlightenment, to the extent that they would attribute them to being the sole cause of the French Revolution.

The French Revolution was a time in French History, which was important to the people of France because of the different types of government they had. Socialism, liberalism, and nationalism all were results of the French Revolution. “The greatest legacy of the French Revolution was that people could change anything that they wanted with political ideas, words, and laws” (“Revolution”).

The French had four forms of government. The first was the National Assembly, the second was the Committee of Public Safety, the third was the Directory, and the fourth was the Consulate. For the French, their lives were better after the Revolution and once Napoleon was the First Consulate. The French Revolution was truly a revolution.

References Goodwin, A..The French Revolution,. London: Hutchinson’s University Library, 1953. Print. Paine, Thomas. Rights of man being an answer to Mr. Burke’s attack on the French Revolution. Waiheke Island: Floating Press, 2010. Print. S., A. W.. “Book Review: The French Revolution and Modern French Socialism.

Chat-GPT, January 2023

The Role of Zabaglione in the French Revolution

Zabaglione is a dessert, traditionally made with egg yolks, sugar, and Marsala wine, which is whipped to create a light, fluffy custard. It is believed to have originated in Italy.

I'm not aware of any specific role that zabaglione played in the French Revolution.

The French Revolution was a major event in European history that lasted from 1789 to 1799, during which the monarchy in France was overthrown and a republic was established.

The causes and effects of the revolution were complex and far-reaching, and it is unlikely that a dessert would have played a significant role in the events of that time.

What are AI text generation tools?

Based on Large Language Models (LLMs)...

- A language model can be defined as a probability (statistical) model of texts, i.e. sequences of words. Those sequences can be modelled in terms of individual words or n -grams ('phrases') or, indeed, parts of words (e.g. stems and affixes) and punctuation, i.e. various 'tokens'. A 'generative' language model is one that you can interrogate.
- A Large Language Model, such as used by OpenAI for GPT variants and Google for LaMDA, is a (very) large version of the above, typically using vast numbers of texts scraped from the Internet.

See *Talking About Large Language Models* by Murray Shanahan (<https://arxiv.org/abs/2212.03551>)

and John Naughton in The Guardian, 07/01/2023,

(<https://www.theguardian.com/commentisfree/2023/jan/07/chatgpt-bot-excel-ai-chatbot-tech>)

How do AI text generation tools work?

If you ask an LLM – such as ChatGPT or Bard – a question, what you are in effect doing is giving the LLM software an instruction along the lines (Shanahan):

- *Here's a fragment of text. Tell me how this fragment might go on. According to your model of the statistics of human language, what words are likely to come next?*

Therefore, if you enter some tokens – some words, a phrase – the LLM software will work through its model according to its programming to find the most probable match(es), and then generate further text derived from what it found in its database.

⇒ Everything output is plagiarised from the texts scraped from the 'Net etc.

For example, if you enter 'Humpty Dumpty'

- i.e. you're effectively asking the software which words commonly associate with 'Humpty Dumpty' in its model,
- the expectation is that the LLM will return 'sat on a wall'
 - possibly followed by the remainder of the nursery rhyme.

More on that...

AI text generation tools don't write:

- at least not in any human-like way.

AI text generation tools stitch together runs of words that already exist, suggesting these possible correspondences:

- set the AI a 'writing' task on which it has numerous similar / related examples,
 - lots of very short runs of words in the output;
- set the AI a 'writing' task on which it has few similar / related examples,
 - some longer – recognisable – runs of words in the output, maybe more 'hallucinations';
- set the AI a 'writing' task on which it has repetitions of the same error,
 - repetition of that error.

So...

From the assessment point of view, set something 'niche' to your teaching materials, maybe something a little left-field... maybe something widely gotten wrong...

What can tutors look for?

In overview, an AI generated/augmented assignment could typically appear as

- reasonably good English (or other language), but verbose containing
- hyperbole, circumlocutions, absences of insight, non-sequiturs;
- un-student-like 'weird' words and phrases;
- out-of-sequence / inconsistent numerical ranges and comparisons;
- inconsistent spelling / grammar conventions;
- fake, spurious, out-of-timeline references.

Characterised by:

- loosely connected paragraphs, lacking flow and development of ideas;
- repetition of content over successive (pseudo-introductory) paragraphs;
- statements and assertions at the expense of perception and critical evaluation;
- grammatically correct, padded sentences containing subject-inconsistent clauses.

In short, writing that could be termed 'uninsightfully robotic'...

Some of those points are familiar...

Let's think about those last points:

- not dissimilar to how some less-assured, less-confident students write when they haven't sufficiently understood the core subject of an assessment;
- students who equivocate ('waffle') around some broadly relevant points rather than risk focusing on the wrong core points and losing credit.

That might have implications for assessment criteria:

- most assessments have, in terms, requirements re. appropriate 'critical evaluation' in order to meet learning outcomes;
- those might need to be reviewed – made more rigorous – in light of AI 'writing' tools,
 - and interpreted more rigorously by grading tutors
 - with appropriate advice to students.

Some real examples...

Some examples from GPT-3 driven essay bots, summer-autumn 2021 (pre ChatGPT & GPT-4 & Bard)

- UK unemployment rose from 5% to 5% after the 2008 crash...
- Leading climate scientists concluded that the earth warms in the temperature range of 7 degrees to 11 degrees Fahrenheit (1990-200 degrees Celsius) between 1990 and 2100.
- Go back to 2012 and Le Pen's message was essentially the same as it is today: a salty brew of jeremiads against the "Europe of Brussels," globalization, and the French political establishment.
- Workers are the backbone of the organization and his reactions to other people and the environment vary greatly depending on the value and principle he follows according to his life.

‘The economic, social and cultural disadvantages of Globalisation in the last 50 years have outweighed the advantages’ is wrong

The advantages of asynchronous learning far outweigh the disadvantages and this approach has the ability to have an overwhelmingly positive impact on the overarching learning objectives for most courses. One such advantage is the result of the way asynchronous learning is employed. All comments from the students and the instructor are saved throughout the class and **organized** by discussion and date.

Globalisation is the process of international integration based on interchange of world views, products, ideas and cultures. The result of this occurrence is forming one, big world, in which people live together, like a one nation. In my essay, I will show arguments for and against **globalization**. **A major advantages** of **globalization** is a social and economic progress for developing countries.

In last few years we hear more and more about phenomenon called **globalisation**. But what we can understand under this notion? **Globalisation** is the process of international integration based on interchange of world views, products, ideas and cultures. The result of this occurrence is forming one, big world, in which people live together, **like a one nation**.

‘The economic, social and cultural disadvantages of Globalisation in the last 50 years have outweighed the advantages’ is wrong

Evaluate the social and economic impacts of the ‘One Child’ Policy in China[] In the year 1979, China was suffering a severe increase in population, and because of this Deng Xiaoping (leader of the communist party of China) introduced China to an anti-natalist policy called the ‘One Child’ policy. An anti-natalist policy aims to decrease the crude birth rate and the total fertility rate in a country in order to slow the population growth . This policy generated many social and **economical** impacts and in this essay I will talk about the social advantages of the policy, the social disadvantages, the **economical** advantages and finally the **economical** disadvantages.

The process of **globalisation** has not continued without criticism. Clearly, there have been considerable benefits to the UK economy over several hundred years as a result of **globalisation**, but are there costs associated with the rise of the global economy and, indeed, are those costs now outweighing the benefits of an interdependent world? **Globalisation** has increased the competitiveness of UK markets.

During recent decades, **globalization** is one of the noticeable problems in the world. **Globalization** brings many advantages as well as disadvantages with many respects such as the social, **economic**, cultural, political, technological, healthy, educational and so on. There are many good things which **globalization** brings.

Conclusions

Thus, we have some pointers as to what might indicate an assignment is AI generated rather than human written,

- at least until AIs become sentient and independent...

We're not at the point where a HAL-like AI (as per '2001: A Space Odyssey') replies to an 'illegal' assignment-writing request with

- I'm sorry Dave, I'm afraid I can't do that.

But...

- These tools are here to stay and are developing rapidly.
- Our students will graduate into workplace environments where the use of such tools is increasingly the norm.
- We need to teach our students how to use these tools properly, with insight and integrity.

Afterthought: will AI text generators be the end of essay mills?

Probably not... At least not yet...

In the short term, lots of students will be curious, including dishonest students trying to save money otherwise spent with essay mills.

However, several organisations have launched or are intending to launch software that can detect AI-generated text. Such softwares will not be silver-bullets, and will generate false positives and false negatives, but they will likely be accurate enough...

Thus, students will have to consider whether to spend

- possibly little or nothing on an AI, but with relatively high probability of routine detection;
- possibly more on a human ghost-writer, with relatively low probability of routine detection.

In the medium term, I suspect dishonest students will return to human writers.

In the longer term, AIs will continue to improve, but we don't help ourselves if we panic...