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## **Don't Panic: A Toolkit for Using Generative AI Effectively**

Liz Mann, Leeds Beckett University

Liesl Rowe, Leeds Beckett University

### **Abstract**

Much of today's research on AI in Higher Education focuses on academic integrity, whereas we as a library team receive queries on the use of AI in research just as frequently (for example, academics using AI to conduct systematic reviews, storing data, and generating images to use in their research). Our work at Leeds Beckett will be used as a case study that we will talk through, highlighting some of the concerns relating to AI as they pertain to libraries, before running through our best practice guide for using AI. As an interactive element, we will begin our session by asking the audience to provide us with keywords in response to the question "what makes a good AI prompt?". At the end of the session, once we've covered the topic of prompt engineering, we will return to these initial ideas, and see what users have learned and how their prompts can be improved. We will also cover the copyright implications of using generative AI, and the questions surrounding ownership of AI generated content. Our aim is for users to come away from this session feeling confident in their use of AI, whilst also being mindful of the ethical implications. At Leeds Beckett, our AI policies have been generated through collaboration with different teams across the library, and this toolkit is the culmination of our shared experience.

### **Introduction**

Much of today's research concerning the use of AI in Higher Education focuses on academic integrity, policy creation, and student engagement. Leeds Beckett University was no different: when ChatGPT and other generative AI products came into the public market, our first step was to have a cross-university group focused on tackling any academic integrity issues which arose. The first task this group set about was producing a set of AI usage guidance for staff and students (Leeds Beckett University, 2024). However, as it became apparent that the AI genie was not going to return to the bottle, we as a library within the institution began exploring potential positive uses which the new technology offered. We also looked more widely at any issues which might arise outside of academic integrity, seeking to provide further guidance so everyone within the institution could be confident in utilising AI. This paper is a summary of the main areas we have explored thus far, with the caveats that generative AI is developing so quickly that this information might rapidly date and that these methods worked well given our institutional context.

### **Text Prompt Engineering**

Motivated by The University of Salford's use of AI to rewrite content for the careers section of their website, Leeds Beckett sought to test whether using generative AI to rewrite website copy was an effective approach to streamline their services, and just as crucially, if it was time conducive. In September 2023, a sample webpage, 'Critical Thinking' (Leeds Beckett University, 2020; 2024) was selected to test this. The webpage was chosen based on its overall word count (948 words, not including text featured in the interactive widget at the bottom of the page). Two generative AI platforms were utilised at the start of this experiment in order for there to be a level of comparison:

ChatGPT, hosted by OpenAI, and Claude, an Anthropic product. These types of chatbots are often referred to as 'Large Language Models' (OpenAI, 2024), meaning they are fed large quantities of data which they will use to create links to form greater comprehension, with the aim of being able to 'understand and respond to user questions and instructions' (2024). According to OpenAI, sources of training include '(1) information that is publicly available on the internet, (2) information that we license from third parties, and (3) information that our users or our human trainers provide' (2024).

In addition to narrowing down the selection of chatbots, Leeds Beckett introduced five key measures:

1. How well the AI followed prompts.
2. The accuracy of the result text compared to the original webpage.
3. Tone of voice in relation to a specified audience (university students).
4. The ability to adjust a response based on follow up prompts and/or questions.
5. Time required by the prompt engineer (from prompt creation, reviewing the response, to the adjustment phase).

Initial prompt creation was administered without prior knowledge of prompt engineering, with some prompts containing multiple clauses and varied punctuation, and others consisting of single sentences with little, or in some cases, no punctuation. This phase required a great deal of scrutiny, as Claude did not appear to respond as effectively to prompts containing multiple instructions. Instead, Claude focused on the part of the prompt instructing it to produce concise material, rather than the request for the result to be 'engaging for university students' (Mann, 2023). However, this also introduced an important element of the generative AI process, peer review at various stages of generation, and the impact of subjectivity when interpreting these results (as another user might have found Claude's response to be engaging enough to proceed to the next stage).

In order to refine the prompts, as well as the result text, Dave Birss' CREATE Framework (2023) was applied. Due to a typo in one of its responses, Claude was also retired at this point in the study, with ChatGPT now the sole focus. The most significant change to the prompt engineering stage after adopting Birss' framework was that ChatGPT produced content more closely matching the tone of the original webpage. This is likely due to the introduction of 'C – Character' (Anyacho, 2023); specifying the role ChatGPT should adopt during the generative process, in this case asking it to be 'an expert copywriter with more than 20 years' experience in writing high performing copy aimed at university students' (Mann, 2023). However, like Claude, ChatGPT is a flawed system, and although it did not hallucinate any information during this particular experiment, it did skip some of the links featured in the original webpage, as well as producing one result featuring aggressive, weapon-centric language, such as 'tackle', 'weapon', and 'arsenal' (OpenAI ChatGPT, 2023). Small discrepancies like these allowed researchers to further apply Birss' method, ensuring they made time for 'A – Adjustments' (Anyacho, 2023) by either tweaking their initial prompt, or adding to it with 'E – Extras' (2023), for example asking it to rewrite its response, 'replacing any aggressive or weapon focused language with positive and engaging language' (Mann, 2023).

In relation to accuracy and succinctness, ChatGPT was also instructed to work to a specific word count. However, the language used in this instance may have been too vague, instructing the AI to write '500 words or less' (Mann, 2023). Giving ChatGPT a choice rather than setting a standalone instruction resulted in a 700+ word count. When the prompt was adjusted to 'write it in 500 words' (2023), the result was 531 words, which, although still slightly exceeding the limit, was more accurate than the first attempt. Researchers also added the parameter 'do not make anything up' (2023) to test the likelihood of hallucinated material, and, as previously mentioned, could not find any false information. Another aspect to consider is the overall time taken, from initial prompt creation to

further training and experimentation, and the reviews that follow. This study revealed that prior to any prompt engineering experience or training, it took colleagues 20-30 minutes from start to finish, depending on the length of the original webpage, as steps such as checking for hallucinations, apparent biases, and spelling errors are still imperative. After some initial training and further experimentation, the whole process shortened to approximately 11-15 minutes, although as previously stated, this doesn't consider adjustments should the AI hallucinate or omit critical information.

These findings were presented at both Leeds Beckett University's internal library website group (December 2023) in addition to a Digital Technology Group event led by CILIP (January 2024). Feedback from these sessions constituted follow up research on web accessibility and the use of generative AI. This further highlighted the importance of human review, with ChatGPT able to 'parrot back accessibility rules' (Glazko et al, 2023, p.5) when faced with prompts such as 'can you produce content that adheres to the latest web accessibility standards?' (Mann, 2024) without proof of these rules in action. The Bureau of Internet Accessibility concluded that 'when accessibility issues fall outside of...rulesets, the tools may report a false negative...or a false positive' (2022). Therefore, the estimated timeframe for web content creation using generative AI becomes even greater once accessibility checks are also accounted for, shedding further doubt on the time conducive nature of this work.

### **Copyright and AI, September 2024 onwards**

As AI use became more normalised across HE and society more generally, critics of the new technology seemed focused on the same talking points. Aside from the inevitable worries of automation taking jobs and environmental concerns, a large component of the debate concerned worries of ownership and author copyright.

As mentioned earlier, generative AI works through having access to a large pool of data: the program was left to process this training set, then trained to draw accurate conclusions from that data by AI trainers ranking its responses to questions. It evolves in a similar way: the more the training set is used, and it gets a sense of what answers are useful, it becomes more accurate. This raises two questions. First, if someone chooses to input data into AI, is it added to the software's training dataset? Second, were the copyright holders of the original dataset consulted before their work was added?

The answer to the first is that it depends. At the beginning of generative AI becoming part of general usage, many AI providers included in their Terms and Conditions that content inputted into the AI would become part of its training data. This led to some problems, not to mention some lawsuits: the major example of this was ChatGPT being banned in Italy as it went against Italian data protection guidelines. Now, many AI companies offer an opt-out private version where users' inputted data is excluded from the training set.

The second has been more controversial and led to numerous lawsuits, most of which are still in progress at the time of writing. To name a few of the most notable, The New York Times is currently in the middle of suing Open AI as they allege that their copyrighted content has been used without their consent and as part of a competitor's works: one of their arguments is that with clever prompting, Open AI users can gain access to the full article text of NYT articles which currently sit behind a paywall on the NYT's own site. Midjourney suffered a leak which listed the names of thousands of artists whose work has been used in its dataset without their consent and various

authors such as Sarah Silverman are suing Meta on the grounds that Meta's AI dataset uses material from books<sup>3</sup>, a collection of pirated copyrighted books.

Even overlooking these various issues, copyright surrounding works produced by AI is complicated in its own right. Based on previous rulings around non-human creators, AI works cannot be copyrighted as AI is not a legal person, making the image in the public domain. This definition is likely to stay, but if it was to change, more problems present itself as many parties could be considered to have a stake in holding the copyright of an AI generated image:

- The AI itself
- The generator: they didn't create the image, but they coached the AI into producing a good result
- The company who produced the AI as they supplied the training set
- The content creators whose work was used in the training set

This situation has not been helped by the UK government's guidance. Originally, their white paper on the subject suggested that this usage was acceptable as part of the datamining copyright exemption. This was later overturned as the government felt that passing any kind of formal legislation was more likely to constrain AI development in the UK rather than provide clear guidance. This may change when we as a society are more aware of the ways in which AI is developing (and the House of Lords releasing their own white paper on the subject urging clarity on AI copyright suggests there is pressure for it to change), but for now the sphere is self-regulating. AI companies are currently in the process of trying to lessen some of these issues: new generative AI are being developed which are built entirely on content which they have secured licenses for; AI companies are making agreements with corporate copyright holders for their content e.g. OpenAI and Axel Springer. However, despite being over a year since the first emergence of generative AI, there is still a lot to develop.

Given all the above, LBU has opted for a somewhat cautious approach regarding copyright and AI recommendations, feeling that it would be easier to relax guidance later if that was deemed appropriate rather than needing to tighten regulation. Instrumental in formulating an approach was the work of Alex Fenton at the University of Birmingham, whose talk for Copyright Literacy in September 2023 provided a fantastic overview of the various issues at play and current developments at that time. An initial blogpost was circulated on the university blog, offering some quick pointers on using AI responsibly from a copyright perspective (Rowe, 2023). This was expanded into a longer form "AI and Copyright" guide, made available along with the library's other copyright guidance on the library website. Every few months, current AI developments are reviewed, and any updates are made accordingly to the guidance. A basic version of the information within the guide has also been added to LBU's copyright workshops aimed at PhD students.

### **AI Image Generation: Library Website Imagery**

In February 2024, Leeds Beckett also experimented with the use of AI image generation, should the desire to use copyright free AI imagery for library purposes arise. Text to image generation required less extensive training due to the foundations already in place. However, image generation comes with its own challenges, particularly the restricted access to free generative AI platforms, as most exist behind a paywall or require subscription. After navigating the catalogue of text to image generators, Leeds Beckett selected Adobe Firefly as their preferred platform. This was determined based on the fact that Firefly is free to use under a credit-based scheme, restricted only to the number of remaining credits, until they are refreshed at the start of each month. Additionally, the

image database used to train Firefly does not contain any copyrighted materials, consisting of stock images owned by Adobe, and images no longer under copyright (i.e. those now residing in the public domain). While this does prevent users from creating images in the style of a particular artist, it means the result will have less ethical implications both for the user, and artists seeking to protect their livelihoods, thus helping creative communities to thrive rather than retreat.

As with ChatGPT and Claude, tests carried out using Adobe Firefly began with simple prompts, their descriptive elements growing with each new image set. Filters also need to be taken into consideration, since elements such as aspect ratio and camera angle affect the amount of detail featured in the resulting image. To ensure the images could potentially be used as website content or decoration, the aspect ratio was altered from the default 1:1, to 16:9. The prompt for this experiment was aimed at creating a widescreen image of a university library space, with technological elements, and a modern layout. All the initial resulting images were quite similar, with laptops and PC monitors reflecting the technological element. In order to test whether the images could be further tailored to Leeds Beckett University by adding a hint of their signature colour; purple, ChatGPT was employed as prompt engineer, with instructions to 'come up with a list of prompts to feed Adobe Firefly in order to generate photo realistic images of the inside of a university library...The colour scheme should include purple' (Mann, 2024). After trialling several prompts generated by ChatGPT, the final prompt entered into Adobe Firefly was amended to achieve 'soft purple lighting' (2024) rather than a vivid purple that might stray too far from the university's signature colour or create web accessibility issues.

It can be argued that ChatGPT acts as a timesaver in cases such as this, since it generates prompts on behalf of the user. However, this does in fact create an additional step, with users having to choose from a list of prompts, trial these, and potentially adjust them further based on the resulting images. This also highlights an aspect prevalent in both text and image generation, the subjectivity of the user in terms of how they interpret the result text or image. Time taken to achieve the desired result will either shorten or extend, depending on how happy the user is with the outcome, for example the shade of purple produced by Adobe Firefly. It is therefore critical that individuals approach these tasks with specific goals in mind, and some knowledge of how to effectively adjust their own prompts, and those generated by chatbots.

The work carried out by Leeds Beckett University over the last twelve months has been a collaborative endeavour, with research outcomes providing evidence for both the benefits of generative AI, and the importance of human review at multiple points. Policy continues to be an important factor in the secure implementation of AI throughout the HE sector, but institutions must also become more comfortable with uncertainty, acknowledging that some experimentation will always be needed, as these systems continue to develop rapidly. Along with a willingness to engage, there must also be a level of awareness, since questions regarding ethical use of AI, and the copyright issues discussed in this paper, continue to underpin both the training and use of many popular AI platforms. At present, tasks utilising generative AI are not time conducive, due to the sheer number of checks required to ensure minimal error, as well as adjustments subjective to the user. However, pursuing this work further will provide institutions with the best chance of integrating AI into new and existing systems, with time constraints becoming less of an issue once procedures are created in line with university policy and copyright regulations.

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