

## WEEK 1 REPORT

### 1. Papers:

#### a. BeautifulPrompt: Towards Automatic Prompt Engineering for Text-to-Image Synthesis

##### I. Link:

<https://aclanthology.org/2023.emnlp-industry.1.pdf?fbclid=IwAR3wrL6HP35tgfDyW1QaGazp9S1vFEF45SpBMMp2k3NTGvP0qAGEcl2x1fA>

##### II. Data Collection:

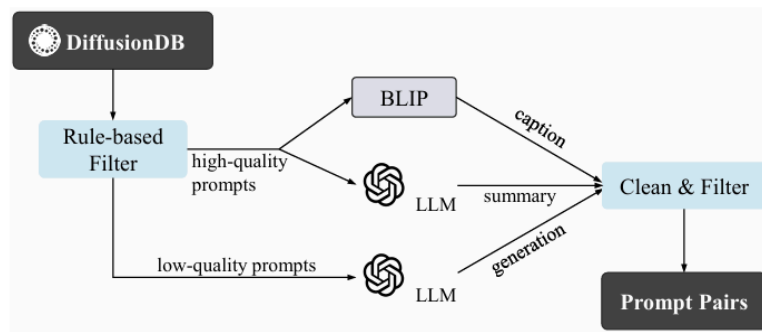


Figure 2: The data collection process.

##### III. Key Findings:

- BeautifulPrompt, a deep generative model to produce high-quality prompts from very simple raw descriptions, which enables diffusion-based models to generate more beautiful images.
- fine-tuned the BeautifulPrompt model over low-quality and high-quality collecting prompt pairs
- propose a Reinforcement Learning with Visual AI Feedback technique

#### b. A Prompt Log Analysis of Text-to-Image Generation Systems

##### I. Link:

[https://zhaoyingpan.github.io/assets/pdf/www23-401.pdf?fbclid=IwAR39Sk3Ukt\\_NWbHEulSKlbk\\_n08caiO5cTDS16-Ah-VtQII\\_TgGo6y3hHcY](https://zhaoyingpan.github.io/assets/pdf/www23-401.pdf?fbclid=IwAR39Sk3Ukt_NWbHEulSKlbk_n08caiO5cTDS16-Ah-VtQII_TgGo6y3hHcY)

##### II. Dataset:

- The Midjourney Discord dataset: Obtained by crawling message records from the Midjourney Discord community over a period of 4 weeks.
- Diffusion DB: Stable Diffusion
- Simulacra Aesthetic Captions (SAC): Over 40K users submitted prompts with LDMs.

##### III. Key Findings:

- first comprehensive analysis of large-scale prompt logs collected from multiple text-to-image generation systems.
- analogous to analysing the query logs of Web search engines

- c. Dynamic Prompt Optimising for Text-to-Image Generation
  - I. Link:  
<https://arxiv.org/pdf/2404.04095>
  - II. Dataset:  
online communities or expert users, DiffusionDB[2 million], expert comparison dataset[137K]
  - III. Key Finding:
    - Prompt Auto-Editing (PAE) method.
    - an online reinforcement learning strategy to explore the weights and injection time steps of each word
- d. Best Prompts for Text-to-Image Models and How to Find Them
  - I. Link:  
[https://www.researchgate.net/publication/363843483\\_Best\\_Prompts\\_for\\_Text-to-Image\\_Models\\_and\\_How\\_to\\_Find\\_Them](https://www.researchgate.net/publication/363843483_Best_Prompts_for_Text-to-Image_Models_and_How_to_Find_Them)
  - II. Dataset:  
publicly available datasets, IMDB-WIKI-SbS dataset
  - III. Key Finding:
    - a human-in-the-loop approach to learning the most useful combination of prompt keywords using a genetic algorithm

2. Synthetic dataset research link:

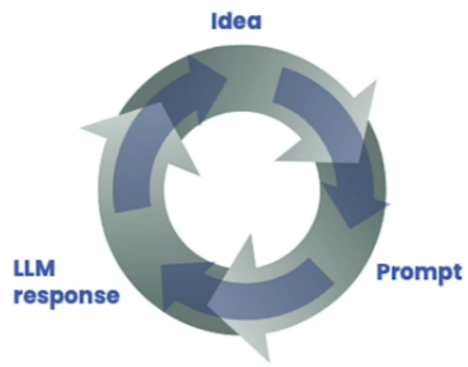
- a. <https://github.com/mddunlap924/LangChain-SynData-RAG-Eval?tab=readme-ov-file>
- b. <https://openreview.net/pdf?id=gmL46YMpu2J#:~:text=Importantly%2C%20the%20few%2Dshot%20examples,highly%20efficient%20dual%20encoder%20models.>
- c. <https://www.promptingguide.ai/datasets>
- d. <https://github.com/dair-ai/Prompt-Engineering-Guide>
- e. <https://paperswithcode.com/task/prompt-engineering>
- f. <https://www.kaggle.com/code/hinepo/synthetic-data-creation-for-llms>

3. Course on Prompt Engineering with Llama 2 & 3

Link: <https://learn.deeplearning.ai/>

Topics:

- in context learning
- zero shot prompt
- one shot prompting
- few shot prompting
- role prompting
- summarization
- chain of thought prompting
  - think step by step
  - explain your reasoning
- idea -> prompt -> LLM response



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