



Class: FY BSc

Subject : Prompt Engineering 101

Subject Code:

Chapter: Unit 1 Chp 1

Chapter Name: Overview of Prompt Engineering

Today's Agenda

1. What is a prompt?
 1. What is prompt engineering
 2. Different types of language models
 3. Importance of prompt design
 4. Broad v/s detailed prompt
 5. Evaluating the output
2. Impact on various industries
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 2. Health care
 3. Marketing
 4. Gaming
 5. Blockchain industry
 6. Challenges and limitations
3. Ethical implications/ Considerations
 1. Responsible practices
4. Key components of a good prompt
 1. Modifying prompts
 2. Examples of good and bad prompts
5. Evaluating the performance
 1. Key metrics
 2. Techniques for improving prompts
 3. Refining prompts for better results

1 What is a Prompt?

- A statement or a set of questions that you give to a language model as a starting point for its output.
- The 'What' that you want the model to generate.

1.1 What is Prompt Engineering?

- The process of designing, refining, and optimizing prompts to get the most accurate and relevant results from the language model.
- The goal is to provide the model with the right information, in the right format.
- Steering the language model in a desired direction and increasing its responses.

1.2 Different types of Language Models

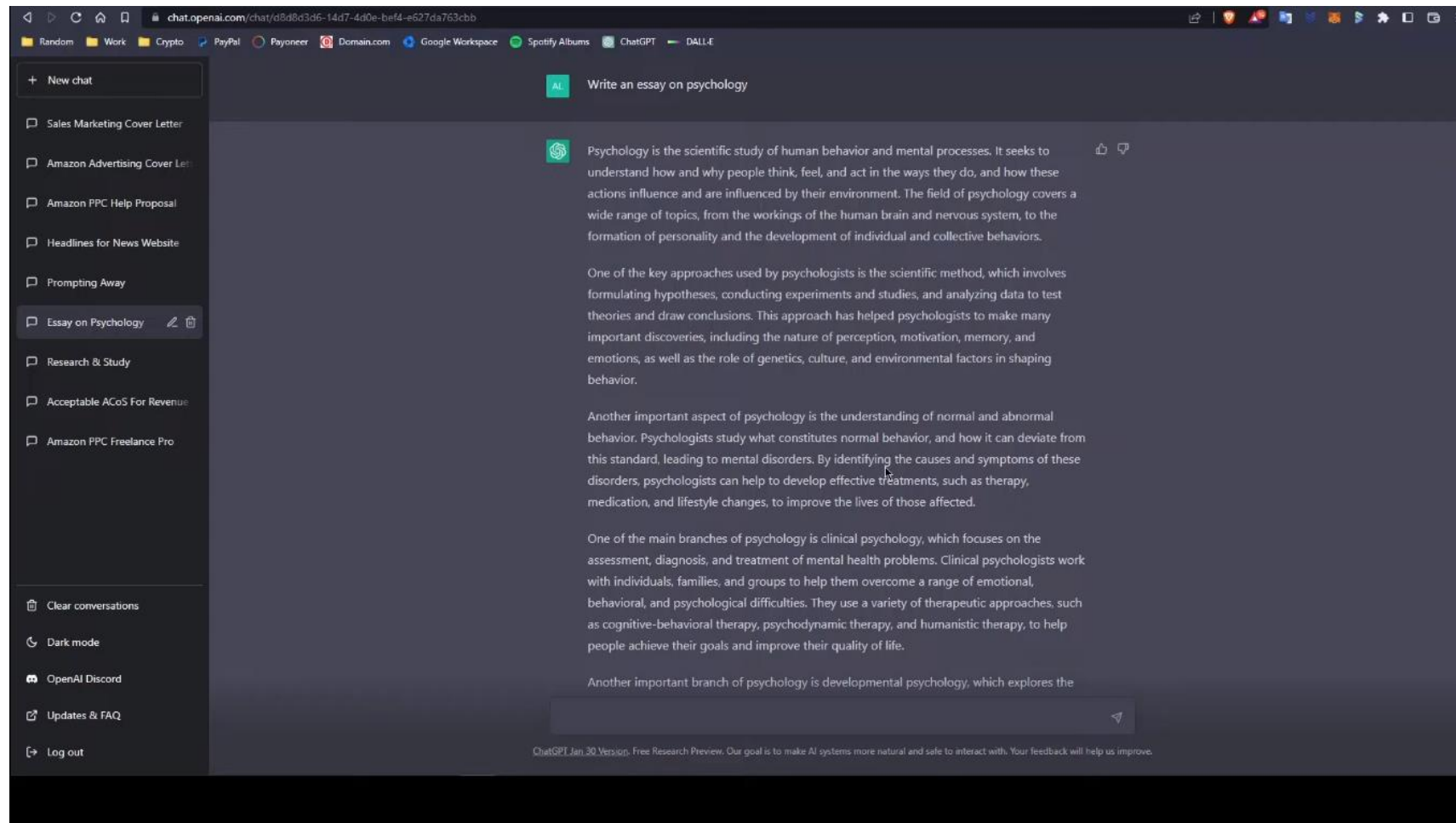
- General: Trained on a broad range of text, chatbot can generate text, answer questions, translate languages, etc.
- Specialized: Trained on specific domains, a healthcare language model can generate medical summaries and diagnose illnesses.
- Controlled: Trained for specific text characteristics, a poetry language model can generate new poems in a specific style.

1.3 Importance of Prompt Design

- The quality of the model's output is heavily influenced by the QUALITY OF THE PROMPT
- Well-designed and detailed prompts set the context and objective for the output.
- Good prompts also make it easier to evaluate and refine the language model's performance.
- Bad prompts don't provide enough information for the language model to generate an accurate and relevant response
- These will lead to confusion, misinformation and poor results

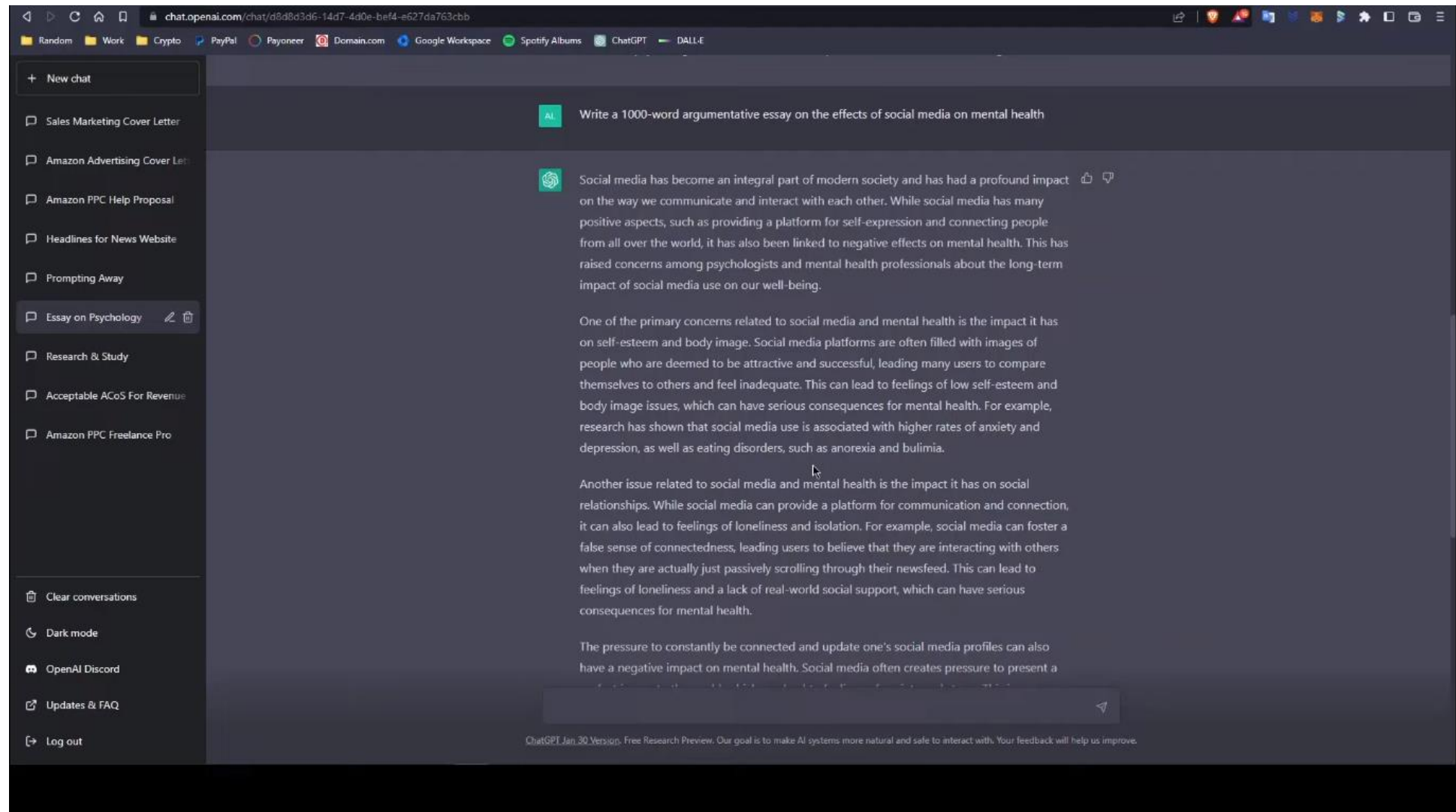
1.4 Broad vs. Detailed Prompt

A. Write an essay on psychology



1.4 Broad vs. Detailed Prompt

B. Write a 1000-word argumentative essay on the effects of social media on mental health



1.4 Broad vs. Detailed Prompt

B. Write a 1000-word argumentative essay on the effects of social media on mental health, including a detailed analysis of three peer-reviewed studies and your own conclusion.

1.5 Evaluating the Output

- The GOAL is to assess the quality of a model's output and identify areas for improving the prompt in order to get a better output
- Key factors to consider are:
 - Relevance
 - Accuracy
 - Coherence
 - Style

2 Impact on various industries

- Tailor your prompts to meet the specific needs of a particular industry
- Understanding the goals will help you create effective prompts

2.1 Customer Service

- "Requires quick and accurate responses to customer inquiries"
- "Providing faster & more personalized service, and freeing up agents to focus on more complex issues"
- "Generate a 100-word response to a customer inquiry regarding the delivery status of an order."

2.2 Health Care

- Assist doctors in diagnosing disease faster and more accurately, making breakthroughs in the development of new treatments, etc.
- "Generate a 200-word summary of a medical record for a patient with symptoms of a fever, headache and body aches."
- Be mindful of privacy concerns

2.3 Marketing

- Prompts can play a big role in gathering information about potential customers
- “What are you interested in?”
- Be transparent about why you’re asking and what you’ll do with the information!

2.4 Gaming

- Use prompts to guide the creation of in-game dialogue, characters and narratives
- A prompt can specify the personality and characteristics of an NPC, and the language model would generate a dialogue

2.5 Blockchain Industry

- Language models can be used for creating smart contracts
- A prompt could specify the terms and conditions of a contract and the language model would generate a legal document
- Generate reports and analyses, which can help businesses make informed decisions

2.6 Challenges and Limitations

- Risk of being used for malicious purposes
- Can have biases and spread misinformation
- Struggle with understanding context
- Can require lot of s=data and computational power to train

3 Ethical Implications/Considerations

- **Privacy:** the data should be protected and kept confidential
- **Fairness & Bias:** language models should provide fair and impartial responses to all users
- **Responsibility for outputs:** outputs generated by language models should align with our ethical and moral standards

3.1 Responsible Practices

- **Transparency:** workings, methods and processes used should be transparent to everyone
- **Continuous Improvement:** the prompts you create should be continuously evaluated and improved
- **Collaboration:** working with a team of experts in various fields (ethics, privacy, and law)

4 Key components of a good prompt

- **Topic:** provides a clear direction for generating text
- **Length:** helps to ensure that the output is of a consistent length
- **Structure:** helps to ensure that the output is organized and coherent
- **Style:** helps to match the output with the desired tone and style

4.1 Modifying Prompts

- Steer the model in a desired direction in order to generate relevant and meaningful text.
- Strategies for modifying prompts are:
 - Specificity
 - Context
 - Structuring
 - Using more specific words
 - Seed text
 - Inclusion/Exclusion
 - Formatting

4.2 Examples of good and bad prompt

- "Write about meditation"
 - "Write a 500-word article about the benefits of meditation for stress reduction"
- "Write an essay about diet"
 - "Write a 300-word persuasive essay arguing why people should adopt a meat-based diet"
- "Write about a sunset"
 - "Write a 200-word descriptive piece about a sunset over the ocean"

5 Evaluating the performance

- Prompt evaluation begins with response evaluation!
- The goal is to assess the quality of the model's output and identify areas for improvement
- Establish clear goals, gather data, and analyse the results
- How well has the generated response captured the intended message, and how it resonates with your target audience
- “Describe your dream vacation”
- Measure the diversity and coherence of the generated responses

5.1 Key Metrics

- **Relevance** - Does the output match the intent of the prompt?
- **Consistency** - Does the output maintain a consistent tone and style throughout the generated text?
- **Coherence** - Does the output form a logical and coherent narrative?
- **Diversity** - Does the output exhibit variety in its choice of words, phrases and sentences?

5.2 Techniques for Improving prompts

- **Adding constraints:** desired length or tone
- **Using seed text:** can help generate text that is more relevant to the prompt
- Using more speWORDS: helps the model generate text that is more accurate and relevant
- **Structuring:** helps to ensure that the response is organized and coherent

5.3 Refining Prompts for Better results

- Key steps in refining your prompts are to:
 - Generate text using the current prompt
 - Evaluate the performance of the model using the previously mentioned metrics
 - Make adjustments to the prompt using the previously mentioned techniques
 - Repeat steps 1-3 until the output meets your desired criteria

5.4 Example 1

- "Write a story about a character who goes on an adventure."
- Too broad and lacks direction, which could result in a confusing and disjointed narrative
- Refinement: "Write a story about a brave young adventurer who sets out to explore a mysterious, uncharted island and discovers the secrets hidden within."

5.5 Example 2

- "Describe a city."
- Too vague and could lead to a general description that lacks detail and personality
- Refinement: "Describe the bustling city of New York, its towering skyscrapers, vibrant street life, and diverse neighbourhoods."

5.6 Example 3

- "Write a poem about nature."
- Too broad and could result in a poem that is not focused and lacks depth
- Refinement: "Write a poem in a lyrical style of A Tribe Called Quest about the beauty of a spring day, capturing the scent of blooming flowers, the chirping of birds, and the warmth of the sun."