ASSIGNMENT

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SEN 411

QUESTIONS:

1. EXPLAIN POSITIVE AND NEGATIVE IMPACTS OF CHATGPT TO EDUCATION

2. EXPLAIN THE VARIOUS MACHINE TRANSLATION METHODS

3. How many facts, rules, clauses, and predicates are there in the following knowledge base? What are the heads of the rules, and what are the goals they contain?

loves(vincent,mia).

loves(marsellus,mia).

loves(pumpkin,honey\_bunny).

loves(honey\_bunny,pumpkin).

jealous(X,Y):- loves(X,Z), loves(Y,Z).

Answers:

1.

POSITIVE IMPACTS OF CHATGPT ON EDUCATION

1. **Instant Learning Support:**  
    ChatGpt helps students understand difficult concepts by providing instant explanations, summaries, and examples.Example- A student struggling with calculus or a math problem can ask ChatGpt for help, and chatgpt would give step by step solutions to solving the problem, and sometimes multiple approaches and their difficulty levels.
2. **Enhances Writing and Research:** It assists in drafting essays, summarizing research papers, generating and refining ideas, making academic work easier.
3. **Personalized Learning:**

ChatGpt has the ability to take note of information and reason at specific levels, based on the user. It can adapt to different learning styles, providing customized explanations based on a students level of understanding.

1. Saves Time and Increases Efficiency:

It helps students and teaches complete tasks faster, such as summarizing long texts or generating lesson plans.

NEGATIVE IMPACTS OF CHATGPT ON EDUCATION

1. **Encourages Laziness:**  
    Some students may rely too much on ChatGpt for answers instead of thinking critically and doing independent research.
2. **Misinformation and Bias:**  
    ChatGpt is not always accurate and may provide incorrect or biased information, and some lazy students might not want to verify information and therefore work with wrong information.
3. **Reduces Human Interaction:**  
    Overuse of AI tools can decrease face-to-face discussions and collaborations with teachers and classmates. Instead of asking a teacher for help or discussing with classmates, chatgpt could become a frequent go-to for problems, greatly reducing human interaction.
4. **Risk of Plagiarism:**  
    Students may copy responses directly from ChatGpt without proper citations, leading to academic dishonesty. ChatGpt might not reference sources except when asked to.
5. **Limited Critical Thinking Development:**  
   Relying on AI-generated answers may weaken problem-solving and analytical skills. Students become too dependent on ChatGpt for problem solving rather than thinking critically about possible solutions.

2. MACHINE TRANSLATION METHODS

1. **Rule-Based Machine Translation (RBMT)**

This method uses predefined rules and dictionaries to translate text. Requires grammar, syntax and vocabulary rules for each language pair.  
Example: Early translation systems like Systran, used for military and business translations.

1. **Statistical Machine Translation (SMT)**  
    This method translates based on statistical models trained on large amounts of bilingual text data. It identifies patterns and probabilities instead of using fixed rules. Example: Google Translate used SMT before switching to neural networks.
2. **Example-Based Machine Translation (EBMTT)**   
    This method uses deep learning and artificial neural networks to improve translation quality. It provides more natural and context-aware translations than SMT and RBMT. Example: Modern Google Translate and DeepL use NMT for better accuracy.
3. **Hybrid Machine Translation:**  
    It combines two or more translation methods (e.g., RBMT + SMT) to improve results. Balances rule-based accuracy with statistical or neural adaptability. **Example:** Some enterprise translation systems mix RBMT with NMT for better control over translations.
4. **Adaptive Machine Translation**:  
    Continuously learns from user corrections and feedback to improve translations. It also provides personalized results based on context and user preferences. Example**:** AI-powered translation tools used in businesses for real-time multilingual communication.

3. How many facts, rules, clauses, and predicates are there in the following knowledge base? What are the heads of the rules, and what are the goals they contain?

loves(vincent,mia).

loves(marsellus,mia).

loves(pumpkin,honey\_bunny).

loves(honey\_bunny,pumpkin).

jealous(X,Y):- loves(X,Z), loves(Y,Z).

1. Facts : There are 4 facts in the knowledge base -  
   loves(vincent, mia).

loves(marsellus, mia).

loves(pumpkin, honey\_bunny).

loves(honey\_bunny, pumpkin).

1. Rules: There is only 1 rule in the knowledge base  
   jealous(X,Y):- loves(X,Z), loves(Y,Z).
2. Clauses: Clauses consist of facts and rules, so there are 4 facts and 1 rule, making 5 clauses in the knowledgebase.  
   loves(vincent, mia).

loves(marsellus, mia).

loves(pumpkin, honey\_bunny).

loves(honey\_bunny, pumpkin).

1. Predicates: There are only 2 predicates in the knowledge base  
   ⇒ loves and jealous
2. The head of the rule is ⇒ jealous(X,Y)
3. Goals of the rule(also known as the body of the rule):  
    loves(X,Z) and loves(Y,Z)