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**COURSE CODE :** CSC411

**COURSE TITLE:** ARTIFICIAL INTELLIGENCE

**PROGRAMME:** COMPUTER SCIENCE

**DEPARTMENT:** COMPUTER SCIENCE

ASSIGNMENT QUESTIONS AND ANSWER

1. Explain the positive and negative impact of chatgpt to Education

While ChatGPT offers valuable educational benefits, responsible usage is key. Educators should guide students on how to use AI as a learning tool rather than a shortcut. Encouraging critical thinking, fact-checking, and ethical use will help maximize the benefits while minimizing the drawbacks.

**Positive Impact of ChatGPT on Education:**

**Instant Access to Information:** ChatGPT provides students with quick answers, explanations, and summaries of complex topics. This reduces the time spent searching through multiple sources and helps learners grasp concepts faster.

**Personalized Learning:** Unlike traditional classroom settings, where one teaching style may not suit all students, ChatGPT can tailor explanations to different learning paces and preferences. Students can ask follow-up questions and receive simplified or more detailed explanations.

**Homework & Study Assistance:**  ChatGPT helps students with assignments by explaining concepts, solving problems, and offering guidance on structuring essays or reports. This is particularly beneficial for self-directed learners.

**Language Support**: Students learning new languages can use ChatGPT to translate, practice grammar, and refine their writing. It also helps non-native English speakers understand academic texts more easily.

**Tutoring Support:** Acts as a virtual tutor, providing support 24/7, which is useful for students who may not have access to personal tutoring services. It can clarify doubts in real time, making learning more accessible.

**Negative Impact of ChatGPT on Education:**

**Encourages Plagiarism:** Students may misuse ChatGPT to generate essays, reports, or homework answers without actually learning or understanding the content. This undermines the development of original thinking and academic integrity.

**Lack of Critical Thinking:** Over-reliance on AI-generated answers can reduce students’ ability to analyze, evaluate, and solve problems independently. Instead of critically engaging with a subject, they may simply accept AI responses at face value.

**Misinformation Risks:** ChatGPT, while advanced, is not infallible. It can sometimes provide outdated, incorrect, or biased information. Students who do not fact-check AI-generated content may unknowingly learn or spread misinformation.

**Reduced Teacher-Student Interaction:** If students turn to ChatGPT instead of engaging with their teachers, it could weaken student-teacher relationships. The value of classroom discussions, peer collaboration, and hands-on learning experiences might be diminished.

**Equity Issues:**  Not all students have equal access to AI tools due to disparities in technology availability and internet access. This digital divide could widen educational inequalities, giving an advantage to those with better resources.

1. Explain the various machine translation methods

**Rule-Based Machine Translation (RBMT):** Uses linguistic rules and dictionaries.

The types of RBMT are Direct, Transfer-Based, Interlingua-Based.

It advantage is of High accuracy in specific domains.

It disavantage is Hard to scale due to manual rule creation.

**Statistical Machine Translation (SMT):** Uses probabilistic models trained on bilingual corpora.The types of SMT are Word-Based, Phrase-Based, Syntax-Based.

It advantage is that it is More adaptable than RBMT.

It disadvantage is that it Struggles with grammar and fluency.

**Example-Based Machine Translation (EBMT):** It Translates using previously translated examples.

It advantage is that it is Effective for languages with rich parallel data.

It disadvantage is that it Requires a large database.

**Neural Machine Translation (NMT): NMT** Uses deep learning models (e.g., RNNs, Transformers).

It is More fluent and context-aware translations.

It disadvantage is that it Requires large datasets and high computational power.

**Hybrid Machine Translation:** Combines RBMT, SMT, and NMT for better performance.Where the advantages is it Improves accuracy and fluency.

Disadvantage is that it Complex to implement.

1. 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).

Facts: 4

Rules: 1

Clauses: 5

Predicates: 2 (loves/2, jealous/2)

Heads of the Rules: jealous(X,Y)

Goals in the Rule: loves(X,Z), loves(Y,Z)

**Facts (4)**

loves(vincent, mia).

loves(marsellus, mia).

loves(pumpkin, honey\_bunny).

loves(honey\_bunny, pumpkin).

**Rules (1)**

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

**Clauses (5)**

4 facts and 1 rule

**Predicates (2)**

loves/2

jealous/2

**Heads of the Rules:**

The head of the rule is the part before in the given rule:

prolog

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

The head is: jealous(X,Y)

**Goals in the Rule:**

The goals are the conditions that must be satisfied for the rule to be true (the part after :-).

The given rule contains two goals:

loves(X,Z)

loves(Y,Z)