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**MATRIC NUMBER: DU0375**

**COURSE: CSC 411**

**PROGRAMME: CYBER SECURITY**

ASSIGNMENT

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).

**ANSWER**

1. EXPLAIN POSITIVE AND NEGATIVE IMPACTS OF CHATGPT TO EDUCATION

**Positive Impacts**

* **Personalized Learning:**
* ChatGPT can provide tailored explanations based on a student’s understanding level.
* Helps students grasp complex concepts by simplifying them.
* **24/7 Availability:**
* Acts as a virtual tutor, available at any time.
* Students can get instant answers to their queries.
* **Improved Writing and Research Assistance:**
* Helps students draft essays, reports, and research papers.
* Can summarize long academic articles into simpler versions.
* **Language Learning Support:**
* Assists in grammar correction and sentence restructuring.
* Helps with translations and learning new languages.
* **Encourages Independent Learning:**
* Promotes self-study by providing quick references.
* Helps with problem-solving in subjects like mathematics and programming.

**Negative Impacts**

* **Dependency on AI:**
* Students may rely too much on ChatGPT, reducing critical thinking skills.
* **Risk of Misinformation:**
* ChatGPT may sometimes generate incorrect answers or outdated information.
* **Academic Dishonesty:**
* Can be misused for cheating in assignments and exams.
* Students might submit AI-generated work instead of their own.
* **Lack of Human Interaction:**
* ChatGPT lacks emotional intelligence and personalized feedback like human teachers.
* **Bias in Responses:**
* AI models may reflect biases present in their training data.

1. EXPLAIN THE VARIOUS MACHINE TRANSLATION METHODS

Machine Translation (MT) is the use of AI to translate text between languages. There are **four main types**:

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

* Uses linguistic rules and dictionaries for translation.
* Example: SYSTRAN, Apertium.  
  Pros: More structured and predictable translations.  
  Cons: Struggles with contextual meaning.

**2. Statistical Machine Translation (SMT)**

* Uses large bilingual corpora and statistical models to generate translations.
* Example: Google Translate (before neural networks).  
   Pros: Can handle a variety of languages.  
  Cons: Often results in grammatical errors.

**3. Neural Machine Translation (NMT)**

* Uses deep learning to translate entire sentences contextually.
* Example: Google Translate (current version), DeepL.  
  Pros: Produces more natural translations.

Cons: Requires large datasets and is computationally expensive.

**4. Hybrid Machine Translation (HMT)**

* Combines RBMT and SMT,NMT to improve accuracy.
* Example: Modern translation tools used in enterprises.  
   Pros: More flexible and customizable.  
  Cons: Complex to develop and maintain.

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**Facts**

Facts are statements that define known relationships.  
There are 4 facts:

1. loves(vincent, mia).
2. loves(marsellus, mia).
3. loves(pumpkin, honey\_bunny).
4. loves(honey\_bunny, pumpkin).

#### ****Rules****

Rules define new relationships based on conditions.  
**There is 1 rule:**

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

**Clauses**

A clause is either a fact or a rule.  
**Total clauses = Facts + Rules = 4 + 1 = 5 clauses.**

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

**Predicates**

Predicates are unique relationships used in the knowledge base.  
**There are 2 predicates:**

1. loves (appears in both facts and rules).
2. jealous (defined in a rule).

**Heads of the Rules**

The **head** of a rule is the term before :-.

* The only rule is

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

The **head** is jealous(X,Y).

**Goals Contained in the Rule**

A **goal** is a condition in the body of a rule.

* The body of the rule contains two goals:
  1. loves(X,Z)
  2. loves(Y,Z)