Assignment

of

**Artificial Intelligence in Education**

**(ICT ED 476)**

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# **Problem Definition in AI:**

In AI, a problem definition outlines the specific issue we want the intelligent system to address. It should be clear, concise, and well-understood by both the developers and the stakeholders. Here are some key elements of a good problem definition in AI:

Objective: Clearly state the desired outcome or goal of the AI system. What do you want it to achieve?

Scope: Define the boundaries of the problem. What aspects are included and excluded?

Data: Specify the type and amount of data required to train and evaluate the AI system.

Metrics: Define how you will measure the success of the AI system. What performance metrics will you use?

Constraints: Identify any limitations or restrictions that the AI system must operate within, such as computational resources, ethical considerations, or regulatory requirements.

# **Real-Time Problems in AI:**

Real-time problems in AI involve making decisions or taking actions based on constantly changing data or situations. These problems require the AI system to process information and respond quickly, often within strict time constraints. Examples of real-time AI applications include:

Autonomous vehicles: Making real-time decisions about steering, braking, and obstacle avoidance based on sensor data.

Fraud detection: Identifying fraudulent transactions in real-time as they occur.

Medical diagnosis: Providing real-time feedback and recommendations during surgery or other medical procedures.

Robot control: Reacting to changes in the environment and making real-time adjustments to robot movements.

# **Well-Defined Problems in AI:**

Well-defined problems in AI have clear and unambiguous goals, well-understood data sources, and well-established performance metrics. These problems are often easier to solve than ill-defined problems, which may have subjective goals, incomplete data, or poorly defined success criteria. Examples of well-defined AI problems include:

Image recognition: Classifying images into different categories based on their visual features.

Machine translation: Translating text from one language to another accurately and fluently.

Game playing: Mastering the rules and strategies of a game to defeat human or computer opponents.

Spam filtering: Identifying and filtering out unwanted emails from your inbox.

Broader Meaning and Ways:

Problem definition in AI is not limited to these specific categories. It can encompass a wide range of challenges, from the most abstract and theoretical to the most practical and applied. Here are some broader ways to think about problem definition in AI:

Identifying opportunities: AI can be used to identify new opportunities and solve problems that we didn't even know existed before.

Automating tasks: AI can automate repetitive and time-consuming tasks, freeing up human time and resources for more creative and strategic work.

Optimizing processes: AI can optimize existing processes to make them more efficient and effective.

Augmenting human intelligence: AI can be used to augment human intelligence and decision-making capabilities.

By effectively defining problems and applying AI solutions, we can unlock new possibilities and create a better future for everyone.