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*Discuss the essence of the Turing test.*

Turing tests are fundamental metric of how similar a machine’s intelligence is to a man’s. In its essence, it proves or disproves the humanity factor of the machine. However, there is not yet a machine to have blurred the lines.

*Differentiate the Total Turing test from just the Turing Test.*

The Total Turing Test is an upgraded version of the Turing Test. A normal Turing Test would be for the human subject and the machine subject to answer questions. To achieve totality, the machine must be able to perform physical tasks like solving puzzles or the machine must be able to feel emotion.

*Demonstrate that the Regular Language is closed under complementation.*

Regular Language is closed under complementation since if there would be two proven languages L1 and L2 and an intersection operation is done, then we can conclude that the intersection between both Languages use the same Alphabet as the compositions.

Given Li uses the Roman Alphabet System:

L1: {a,b,c}

L2: {a,d,e}

L1 Intersection L2: {a}

*Describe how machine learning works.*

Machine Learning is a way of powering the computers to think on its own. The goal of this is to have autonomous problem-solving given a situation. Machine Learning follows the structure of the human brain. To learn specific situations through mathematical means, we give a machine, neurons. These neurons calculate possible next steps and are given performance measures and values to ‘learn’. In a perfect Machine Learning Setup, the machine must reach a node setup like a human brain and have weights on each node that would perfectly function as a brain.

*Discuss one good example of a machine learning application.*

A good example of a machine learning application is the collaborative marketing strategy of Facebook and other Social Media applications. These learn from peer interest and suggest to the target user.

*How do you define AI?*

Artificial Intelligence for me is machines acting as if humanly rational. Machines must reach a point where it can change itself to suit a real-world problem.

*In what way Regular Relations differ from Regular Languages and in what way they are similar?*

Regular relations refer to transducers and regular languages refer to automatons. Regular relations for one, uses transducing to verify correct outputs. However, regular languages use regular expressions to verify correct outputs. They are similar in a way that they both are finite-states.

*Explain the difference between Natural Language Processing and Natural Language Understanding.*

Natural Language Understanding and Natural Language Processing are different such that Natural Language is broader and even covers Natural Language Processing. Natural Language Processing usually refers to system-human interaction. Natural Language Understanding handles the fuzziness of possible data to convert them into predefined constructs.

*Discuss how Context-Free Grammar differs from Context-Sensitive Grammar and show which one is better suited to natural language.*

Context-Free Grammar usually is better suited for validations since it is unbiased in a way that it only checks what is given. Context-Sensitive Grammar on the other hand, is suited better for natural language since it learns from its experiences.