Chapter 15:

Is Artificial Intelligence Real?

## Multiple Choice:

1. “Artificial intelligence is the study of ideas which enable computers to do the things that make people seem intelligent.” This commonly used definition of AI is a quote by:
   1. Alan Turing.
   2. Patrick Henry Winston.
   3. Phil Knight.
   4. Bill Gates.

**Answer:** B **Reference:** What Is Artificial Intelligence? **Difficulty:** Moderate

1. The “imitation game” was developed by \_\_\_\_\_\_\_\_\_\_\_\_ to demonstrate a computer’s intelligence.
   1. Alan Turing
   2. Patrick Henry Winston
   3. the U.S. Dept. of Defense
   4. Bill Gates

**Answer:** A **Reference:** Can Machines Think? **Difficulty:** Moderate

1. The simulation approach in regard to AI includes all of the following problems EXCEPT:
   1. people don’t always know how they do things.
   2. the brain can perform parallel processing, which is difficult for computers.
   3. machines operate differently than the brain.
   4. we know how the brain functions and can simulate that in a computer.

**Answer:** D **Reference:** What Is Artificial Intelligence? **Difficulty:** Moderate

1. One of the first popular domains for AI research was:
   1. the checkerboard.
   2. solitaire.
   3. chess.
   4. parallel processing.

**Answer:** A **Reference:** Opening Games **Difficulty:** Moderate

1. Traditional AI techniques still used today include all of the following EXCEPT:
   1. searching.
   2. heuristics.
   3. pattern recognition.
   4. parallel processing.

**Answer:** D **Reference:** Opening Games **Difficulty:** Challenging

1. Machine learning involves:
   1. learning from a successful move.
   2. copying the knowledge of a human to a computer.
   3. loading numerous games and playing them regularly.
   4. making numerous mistakes so the computer can learn.

**Answer:** A **Reference:** Opening Games **Difficulty:** Moderate

1. A primary outcome of the automatic language translation program was the realization that:
   1. humans are faster and more accurate.
   2. computers are faster and more accurate.
   3. computers make fewer errors than humans.
   4. computers can accurately translate 99% of the text.

**Answer:** A **Reference:** Machine Translation Traps **Difficulty:** Easy

1. AltaVista’s Babel Fish Web site is a(n):
   1. language translation program.
   2. wealth of information about species of fish.
   3. AI search engine.
   4. AI organizational page of information.

**Answer:** A **Reference:** Machine Translation Traps **Difficulty:** Moderate

1. A typical problem of natural-language communication is:
   1. tone inflection.
   2. the limited vocabulary of natural language.
   3. the use of accents.
   4. the enormous vocabulary of natural language.

**Answer:** D **Reference:** Nonsense and Common Sense **Difficulty:** Moderate

1. Syntax, a problem with natural-language communication, is:
   1. the tone inflection of human language.
   2. the natural accent of the human voice.
   3. a set of rules for common expressions.
   4. a set of rules for constructing sentences from words.

**Answer:** D **Reference:** Nonsense and Common Sense **Difficulty:** Moderate

1. Semantics, a problem with natural-language communication, refers to:
   1. the underlying meaning of words and phrases.
   2. a set of rules for constructing sentences from words.
   3. the natural accent of the human voice.
   4. the tone inflection of human language.

**Answer:** A **Reference:** Nonsense and Common Sense **Difficulty:** Moderate

1. The most successful natural-language applications:
   1. keep the scope of their work very wide and nebulous.
   2. limit the scope of their field.
   3. keep the rules very flexible and variable.
   4. discard common sense as unimportant.

**Answer:** B **Reference:** Nonsense and Common Sense **Difficulty:** Easy

1. When it comes to the areas of data and knowledge, computers are much better at handling:
   1. knowledge first, then processing the data.
   2. knowledge than data.
   3. data than knowledge.
   4. only knowledge.

**Answer:** C **Reference:** Knowledge Bases and Expert Systems **Difficulty:** Easy

1. A typical database contains:
   1. rules, facts, and relationships.
   2. only rules and relationships.
   3. simulation of human thinking.
   4. only facts.

**Answer:** D **Reference:** Knowledge Bases **Difficulty:** Moderate

1. When a computer can correctly recognize faces of users with a high degree of reliability, it is using:
   1. fuzzy logic.
   2. pattern recognition.
   3. image analysis.
   4. OCR.

**Answer:** C **Reference:** Image Analysis **Difficulty:** Easy

1. A knowledge base contains:
   1. rules, facts, and relationships.
   2. only rules and relationships.
   3. simulation of human thinking.
   4. only facts.

**Answer:** A **Reference:** Knowledge Bases **Difficulty:** Moderate

1. A software program designed to replicate the decision-making process of a human expert is a(n):
   1. data system.
   2. database.
   3. expert system.
   4. semantic system.

**Answer:** C **Reference:** Artificial Experts **Difficulty:** Moderate

1. Using the knowledge of an expert in a particular field in order to duplicate it into a program is the creation of a(n):
   1. expert system.
   2. database.
   3. fuzzy logic system.
   4. pattern recognition system.

**Answer:** A **Reference:** Artificial Experts **Difficulty:** Easy

1. When a conclusion is stated as a probability rather than an exact fact, it is known as:
   1. an expert system.
   2. a database.
   3. fuzzy logic.
   4. a pattern recognition system.

**Answer:** C **Reference:** Artificial Experts **Difficulty:** Moderate

1. XCON, a system at American Express, and a system at Blue Cross/Blue Shield of Virginia are all examples of:
   1. expert systems.
   2. databases.
   3. fuzzy logic.
   4. pattern recognition systems.

**Answer:** A **Reference:** Expert Systems in Action **Difficulty:** Moderate

1. Expert systems primarily started in the:
   1. insurance field.
   2. medical field.
   3. aviation field.
   4. library reference field.

**Answer:** B **Reference:** Expert Systems in Action **Difficulty:** Easy

1. The field of AI that covers fingerprint identification, handwriting recognition, and weather forecasting is:
   1. pattern recognition.
   2. image analysis.
   3. parsing programs.
   4. fuzzy logic.

**Answer:** A **Reference:** Pattern Recognition: Making Sense of the World **Difficulty:** Moderate

1. The task of identifying recurring patterns in input data with the eventual understanding or categorizing of that input is known as:
   1. fuzzy logic.
   2. automatic translation.
   3. a parsing program.
   4. pattern recognition.

**Answer:** D **Reference:** Pattern Recognition: Making Sense of the World **Difficulty:** Moderate

1. What aspect of artificial intelligence represents half of the industry?
   1. Fuzzy logic
   2. Automatic translation
   3. Parsing programs
   4. Pattern recognition

**Answer:** D **Reference:** Pattern Recognition: Making Sense of the World **Difficulty:** Moderate

1. \_\_\_\_\_\_\_\_\_\_\_\_\_ is the process of identifying objects and shapes in a photograph, drawing, video, or other visual image.
   1. Pattern recognition
   2. Image analysis
   3. OCR
   4. Fuzzy logic

**Answer:** B **Reference:** Image Analysis **Difficulty:** Easy

1. The U.S. Postal Service sorts much of its mail using:
   1. OCR.
   2. fuzzy logic.
   3. image analysis.
   4. pattern recognition.

**Answer:** A **Reference:** Optical Character Recognition **Difficulty:** Moderate

1. OCR stands for:
   1. original character representation.
   2. optical character recognition.
   3. optical computer reply.
   4. original character recognition.

**Answer:** B **Reference:** Optical Character Recognition **Difficulty:** Easy

1. More advanced speech recognition programs that have the ability to recognize speech without being trained by a speaker are known as:
   1. OCR.
   2. speaker independent.
   3. digitized speech.
   4. synthetic speech systems.

**Answer:** B **Reference:** Automatic Speech Recognition **Difficulty:** Moderate

1. When a computer’s speech sounds like the speech of a human, it is using:
   1. OCR.
   2. synthetic speech.
   3. speech synthesis.
   4. prerecorded commentary.

**Answer:** C **Reference:** Talking Computers **Difficulty:** Moderate

1. The primary successes of intelligent applications tend to have all of the following characteristics EXCEPT:
   1. logical rules.
   2. unstructured logic.
   3. sequential thinking.
   4. orderly relationships.

**Answer:** B **Reference:** Neural Networks **Difficulty:** Moderate

1. A network of a few thousand simple processors is called a \_\_\_\_\_\_\_\_\_ network.
   1. neural
   2. cerebral
   3. rational
   4. robot

**Answer:** A **Reference:** Neural Networks **Difficulty:** Moderate

1. An example of a \_\_\_\_\_\_\_\_\_\_\_\_ network is American Express reading and analyzing millions of charge slips each day or recognizing patterns in huge quantities of data, such as the stock market.
   1. neural
   2. cerebral
   3. rational
   4. robot

**Answer:** A **Reference:** Neural Networks **Difficulty:** Moderate

1. A computer-controlled machine designed to perform specific manual tasks is known as a(n):
   1. speech synthesizer.
   2. AI.
   3. robot.
   4. OCR.

**Answer:** C **Reference:** What Is a Robot? **Difficulty:** Easy

1. Robots are quite effective in all of the following EXCEPT:
   1. cleaning up hazardous waste.
   2. doing repetitive jobs.
   3. working 24/7.
   4. doing work that requires fine-motor skills.

**Answer:** D **Reference:** Steel-Collar Workers **Difficulty:** Moderate

## Fill in the Blank:

1. AI stands for \_\_\_\_\_\_\_\_\_\_\_\_.

**Answer:** artificial intelligence **Reference:** Alan Turing, Military Intelligence, and Intelligent Machines  
**Difficulty:** Easy

1. \_\_\_\_\_\_\_\_\_\_\_\_ is the process of breaking complex jobs into manageable pieces and completing these tasks simultaneously.

**Answer:** Parallel processing **Reference:** What Is Artificial Intelligence? **Difficulty:** Moderate

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ is a rule of thumb.

**Answer:** heuristic **Reference:** Opening Games **Difficulty:** Challenging

1. One AI technique that is still used today is \_\_\_\_\_\_\_\_\_\_\_\_, the process of looking at possibilities and choosing one that is most probable for success.

**Answer:** searching **Reference:** Opening Games **Difficulty:** Moderate

1. The \_\_\_\_\_\_\_\_\_\_\_\_ technique rapidly repeats a simple operation until an answer is found.

**Answer:** brute-force **Reference:** Opening Games **Difficulty:** Challenging

1. Every natural language has a(n) \_\_\_\_\_\_\_\_\_\_\_\_, a set of rules for constructing sentences from words.

**Answer:** syntax **Reference:** Nonsense and Common Sense **Difficulty:** Moderate

1. The most successful natural-language applications limit their \_\_\_\_\_\_\_\_\_\_\_\_, or affected area, so that rules can be clean and unambiguous.

**Answer:** domain **Reference:** Nonsense and Common Sense **Difficulty:** Easy

1. \_\_\_\_\_\_\_\_\_\_\_\_ allows a computer to output words in English or another language.

**Answer:** Speech synthesis **Reference:** Talking Computers **Difficulty:** Moderate

1. Between humans and computers, \_\_\_\_\_\_\_\_\_\_\_\_ are better at comprehending and identifying relationships among facts.

**Answer:** humans **Reference:** Knowledge Bases and Expert Systems **Difficulty:** Moderate

1. A database contains only facts, while a(n) \_\_\_\_\_\_\_\_\_\_\_\_ also contains a system of rules for determining and changing the relationship among those facts.

**Answer:** knowledge base **Reference:** Knowledge Bases and Expert Systems **Difficulty:** Challenging

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ is a software program designed to replicate the decision-making process of a human expert.

**Answer:** expert system **Reference:** Artificial Experts **Difficulty:** Moderate

1. Since most human decision making involves ambiguity, \_\_\_\_\_\_\_\_\_\_\_\_ allows for conclusions that are based on probabilities rather than certainties.

**Answer:** fuzzy logic **Reference:** Artificial Experts **Difficulty:** Moderate

1. An expert system is based on the knowledge of a(n) \_\_\_\_\_\_\_\_\_\_\_\_.

**Answer:** expert **Reference:** Artificial Experts **Difficulty:** Moderate

1. Because of the orderly and well-documented information of the industry, the \_\_\_\_\_\_\_\_\_\_\_\_ field was the area used for some of the first successful expert systems.

**Answer:** medical **Reference:** Artificial Experts **Difficulty:** Moderate

1. The process of \_\_\_\_\_\_\_\_\_\_\_\_ is used for recognizing and recoloring classic motion pictures or piloting cruise missiles.

**Answer:** image analysis **Reference:** Image Analysis **Difficulty:** Challenging

1. \_\_\_\_\_\_\_\_\_\_\_\_ text is more difficult than printed text for a computer to recognize accurately.

**Answer:** Handwritten **Reference:** Optical Character Recognition **Difficulty:** Easy

1. \_\_\_\_\_\_\_\_\_\_\_\_ voice recognition systems have the ability to recognize speech without being trained by an individual speaker.

**Answer:** Speaker independent **Reference:** Automatic Speech Recognition **Difficulty:** Moderate

1. Most modern robots include \_\_\_\_\_\_\_\_\_\_\_\_ that accept new input and enable robots to correct or modify their actions based on feedback from the outside world.

**Answer:** sensors **Reference:** What Is a Robot? **Difficulty:** Challenging

1. \_\_\_\_\_\_\_\_\_\_\_\_ is the playing of prerecorded speech stored on a computer.

**Answer:** Digitized speech **Reference:** Talking Computers **Difficulty:** Moderate

1. With **\_\_\_\_\_\_\_\_\_\_\_\_** software or hardware, PCs can recite typed text, but with artificial and robotic voices.

**Answer:** speech synthesis **Reference:** Talking Computers **Difficulty:** Moderate

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ uses a network of a few thousand simple processors that work simultaneously.

**Answer:** neural network **Reference:** Neural Networks **Difficulty:** Challenging

1. A(n) \_\_\_\_\_\_\_\_\_\_\_\_ is a computer-controlled machine designed to perform specific manual tasks.

**Answer:** robot **Reference:** What Is a Robot? **Difficulty:** Moderate

1. \_\_\_\_\_\_\_\_\_\_\_\_ is the application of AI concepts to networks, rather than only to individual computers.

**Answer:** Distributed intelligence **Reference:** AI Implications and Ethical Questions **Difficulty:** Moderate

1. In the workplace, \_\_\_\_\_\_\_\_\_\_\_\_ primarily take over tasks that are boring, dirty, or dangerous and which humans often do not want, cannot do, or get very tired of doing.

**Answer:** robots **Reference:** What Is a Robot? **Difficulty:** Moderate

## Matching:

1. Match the following terms to their meanings:

I. Turing test A. software designed to replicate the knowledge of a human “expert”

II. Expert system B. set of rules for constructing sentences from words

III. Automatic translation C. the “real” meaning of words and phrases

IV. Checkers and chess D. if it acts intelligent, it is intelligent

V. Syntax E. contains facts and relationships

VI. Semantics F. the first area of AI research

VII. Domain G. Spanish “hola” for English “hello”

VIII. ELIZA H. contains only facts

IX. Database I. one of the first software programs to converse in natural language

X. Knowledge base J. the “world” that the application deals with

**Answers:** D, A, G, F, B, C, J, I, H, E **Reference:** Multiple locations **Difficulty:** Challenging

1. Match the following AI techniques to their specific examples:

I. Searching A. in a game of checkers, keep checkers in the king’s row as long as possible

II. Heuristics B. a chess move is successful, the computer will probably opt to use it more often in the future and vice versa

III. Pattern recognition C. there are five possible chess moves in this situation, if I choose this…then this happens; if I choose this other option…then this other thing happens; etc.

IV. Machine learning D. if the knight chess piece is in this square and the Queen is to the right with the opponent’s King straight in front, then the proper move is…

**Answers:** C, A, D, B **Reference:** Opening Games **Difficulty:** Moderate