List of Abbreviations

**Breadth search:** A searching technique that investigates all the nodes at a given level before moving down to the next level.

**Concept:** Knowledge in an abstract format that can be used to guide a searching or reasoning process.

**Depth search:** A searching technique that investigates all lower-level nodes before considering the next node at the same level.

**Domain:** A possible problem space in which searching or reasoning techniques can be applied.

**Expert system ES (knowledge-based system):** A computer program that emulates the thought process of a human expert.

**Expert system shell:** The user interface to an expert system.

**Explanation facility:** An expert system component that reproduces the logic the inference engine followed to reach its conclusion.

**Factoring:** A technique for grouping several sub-problems into a meta-problem.

**Graph base:** A database with a collection of graphs or graphing tools; for example, most graphic software implements a graph base of customized symbols or pictures.

**Heuristic rule:** A specific rule of thumb or common sense that can be used to restrict a search to a subset of a problem domain.

**Heuristic search:** A search technique that applies heuristics to reduce the size of a problem domain.

**Heuristics:** General rules derived from experience, common sense, inferences, and intelligent trial and error.

**Hypothesis space:** A mathematical term for a space that is defined abstractly; generally, the subset of a solution space to be considered.

**Inference engine:** The component of an expert system that uses input parameters to access the knowledge base, reach a conclusion, and offer expert advice.

**Knowledge acquisition facility:** A set of software tools for capturing and encoding a human expert’s expertise and creating a knowledge base.

**Knowledge base:** A collection of data, algorithms, and heuristic rules that forms the core of an expert system.

**Knowledge engineer:** A person who captures and encodes a human expert’s expertise and creates a knowledge base.
**Machine learning**: The capacity of a machine (or an expert system) to “learn” from experience.

**Meta-problem**: A problem that is synthesized or generalized from several lower level sub-problems.

**Model base**: A collection of models that support decision making and/or data analysis; an example is a collection of different forecasting models.

**Natural language processing**: Hardware and/or software that allow people to communicate with computers in much the same way they communicate with other people.

**Partition**: To decompose a large problem into several smaller problems.

**Prototype**: A reasonably complete, working model of a system.

**Reasoning**: The act of using inference to lead to a conclusion based on existing knowledge and/or data.

**Reasoning capability**: An inference engine feature that reaches a conclusion by applying the rules in the rule base.

**Relation**: An association or link between two objects or entities.

**Rule**: A formal specification or description of a unit of knowledge.

**Rule base**: A collection of executable rules; the rule base is accessed by the inference engine to support reasoning.

**Solution space (problem space)**: A mathematical term for the set of all possible solutions.

**Symbolic reasoning**: A technique for performing reasoning or inference with symbolic data such as graph, image, and/or picture.

**Symbolic representation**: A technique for representing symbolic data or knowledge.
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