Definitions of Relevance

1. B is irrelevant to A given a context represented by C, iff the degree of belief in A given B in context C is identical to the degree of belief in A in context C.
2. a is an irrelevant consequence of b *iff* a is a consequence of b and there is some consequence s of b such that s is stronger than all of s's (non-logical) vocabulary occurs in a. More formally, and where for any wff f, "$At(f)$" designates the set of all atomic wffs occurring in f, a is an irrelevant consequence of $b \Leftrightarrow$ For some s , $b \vdash s \vdash a$, $a \nvdash s$ and $At(s) \subset At(a)$.
3. Retrieved information is relevant if it is similar in a current context.
4. "Relevant Information" is that which, once sufficiently available to a system, necessarily leads that system to achieve a specific goal or obtain a desired result. "Irrelevant Information" is that which, if available to a system, neither effects nor facilitates its achievement of a goal.
5. The subject s is irrelevant to the query (derivation D) if $DI(s, D)$ holds for all/some/x-percent of the derivations in $\mathcal{D}_0$, where $\mathcal{D}_0$ is some subset of the derivations of the query from the KB.
6. A feature is relevant to a goal concept if it is part of a minimal determination for that concept.
7. Let α be a propositional sentence, π a set of atomic propositions, and p and q atomic propositions. (1) α is relevant to π if you know something nontrivial about π given all you know is α. (2) α is strictly relevant to π if α is all you know about π given all you know is α. (3) p is relevant to q wrt α if β is relevant to p given α is all you know and β is all you know about q.
8. A complex physical system is fully described by a vast network of state variables and the influences among them. Given a question specifying the behavior of some of these variables (the "driving variables") and asking for the resulting behavior of others (the "variables of interest"), the modeling task is to select those variables and influences from the full description that are *relevant* for predicting the effects of the driving variables on the variables of interest.
9. A concept a is relevant to the concept b if b can be expressed as some concise logical expression involving a.
10. A fact p is irrelevant for answering the query q under the theory T if forgetting p in T will not affect the answers.
11. A subset of the propositions of a text is relevant to the propositions of a query Q if it contains descriptions of similar objects to those in Q, standing in similar, converse or antonymous relations as their relations in Q, in appropriate case-roles.
12. An Humean event or variable H is causally relevant to a Moivrean event or variable Z if the happening of H sometimes changes the probability of Z. A probability tree is causally valid even if it omits causally relevant events, provided that the causal relevancies it asserts remain valid in more detailed descriptions.
13. An attribute x_0 is "conditionally irrelevant given the partial assignment $\{x_1/v1, \ldots, x_n/v_n\}$ (wrt a concept c over the set of attributes $\{x_0, \ldots, x_n\}$)" iff for any assignment to x_0, v, $c(\langle v, v_1, \ldots, v_n\rangle) = c(\langle 0, v_1, \ldots, v_n\rangle)$.
14. An influence diagram may be composed of decision nodes, chance nodes, deterministic nodes and a value node. Arrows between chance nodes, indicating conditional probabilistic dependence, represent relevance relationships and do not represent causality.
15. In context of on-line learning from examples, when learning algorithms are restricted to remember (at any time) only a small number of examples from the history; these examples are called Relevant Examples.
16. In problem solving, a "relevant" experience is one that can inform the reasoner about which operators will lead it most directly to its goal, thus, increasing its efficiency.
17. In the context of learning, the relevance of an example is the degree to which knowing the example reduces the error of the learner on future examples.
18. In the context of supervised machine learning, a feature f is *strongly relevant* if removal of f alone will result in performance deterioration of an optimal Bayes classifier, and *weakly relevant* if there exists a subset of features, S, such that the performance of an optimal Bayes classifier on S is less than the performance on $S \cup \{f\}$.
19. Information I is relevant to algorithm A iff A performs more efficiently when I is present.
20. Information is relevant to a current situation if it has proven useful in similar situations in the past.
21. Relevance is a comparative relation on propositions that measures the effect on degree of belief of a related proposition.

22. Relevance is a connection which exists between an individual's information need situation and the information itself. Evaluations of relevance involve interactions among various factors including, but perhaps not restricted to, the individual's situation and goals, the individual's knowledge level and beliefs, the information being evaluated, the availability of other information within the environment, and the time, cost, and effort involved in obtaining the information.

23. Relevance is the usefulness of information to the problem solving.

24. Sentences A and B are independent given sentence C wrt database D precisely when $D \models A \vee B \vee C$ iff $D \models A \vee C$ or $D \models B \vee C$.

25. Something is relevant if it is potentially useful. Something is irrelevant only if you can show it cannot be useful.

26. The "relevance" of a given leaf in a game tree search is the game theoretic utility of expanding it next, given our current computational and informational limitations.

27. The expense of maintaining all observed data during a learning episode has inspired many researchers to consider various strategies to reduce the amount of data retained. Our work introduces the first true complexity theoretic analysis of space utilization by learning algorithms that repeatedly input examples and produce new hypotheses.

28. Given a set of general-purpose heuristics in a domain of related problem classes, relevance is the usefulness of a specific heuristic in decision-making for a particular problem class.

29. The relevance of an image primitive used for objects recognition is the probability that this primitive is different from noise, multiplied by the probability that this primitive does not belong to the image background.

30. The uniformity of an output attribute O given input attributes A is the probability that two random individuals that have the same values for A also have the same values for O: $U(O|A) = P(O(x) = O(y)|A(x) = A(y))$. A is relevant (for predicting the value of O in the context of concept learning) if A increases the marginal uniformity of O, i.e., if $U(O|A) > U(O)$.

31. Information X is relevant iff considering X will change my (default) decision/answer Z (in a significant way). If solving a constraint problem incrementally, then we define an ordering over relevance such that 'information X is more relevant than information Y iff considering X results in a 'more constrained' solution than considering information Y.

32. A feature F is relevant to concept C if removing F from some description D for C decreases the accuracy of D.

33. A multi-valued predicate x is [ir]relevant to a situated inference/decision by an agent at a particular time iff [any] some value of x would lead the agent to draw [the same] a different conclusion in that situation.

34. Data is relevant to a task if it supports an efficient computation that performs correctly on the task.

35. For learning a concept represented by a layered neural network: the "relevant space" is the space spanned by the weight vectors of the hidden nodes (only the nodes "just above" the inputs if there are more than 2 layers).

36. In the case of linear prediction with binary weights, the relevant variables are the ones with weight one. In more general cases we use various norms that generalize the number of relevant variables.

37. In theory T, a is *naively relevant* to $b \Rightarrow c$ iff either $T \models (b \Rightarrow c)$, and $T \models (a\&b \Rightarrow \neg c)$ or $T \models (b \Rightarrow \neg c)$, and $T \models (a\&b \Rightarrow c)$; and a is *relevant* to $b \Rightarrow c$ iff: either (1) for every d and d' such that $T \models (a \Leftrightarrow (d\&d'))$ and each of d and d' is naively relevant to $b \Rightarrow c$, we have $T \models (a \Leftrightarrow d)$ or $T \models (a \Leftrightarrow d')$ or (2) there is an a' such that $(a\&b) \rightarrow (a'\&b)$, where a is relevant to $(a'\&b \Rightarrow c)$ and a' is relevant to $b \Rightarrow c$.

38. Irrelevant nodes in a knowledge base are those which do not clarify further the response being generated for a user, while the most relevant nodes are those which generate the appropriate response with the least computational effort (and, for natural language, with coherence and clarity retained, for user comprehension). And, to view these definitions more generally, simply consider the task of generating a response for a user as the required output of the automated reasoning system.

39. Let V be the set of variables included in a model. Variable v in V is relevant to a subset T of V (T stands for target and is the set of variables of interest) given a subset E of V of observed variables (E stands for evidence) if v is needed to reason about the impact of observing E on T.

40. Relevance in empirical learning methods (empirical classifiers) is defined as relevance of each given attribute to apparent or predictive classification.

41. The variable x_i is irrelevant to a function $f(x_1, \ldots, x_n)$ if its value does not affect the output of f. More formally, x_i is irrelevant to f if, for any two assignments $b = b_1, \ldots, b_n$ and $b' = b'_1, \ldots, b'_n$ to $x_1, \ldots, x_n$, such that b and b' differ only in their assignments to x_i, $f(b) = f(b')$.