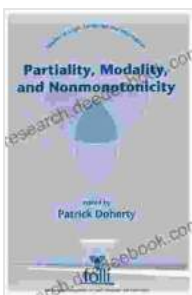


Partiality, Modality, and Nonmonotonicity Studies in Logic, Language, and Computation

Partiality, modality, and nonmonotonicity are three fundamental concepts that have been extensively studied in logic, language, and computation. Partiality refers to the fact that some statements or propositions may not have a truth value. Modality refers to the distinction between what is necessary, possible, or contingent. Nonmonotonicity refers to the fact that new information may lead to a change in beliefs or s.

The study of partiality, modality, and nonmonotonicity has a long history, dating back to the ancient Greek philosophers. In recent years, there has been a renewed interest in these topics, due in part to their applications in artificial intelligence, natural language processing, and knowledge representation.



Partiality, Modality and Nonmonotonicity (Studies in Logic, Language, and Information) by Josh Hugh Learning

★★★★☆ 4 out of 5

Language : English

File size : 10027 KB

Screen Reader: Supported

Print length : 300 pages



Partiality

Partiality is a property of statements or propositions that do not have a truth value. This can be due to a variety of factors, such as:

* The statement is incomplete or ambiguous. * The statement refers to an unknown or indeterminate object. * The statement is self-referential.

Partiality is a fundamental property of natural language. Many natural language statements are either incomplete or ambiguous. For example, the statement "John is tall" is incomplete because it does not specify how tall John is. The statement "The book is on the table" is ambiguous because it is not clear which book or which table is being referred to.

Partiality can also arise in formal languages, such as mathematics and logic. For example, the statement "x is a prime number" is incomplete because it does not specify which numbers are prime. The statement "All men are mortal" is ambiguous because it is not clear what it means to be a man.

Modality

Modality is a property of statements or propositions that express the speaker's attitude towards their truth value. The most common modal operators are:

* Necessity: The statement is necessarily true. * Possibility: The statement is possibly true. * Contingency: The statement is neither necessarily true nor necessarily false.

Modality is a fundamental property of natural language. Many natural language statements express the speaker's attitude towards their truth value. For example, the statement "It is necessary that John is tall" expresses the speaker's belief that John is tall. The statement "It is possible

that Mary is happy" expresses the speaker's belief that Mary is possibly happy.

Modality can also arise in formal languages, such as mathematics and logic. For example, the statement "It is necessary that $2 + 2 = 4$ " expresses the speaker's belief that $2 + 2 = 4$ is a necessary truth. The statement "It is possible that the moon is made of cheese" expresses the speaker's belief that the moon is possibly made of cheese.

Nonmonotonicity

Nonmonotonicity is a property of reasoning systems that allow new information to lead to a change in beliefs or s . This is in contrast to monotonic reasoning systems, which always produce the same s from the same premises.

Nonmonotonicity is a fundamental property of natural language reasoning. Many natural language arguments are nonmonotonic. For example, the following argument is nonmonotonic:

* All birds can fly. * Tweety is a bird. * Therefore, Tweety can fly.

This argument is nonmonotonic because the addition of the new premise "Tweety is a penguin" would lead to a change in the s .

Nonmonotonicity can also arise in formal reasoning systems, such as logic and artificial intelligence. For example, the following logical argument is nonmonotonic:

* All birds can fly. * Tweety is a bird. * Therefore, Tweety can fly.

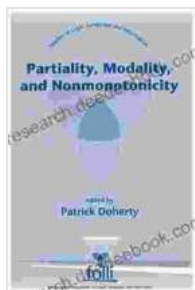
This logical argument is nonmonotonic because the addition of the new premise "Tweety is a penguin" would lead to a change in the .

Applications

The study of partiality, modality, and nonmonotonicity has a wide range of applications, including:

* **Artificial intelligence:** Partiality, modality, and nonmonotonicity are essential for developing artificial intelligence systems that can reason about incomplete, ambiguous, and uncertain information. * **Natural language processing:** Partiality, modality, and nonmonotonicity are essential for developing natural language processing systems that can understand and generate natural language text. * **Knowledge representation:** Partiality, modality, and nonmonotonicity are essential for developing knowledge representation systems that can represent and reason about complex and uncertain knowledge.

Partiality, modality, and nonmonotonicity are three fundamental concepts that have been extensively studied in logic, language, and computation. These concepts are essential for developing intelligent systems that can reason about incomplete, ambiguous, and uncertain information. The study of partiality, modality, and nonmonotonicity is a vibrant and active area of research, with many new and exciting developments on the horizon.



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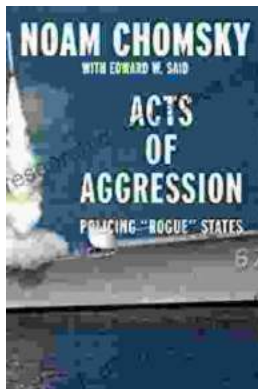
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