Basic Concepts in Modal Logic

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Outline



1 What is Modal Logic?

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1. Extension of classical first order logic, intensional logic, branch of Philosophical Logic (1918),
2. Modes of truth: $\Box p$, $\Diamond p$ and p, where p(What has been the case) is an atomic sentence referring to actual facts.
3. Logic of Necessity and Possibility
4. Modal Arguments and reasoning: reasoning about knowledge, Fee Will, existence of God, Understanding nomic necessity in Laws, analyzing counterfactual conditionals.
5. interests computer scientist (program behaviour), express dynamical properties of transitions between states, AI (how agents reason about other agents), Economists (Game theory- knowledge games).

Why Modal Logic?

1. Dissatisfaction concerning Material Implication in understanding deduction
2. Distinguising $\Box p$, p and $\Diamond p$, inferences based on these modal operators
3. Representing Future contingent sentences.
4. Analysis of conditionals.

Flavors of Modality

1. Epistemic: It is possible for all they knew that... It is known by the police that...
2. Temporal: It will sometime be that... It will always be that ...
3. Alethic: It could have been that... It is necessary that ...
4. Deontic: It is permissible that ... It is obligatory that ..

Syllabus

1. Crash Course on Propositional Logic.
2. Normal propositional Modal Logic: Syntax and Semantics
3. Conditional Logic (Application of Modal Logic)


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Thank You!

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