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No:- Date:

CSXX2850: Knowledge Representation & Reasoning

L-T-P-Cr: 3-0-0-3

PART 1: Knowledge Representation & Reasoningwith propositional and first-order logic

- Introduction to knowledge-based technologies and knowledge representation
- Propositional Logic as a simple knowledge representation of language
- Representing Knowledge in First Order Predicate Logic
- Limitations of Propositional and First Order Predicate Logic

PART 2: Fragments Of First-Order Logic

- Description Logics as Knowledge Representation Languages
- Reasoning in Description Logics
- Lightweight description logic.
- Horn Fragments of First Order Logic.
- Rule-based Knowledge Representation and Reasoning
- Ontologies and Ontology Languages.
- Other Decidable Fragments of First-Order Logic for Knowledge Representation

PART 3: Non-Monotonic Logics

- Classical vs non-monotonic logic. Ways to achieve non-monotonicity.
- Stable Model Semantics

Books:

- An Introduction to Description Logic. Franz Baader, Ian Horrocks, Carsten Lutz, Uli Sattler
- Handbook of Knowledge Representation. Frank van Harmelen, Vladimir Lifschitz and Bruce Porter (Eds). Foundations of Artificial Intelligence, 2008.
- Foundations of Semantic Web Technologies. Chapman & Hall/ CRC Textbooks in Computing. Pascal Hitzler, Markus Kroetsch, and Sebastian Rudolph, 2009.
- Logic for Computer Scientists. UweSchoning. Modern Birkäuser Classics, Reprint of the 1989 edition.