Augusto, Luis M. (in progress).

Logic in knowledge representation and reasoning:

Central topics via readings.

Logic has been a—disputed—ingredient in the emergence and development of the now very large field known as knowledge representation and reasoning (KRR). In this book (in progress), I select some central topics in this highly fruitful, albeit controversial, association (e.g., non-monotonic reasoning, implicit belief and logical omniscience, reasoning temporally), identifying their sources and analyzing/explaining their elaboration in highly influential published work. Below, the tentative structure and corresponding readings. (**Comments welcome:** luis.ml.augusto at gmail.com)

PART 1: Pre- and protohistory

Prehistory: Logical Machines

Leibniz
- Lovelace (1843)
- Peirce (1887)
- McCulloch & Pitts (1941)
- Newell & Simon (1956)

Protohistory: Commonsense reasoning

McCarthy (1959)

PART 2: Main developments

Symbols, general intelligence, & knowledge

Newell & Simon (1963)
- Newell & Simon (1976)
- Newell (1980, 1981)

Default and non-monotonic reasoning

Reiter (1980)
  McDermott & Doyle (1980)
  McCarthy (1980)

Reasoning under uncertainty

Belnap (1977)
  Zadeh (1989)
  Nilsson (1986)

Reasoning about domains

Brachman & Schmolze (1985)

Reasoning temporally

McDermott (1982)

Inductive reasoning

Muggleton & De Raedt (1984)

PART 3: Facing up to the problems

The frame problem

McCarthy & Hayes (1969)
  Minsky (1974)

Epistemological and other philosophical problems

McCarthy & Hayes (1969)
  McCarthy (1977)

The logical-omniscience problem

Hintikka (1962)
  Hocutt (1972)
  Levesque (1984)
  Fagin & Halpern (1988)

The computational costs of logic in KRR

Cook (1971)
  Levesque & Brachman (1987)

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