COMP4418

Knowledge Representation and Reasoning

Lecturers:

• Haris Aziz (Haris.Aziz@unsw.edu.au)
• Christoph Schwering (c.schwering@unsw.edu.au)
• Maurice Pagnucco (K17-104A; morri@cse.unsw.edu.au)
• David Rajaratnam (daver@cse.unsw.edu.au)

Aim: Introduce

• Techniques used in KR to represent knowledge
• Associated methods of automated reasoning

Units of Credit: 6

Prerequisites: COMP3411 plus 6 Units of Credit in COMP3###

Course in AI + some familiarity with

• LISP/PROLOG
• First-order logic
COMP4418

Knowledge Representation and Reasoning

**Marking:** 3 assignments of equal value (15%) and final exam work 55%.

No project but some programming

**Text:** References provided in class

**Format:**

- Lectures: Mondays 3-6pm
  - Colombo Theatre B
- Consultations: as required

**Course Structure:**

- 4 weeks: Introduction to KRR
- 4 weeks: Non-monotonic reasoning, reasoning about knowledge and reasoning about action
- 4 weeks: Planning and decision making
Topics for KRR Part 1: Introduction:

– Introduction
– First-order logic
– Expressing knowledge
– Full Clausal logic
– Horn Clause logic
– Procedural representation
– Nonmonotonic reasoning and defaults

Topics for KRR Part 1: Potential Additional Topics:

– Production systems
– Description logics
– Frames
– Inheritance networks
– Probabilities
– Defaults
– Abductive explanation
– Action
– Planning
– Expresiveness/tractability
– Belief Change
– Cognitive Robotics