COMP4418

Knowledge Representation and Reasoning

Lecturers:

- Haris Aziz (K17-L3; Haris.Aziz@unsw.edu.au)

- Maurice Pagnucco (Lecturer-in-Charge; J17-501B; morri@cse.unsw.edu.au)

- Abdallah Saffidine (K17-501B; abdallahs@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 plus 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 12-2pm, Mathews Theatre B

    – Thursdays 2-4pm, Colombo Theatre A
- Consultations: as required

Course Structure:

- 3 weeks: Introduction to KRR.

- 3 weeks: Non-monotonic reasoning, reasoning about knowledge and reasoning about action.

- 3 weeks: Social choice, resource allocation and cooperative/non-cooperative game theory.

COMP4418

Knowledge Representation and Reasoning

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