Logic and AI: Adequacy and New Challenges

Objectives of the project

O1 Elaborate a general framework for adequacy conditions

O2 Produce examples of accountability by providing explanations and justifications.

O3 Study adequacy conditions for epistemic logics.

Logic and AI: Adequacy and New Challenges

Objectives of the project

O1 Elaborate a general framework for adequacy conditions. With special attention to AI and nonmomotonic reasoning

O2 Produce examples of accountability by providing explanations and justifications. For specific relevant cases in AI applications

O3 Study adequacy conditions for epistemic logics. Systems with knowledge, belief, awareness, also nonmonotonic, including group attitudes.

Methodology

Build on prior and current work of the participants

Combine insights obtained from different groups and subareas, to promote multi-disciplinary and interdisciplinary advances.

Face to face meetings and brainstorming

Open field to new participants and influences through workshops and Web groups

Workpackages and Workplan WP1

T1.1 General analysis of adequacy conditions for applied and nonmonotonic logics. Elaboration of the internal/extenal distinction and main features of each. DP with AH, AB, CF, PC, CV

T1.2 Philosophical conditions for explanations in AI. How do these compare with explanations in the social and natural sciences? AB with PC, DP, CF.

Workpackages and Workplan WP2

T2.1 Causal justifications in logical systems. Causal graphs and other methods to trace and visualise outcomes of system computations. PC. with BM, CF, CV, DP

T2.2 Logical analysis of decision trees. Generate explanations for classifiers obtained from symbolic learning, mainly decision trees. Represent decision trees via logical rules. PC with CV, BM.

Workpackages and Workplan WP3

T3.1 Formal and epistemological analysis of epistemic logics. Combine and extend previous work of CF and AH on epistemic and social logics. AB, CF, AH, DP, PC

T3.2 Nonmonotonic and other extensions of epistemic logics. Epistemic and deontic (?) equilibrium logic, logics for group attitudes PC, AH, CF, DP, CV

Diffusion and exploitation of results

Web

Workshops

Publications and conference talks

International contacts (eg cognitive logics)

Implementations where appropriate