

MSc thesis defense presentation

Christos Rantsoudis defends his MSc thesis

Date:	Monday, 09 Nov 2015
Time:	13:00
Location:	Univeristy of Athens, Department of Mathematics, University of Athens, room Γ33 Model-theoretic investigations on
Thesis title:	"overwhelming majority" default conditionals
Committee:	<ul style="list-style-type: none">• Constantinos Dimitracopoulos• Costas D. Koutras• Panagiotis Rondogiannis• Efstathios Zachos

Thesis abstract

Defeasible conditionals of the form ‘if A then normally B’ are usually interpreted with the aid of a ‘normality’ ordering between possible states of affairs: $A \Rightarrow B$ is true if it happens that in the most ‘normal’ (least exceptional) A-worlds, B is also true. Another plausible interpretation of ‘normality’ introduced in nonmonotonic reasoning dictates that $A \Rightarrow B$ is true iff B is true in ‘most’ A-worlds. A formal account of ‘most’ in this majority-based approach to default reasoning has been given through the usage of weak filters and weak ultrafilters, capturing at least, a basic core of a size-oriented approach to defeasible reasoning. In this paper, we investigate defeasible conditionals constructed upon a notion of ‘overwhelming majority’, defined as ‘truth in a cofinite subset of ω ’, the first infinite ordinal. One approach employs the modal logic of the frame $(\omega, <)$, used in the temporal logic of discrete linear time. We introduce and investigate conditionals, defined modally over $(\omega, <)$; several modal definitions of the conditional connective are examined, with an emphasis on the nonmonotonic ones. An alternative interpretation of ‘majority’ as sets cofinal (in ω) rather than cofinite (subsets of ω) is examined. For all these modal approaches over $(\omega, <)$, a decision procedure readily emerges, as the modal logic KD4LZ of this frame is well-known and a translation of the conditional sentences can be mechanically checked for validity. A second approach employs the conditional version of Scott-Montague semantics, in the form of ω -many possible worlds, endowed with neighborhoods populated by its cofinite subsets. Again, different conditionals are introduced and examined. Although it is difficult to obtain a completeness theorem (since it is not easy to capture ‘cofiniteness-in- ω ’ syntactically) this research reveals the possible structure of ‘overwhelming majority’ conditionals, whose relative strength is compared to (the conditional logic ‘equivalent’ of) KLM logics and other conditional logics in the literature.

