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Rapport sur la mission effectuée à Schloss Dagstuhl (Wadern, Allemagne), du 10 au 15 février 2013.

Financement : STL

Objet : Participation au séminaire « Dependence Logic: Theory and Applications », organisé par Samson Abramsky, Juha Kontinen, Jouko Väänänen et Heribert Vollmer à Schloss Dagstuhl, Leibniz-Zentrum für Informatik (Wadern, Allemagne), du 10 au 15 février 2013.

Site du séminaire : <http://www.dagstuhl.de/en/program/calendar/semhp/?semnr=13071>

Déroulement de la mission

Le but du séminaire était de rendre possible pour les chercheurs travaillant sur la « logique de dépendance » (Dependence Logic) de se rencontrer et de discuter l'état de l'art de ce domaine nouveau en plein développement. J'avais effectivement l'occasion d'échanger des idées sur des questions sur lesquelles je travaille actuellement : la logique modale IF et les langues naturelles, les généralisations de la logique IF permettant d'exprimer la négation contradictoire, le lien entre (les généralisations de) la logique de dépendance et les logiques d'ordre supérieur.

Description du séminaire sur le site du séminaire :

Dependence Logic is a new tool for modeling dependencies and interaction in dynamical scenarios. Reflecting this, it has higher expressive power and complexity than classical logics used for these purposes previously. Algorithmically, first-order dependence logic corresponds exactly to the complexity class NP and to the so-called existential fragment of second-order logic.

Since the introduction of dependence logic in 2007, the framework has been generalized, e. g., to the contexts of modal, intuitionistic and probabilistic logic. Moreover, interesting connections have been found to complexity theory and database theory, and dependence logic has been applied in areas such as linguistics, social choice theory, and physics. Although significant progress has been made in understanding the computational side of these formalisms, still many central questions remain unsolved so far.

The notions of logical dependence and independence are pervasive, and occur in many areas of science. The development of logical and semantical structures for these notions provides an opportunity for a systematic approach, which can expose surprising connections between different areas (e. g., quantum mechanics, social choice theory, and many more), and may lead to useful general results.

One of the main aims of the proposed Dagstuhl Seminar is to bring together, for the first time, researchers working in this area so that they can communicate state-of-the-art advances and embark on a systematic interaction. In particular, bringing together researchers from areas of theoretical studies with the application areas will enhance the synergy between the different communities working on dependence logic.