Report on the workshop: "Constraints in Computational Logics", Paris, Gif sur Yvette, 8.9.1999-9.9.1999

The 1999 workshop was held for two days in the chateau and the nice surroundings of CNRS in Gif-sur-Yvette, Paris. There were around 30 people attending all the talks and an atmosphere that enabled lively discussions. This report on the scientific conference gives a short sketch of the talks; more information can be found in the abstracts of the talks.

There were two **invited talks**.

Yves Caseau gave a talk on automatic synthesis of meta-heuristics for constraint based algorithms. He argued that a good combination of local optimization (greedy algorithms), limited discrepancy search and a kind of learning algorithm is very well suited to solve constraints. This was demonstrated using examples like vehicle routing and traveling salesman problem.

Thom Fruewirth gave a talk on Analysis of constraint handling rules programs. A basic formal method is to analyse the confluence of certain transformation rules on constraints.

The **regular talks** reported on applications of constraints and research results concerning specialized constrained logics and methods. Compared to previous CCL-meetings, the percentage of talks on application-oriented research was high.

News on Producers and Consumers. *Helmut Simonis* reported on recent developments and applications using the constraint programming language CHIP, in particular process-based scheduling problems, where he concentrated on examples of producer/consumer type like scheduling the mixing of different types of fuel from some raw input.

Entailment of non-structural subtyping constraints. *Tim Priesnitz* gave a talk on some type-checking using so-called non-structural subtyping constraints, where besides type constructors a smallest ($\perp$) and a greatest element ($\top$) is permitted. He introduced P-automata and demonstrated their usefulness by showing decidability for a fragment.

Parallelism constraints. *Katrin Erk* talked on the use of context formalism and context unification to analyse semantics of natural language expressions. She proposed to use a slightly different language which appears to be better suited to the application domain.

Declarative debugging. *Rafael Caballero-Roldan* gave a talk on declarative debugging for logic programs. The aim of the debugger is to find out erroneous nodes in a (functionally specified) computation tree.

Deciding the word problem in the union of equational theories sharing constructors. *Franz Baader* gave a talk on the word problem in a combination with sharing constructors based on an algebraic definition. This could be a basis for a new generalized combination method for unification algorithms where the equational theories share constructors.

Tree Matching techniques for textual tree databases. *Klaus Schulz*'s talk showed that text retrieval in certain kinds of data like HTML-files could be improved by using a data structure that is a compressed representation of all solutions. The compression technique was shown to permit polynomial algorithms for different kinds of retrievals.

Homomorphisms and concurrent term rewriting. *Sophie Tison* reports on a study of relations between term rewriting systems and regular tree languages.

On Solving Termination constrains. *Claude Marché* talked on work automatically solving termination constraints. The work improves upon work done by Steinbach, Giesl and Aarts

Mechanizing Induction for semantic data structures. *Florent Jacquemard* Unfortunately the speaker could not give the talk. More information on this interesting topic is available in the summary of abstract.

On a problem from set constraint ... *Witold Charatonik* gave a talk on his investigations into determining the complexity of of some problems from set constraints. The tool was to show that the emptiness problem for finite automata with push and alternation is DEXPTIME-complete.

Timed automata and constrains *Hubert Comon* investigated automata extended by a clock and also by specialized constraint. The research was motivated by a delay analysis of timed automata. The main topic of the talk was a result on the expressiveness of the derivability relation.