The international Static Analysis Symposium (SAS) is the annual conference concerned with all aspects of static analysis of computer languages. SAS’97 was held in Paris in September 1997 and attracted 61 high-quality submissions, 23 of which were accepted for presentation at the symposium. In addition, Patrick Cousot, William Harrison, Neil Jones, Baudouin Le Charlier, Kim Marriott, and Barbara Ryder gave invited talks and tutorials.

This special volume contains the extended versions of six papers that appear in the SAS’97 proceedings (Springer LNCS 1302). These papers were selected according to their high technical quality and to their adequacy for publication in Theoretical Computer Science. The six papers were subject to the traditional reviewing process and were all accepted for publication, after substantial work from the reviewers and the authors. The result is, I believe, an outstanding set of papers whose contributions to static analysis are significant.

The first paper of the special volume, Set-Sharing is Redundant for Pair-Sharing by Roberto Bagnara, Patricia Hill, and Enea Zaffanella, describes a novel abstract domain for sharing analysis of logic programs. The abstract domain is as precise as traditional set-sharing domains although it is considerably simpler and more efficient.

Patrick Cousot was an invited speaker at SAS’97 and this special volume includes his paper Constructive Design of a Hierarchy of Semantics of a Transition System by Abstract Interpretation that presents a hierarchy of semantics obtained by successive approximations. The paper addresses the important issue of choosing which semantics to start from in static analysis. It shows how to link the semantics by Galois connections, providing a unifying framework for both semantics and domains.

The third paper, Satisfying Subtype Inequalities in Polynomial Space by Alexandre Frey, considers a fundamental typing problem arising in object-oriented programming: type inference in presence of subtyping. It shows that this problem can be solved in polynomial space, closing an open question in this area.

The paper, On Sparse Evaluation Representations by G. Ramalingam, considers sparse evaluation graphs, an intermediate representation for dataflow analysis. It proposes a novel algorithm for constructing sparse evaluation graphs and studies a number of problems and algorithms for minimizing the size of these graphs while retaining the original information.

Francesca Scozzari is the author of the next paper, Logical Optimality of Groundness Analysis, that is concerned with groundness analysis of logic programs. The paper provides a systematic reconstruction of the domain Pos as a logical domain in intuitionistic logic. This makes it possible to answer a number of questions regarding the
optimality of the domain and suggests novel directions to build abstract domains for logic programming.

The final paper, *A Cost-Effective Estimation of Uncaught Exceptions in Standard ML Programs* by Kwangkeun Yi and Sukyoung Ryu, presents a static analysis detecting potential runtime exceptions that are raised but never handled in ML programs. The resulting analysis, that decouples the control and exception flows, is shown to be a promising tradeoff between accuracy and efficiency.

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