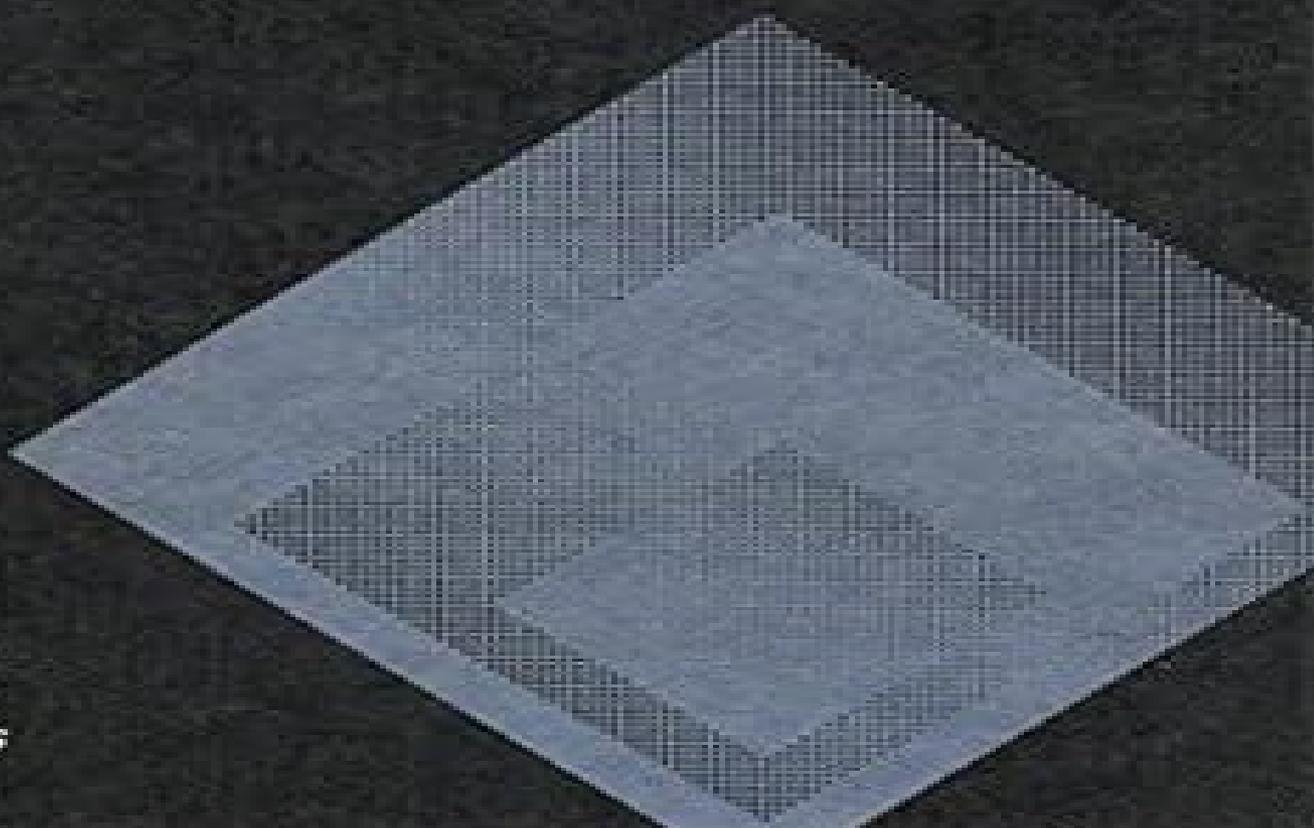


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***Algorithmic
Program Debugging***
Ehud Y. Shapiro

The MIT Press



Algorithmic Program Debugging

Roman Wölfel



Algorithmic Program Debugging:

Algorithmic Program Debugging Ehud Y. Shapiro, 2004-07-01 Shapiro productively combines elements of programming languages environments logic and inductive inference to produce effective debugging aids The author s use of the PROLOG language provides an efficient implementation of the debugging algorithms

Algorithmic Program Debugging Ehud Yehuda Shapiro, 1982 *Generalized Algorithmic Debugging* N. Shahmehri, 1991 Abstract This thesis presents a novel method for semi automatic program debugging the Generalized Algorithmic Debugging Technique GADT The notion of declarative algorithmic debugging was first introduced for logic programming However this is the first algorithmic debugging method based on the principle of declarative debugging which can handle the debugging of programs written in an imperative language including loops and side effects In order to localize a bug the debugging algorithm incrementally acquires knowledge about the debugged program The knowledge is supplied by the user The algorithm terminates when the bug has been localized to within the body of a procedure or an explicit loop The generalized algorithmic debugging method uses program transformation and program flow analysis techniques to transform the subject program to a largely side effect free internal form which is used for bug localization Thus this algorithm defines two views of a program 1 The user view which is the original program with side effects and 2 the transformed view which is the transformed side effect free version of the original program Transparent program debugging is supported by maintaining a mapping between these two views The bug localization algorithm works on the transformed version whereas user interactions are defined in terms of the user view We have presented a general technique which is not based on any ad hoc assumptions about the subject program The flexibility of this method has made it possible to further improve the bug localization algorithm by employing a number of other techniques i e program slicing and test database lookup thus increasing the degree of automation provided by GADT These extensions are topics for ongoing research projects and future work A survey and evaluation of a number of automated debugging systems and the techniques behind these systems are also presented We have introduced several criteria for comparing these techniques with GADT A prototype implementation of the generalized algorithmic debugging technique has been carried out to verify its feasibility and to provide feedback for further refinement of the method This has already resulted in a more efficient set of transformations described in the thesis compared to the initial prototype

Automated and Algorithmic Debugging Peter A. Fritzson, 1993-11-10 Debugging has always been a costly part of software development and many attempts have been made to provide automatic computer support for this task Automated debugging has seen major developments over the last decade One successful development is algorithmic debugging which originated in logic programming but was later generalized to concurrent imperative and lazy functional languages Important advances have also been made in knowledge based program debugging and in approaches to automated debugging based on static and dynamic program slicing based on dataflow and dependence analysis technology This is the first collected volume of papers on

automated debugging and presents latest developments tutorial papers and surveys Logic-Based Program Synthesis and Transformation María Alpuente,2011-04-21 This book constitutes the thoroughly refereed post proceedings of the 20th International Symposium on Logic Based Program Synthesis and Transformation LOPSTR 2010 held in Hagenberg Austria in July 2010 The 13 revised full papers presented together with two invited papers were carefully reviewed and selected from 26 submissions Among the topics covered are specification synthesis verification analysis optimization specialization security certification application and tools program model manipulation and transformation techniques for any programming language paradigm **Logic-Based Program Synthesis and Transformation** Germán Puebla,2007-05-22 This book constitutes the thoroughly refereed postproceedings of the 16th International Symposium on Logic Based Program Synthesis and Transformation LOPSTR 2006 held in Venice Italy July 2006 in conjunction with ICALP 2006 PPDP 2006 and CSFW 2006 The 14 revised full papers cover tools for program development partial evaluation and program transformation security and synthesis debugging and testing as well as termination and analysis *Programming Language Implementation and Logic Programming* Pierre Deransart,Jan Maluszynski,1990-08-08 This volume consists of the papers accepted for presentation at the second international workshop on Programming Language Implementation and Logic Programming PLILP 90 held in Linköping Sweden August 20 22 1990 The aim of the workshop was to identify concepts and techniques used both in implementation of programming languages regardless of the underlying programming paradigm and in logic programming The intention was to bring together researchers working in these fields The volume includes 26 selected papers falling into two categories Papers in the first category present certain ideas from the point of view of a particular class of programming languages or even a particular language The ideas presented seem to be applicable in other classes of languages Papers in the second category directly address the problem of integration of various programming paradigms The proceedings of the predecessor workshop PLILP 88 held in Orleans France May 16 18 1988 are available as Lecture Notes in Computer Science Vol 348 *Compiler Compilers* Dieter Hammer,1991-02-12 Advances and problems in the field of compiler compilers are considered in this volume which presents the proceedings of the third in a series of biannual workshops on compiler compilers Selected papers address the topics of requirements properties and theoretical aspects of compiler compilers as well as tools and metatools for software engineering The 23 papers cover a wide spectrum in the field of compiler compilers ranging from overviews of new compiler compilers for generating quality compilers to special problems of code generation and optimization Aspects of compilers for parallel systems and knowledge based development tools are also discussed *Principles and Practice of Constraint Programming - CP '95* Ugo Montanari,1995-09-06 This book constitutes the proceedings of the First International Conference on Principles and Practice of Constraint Programming CP 95 held in Cassis near Marseille France in September 1995 The 33 refereed full papers included were selected out of 108 submissions and constitute the main part of the book in addition there is a 60 page documentation of the four invited papers and a section

presenting industrial reports Thus besides having a very strong research component the volume will be attractive for practitioners The papers are organized in sections on efficient constraint handling constraint logic programming concurrent constraint programming computational logic applications and operations research

How Debuggers Work Jonathan B. Rosenberg, 1996 A total guide to debuggers what they do how they work and how to use them to produce better programs Debuggers are the magnifying glass the microscope the logic analyzer the profiler and the browser with which a program can be examined Jonathan B Rosenberg Debuggers are an indispensable tool in the development process In fact during the course of the average software project more hours are spent debugging software than in compiling code Yet not many programmers really know how to constructively interpret the results they get back from debuggers And even fewer know what makes these complex suites of algorithms and data structures tick Now in this extremely accessible guide Jonathan B Rosenberg demystifies debuggers for programmers and shows them how to make better use of debuggers in their next projects Taking a hands on problem solving approach to a complex subject Rosenberg explains how debuggers work and why programmers use them Most importantly he provides practical discussions of debugger algorithms and procedures for their use accompanied by many practical examples The author also discusses a wide variety of systems applications from Microsoft s Win32 debug API to a large parallel architecture Visit our Web site at <http://www.wiley.com/compbooks>

Computational Science and Its Applications - ICCSA 2003 Vipin Kumar, Marina L. Gavrilova, C.J. Kenneth Tan, Pierre L'Ecuyer, 2003-08-03 The three volume set LNCS 2667 LNCS 2668 and LNCS 2669 constitutes the refereed proceedings of the International Conference on Computational Science and Its Applications ICCSA 2003 held in Montreal Canada in May 2003 The three volumes present more than 300 papers and span the whole range of computational science from foundational issues in computer science and mathematics to advanced applications in virtually all sciences making use of computational techniques The proceedings give a unique account of recent results in computational science

Data Structures, Algorithms, and Program Style Using C James F. Korsh, Leonard J. Garrett, 1988 *Programming Languages Implementation and Logic Programming*, 1992 [Data Structures, Algorithms, and Program Style](#) James F. Korsh, 1986 **Program Style, Design, Efficiency, Debugging, and Testing** Dennie Van Tassel, 1974 [Principles and Practice of Declarative Programming](#), 2006 **Programming Language Implementation and Logic Programming** Maurice Bruynooghe, Martin Wirsing, 1992 This volume contains the papers accepted for presentation at the Fourth International Symposium on Programming Language Implementation and Logic Programming PLILP 92 held in Leuven Belgium August 26 28 1992 The aim of the symposium was to explore new declarative concepts methods and techniques relevant for implementation of all kinds of programming languages whether algorithmic or declarative The symposium gathered researchers from the fields of algorithmic programming languages as well as logic functional and object oriented programming The topics discussed in the volume include Declarative implementation techniques Implementation of declarative concepts and modules Compiler

specification and construction Program transformation Programming environments for declarative languages Amalgamation
of logic programming with algorithmic functional or object oriented techniques Executable specification PUBLISHER S
WEBSITE *Algorithmic Learning Theory*,2004 **Principles and Practice of Constraint Programming** ,1995
Algorithmic Debugging for Complex Lazy Functional Programs Maarten Faddegon,2017

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