CURRICULUM VITAE Reinhard Wilhelm

Studied Mathematics, Physics, and Mathematical Logic at Westfälische Wilhelms-Universität Münster, Informatics at Technical University München and Stanford University.
Dr. rer. nat degree from TU München, 1977.
Since 1978 Full Professor of Informatics at Saarland University in Saarbrücken.
Since 1990 Scientific Director of the Leibniz Centre for Computer Science, Schloss Dagstuhl

Visiting Scientist

University of California, Berkeley, in 1983
Hebrew University, Jerusalem, and IBM Israel Scientific Centre, Haifa, in 1986,
International Computer Science Institute, Berkeley, in 1989,
École Normale Supérieure, Paris, in 1999 and 2008,
Verimag, Grenoble, in 2008 and 2009.

Summary of Research Activities

The research activities of Reinhard Wilhelm have concentrated on the following areas:
Compiler design and generation, static program analysis, design and implementation of program analyses for the determination of worst-case execution times incorporating cache and pipeline behaviour predictions, design of powerful shape analyses which determine the data structures a program is manipulating, techniques to generate visualisations and animations.

Compiler Design and Generation.
Development of a series of increasingly powerful compiler generators, starting with the MUG systems and ending in the OPTRAN system for the generation of attributed tree transformers.
Individual contributions concerned attribute evaluation, tree pattern matching, tree parsing, and tree transformation, code selection, instruction scheduling, and grammar flow analysis.

Program analysis.
Design and implementation of program analyses for the determination of worst-case execution times incorporating cache and pipeline behaviour predictions. This research resulted in the first set of commercial tools for the determination of worst-case execution times, marketed by the spin-off company AbsInt. These tools are currently used in the certification of the time-critical systems of the Airbus A380.

Design of powerful static program analyses based on 3-valued logic.
Originally, these analyses were developed to determine the data structures a program is manipulating. Later applications concerned the verification of partial correctness of sorting programs and of a mark-and-sweep garbage collector, and of synchronization properties of multi-threaded programs.

Implementation of functional programming languages.
Implementation techniques for functional programming languages on sequential and parallel architectures. Design of abstract machines, both sequential and parallel. Development of several approaches for load balancing in the parallel execution of functional languages.

Visualisation.
Design of techniques to generate visualisations and animations. These are again based on static program analysis.

Publications
Author and coauthor of several text books on Programming Languages and Compiler Construction, and on Document Processing. These books are partly translated into English and French.

Extensive publication about the results of the research in the fields listed above in journals, monographs, conference and workshop proceedings (DBLP 137).

Major Research Projects:

1982 - 1997: SFB project, "Parallel Architectures for Functional Languages" of the Deutsche Forschungsgemeinschaft (DFG)
1985 - 1990: ESPRIT project PROSPECTRA, "PROgram development by SPECification and TRAnsformation"
1990 - 1995: ESPRIT project Compare,
1998 - 2002: Project "Generation of Animation and Visualisation" (DFG)
1999 - 2000: ESPRIT project Java for Embedded Systems (JOSES)
1999 - 2001: Transfer Project "Run-Time Guarantees for Real-Time Systems" (DFG).
2000 - 2002: EU LTR project DAEDALUS "Validation of critical software by static analysis and abstract testing"
2004 - : Transregional Research Centre (SFB) AVACS (DFG)
2004 -: European Networks of Excellence ARTIST2, ARTIST DESIGN
2008 – 2011: EU ICT project PREDATOR – Reconciling Predictability with Performance

Awards and Honors:

ACM Fellow, 2000
European IST Prize with AbsInt, 2004,
Alwin Walther Medal, Technical University Darmstadt and Fraunhofer Institute for Computer Graphics, 2006
Prix Gay-Lussac Humboldt, French Ministry of Education and Research, 2007
Konrad-Zuse Medal, Gesellschaft für Informatik, 2009
Honorary Doctorates from RWTH Aachen and Tartu Universty, 2008

International Activities

Driving force behind the formation of the European Association for Programming Languages and Systems (EAPLS) and of the European Conference on Theory and Practice of Software (ETAPS).
Cofounder of the European Symposium on Programming (ESOP).
2001-:Member-at-Large of the Steering Committee of the ACM SIGPLAN Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES),
2001-:Member of the Steering Committee of the EMSOFT Conference on Embedded Software,
2005-: Member of the ACM SIGPLAN Executive Committee,
Member of the executive board for the ACM SIGBED.

Program-committee member of roughly 40 international conferences and workshops.