



DIA



Workshop on *Computer-aided Development of Proofs, Theories, Programs, and Circuits*
Madrid, 3-7 July 1989

Objectives

The importance of computer support to formal methods for the development of programs and mathematical theories is being recognised by an evergrowing number of computer scientists, mathematicians, and philosophers. The goal of this workshop is to fulfill some of the needs created by this interest. This goal shall be achieved in two ways. First, by introducing interested people into the field with tutorials, showing-how one can develop interactively mathematical theories, correct software, and even hardware. Second, having a forum for the exchange of ideas and approaches for people working in this area with the presentation of communications about their work.

Activities

- **Introductory Lecture** by Prof. Martin Davis (Courant Institute, New York University, USA)

Prof. Davis has had a great influence on the development of computability theory and automatic theorem proving. His publications have confirmed him as a great exposor of these subjects.

- **Tutorial on HOL** by Dr. Thomas Forster (Cambridge University, United Kingdom) (10 hours, 2 hours/day)

HOL (Higher Order Logic) has been developed at Cambridge as a successor of LCF (Logic for Computable Functions). It is mainly used to prove digital circuits correct. Dr. Forster has used HOL to design a theorem prover.

- **Tutorial on MIZAR** by Prof. Andrzej Trybulec (University of Warsaw, Branch of Białystok) (10 hours, 2 hours/day)

MIZAR is a family of systems devoted to check the correctness of mathematical proofs. Prof. Trybulec is the author and main designer of MIZAR.

- **Communications (of 30 minutes) of participants on the following topics:**

- Computational Logic
- Interactive Provers
- Proof Editors
- Transformational Programming
- Computer-aided Teaching of Logic
- LCF and HOL systems
- MIZAR systems
- Inference checkers
- Logical Obviousness
- Implementation of checkers

This list is not meant to be exhaustive.

Membership in Academic Societies

The Polish Information Processing Society
(Chairman of the Section of Logic Information
Languages)
American Association of Computational Linguistics
Płock Scientific Society

Research interests

I am interested in computer oriented formalization of mathematics, computational linguistic and semantics of programming languages, particularly in proving properties of programs.

Since 1976, I lead the Mizar project, the main goal of which is implementation of languages used for symbolizing mathematic articles in the form that enables automatic checking of correctness. My part in it - designing of the language and directing the implementation of the language processor. A sublanguage of Mizar (Mizar MSE) has been used for 4 years in logical instruction, another one was used to verification of demonstration of program properties.

Publications:

I. Computer Science

1. Informationlogische Sprache Mizar, Dokumentation/Information, No 45, Ilmenau, E.Germany, 1979
2. The Mizar/QC/6000 Logic Information Language, ALLC Bulletin, No. 2, 6(1978), Birmingham - Cambridge, Great Britain
3. The Mizar Logic Information Language, Papers of Warsaw University, Białystok Branch Humanities Vol.5. Logic. Studies in Logic, Grammar and Rhetorics I, Białystok 1980. pp. 127-136
4. Mizar, Delta, No. 7, 1983 (bilingual issue in Polish and English for International Congress of Mathematicians '82, Warsaw)
5. On a system of computer-aided instruction of logic, Bulletin of the Section of Logic, PAS, 214-220, 12(1983), Warszawa-Łódź, Poland
(abstract of this paper prepared on the request of Philosophy Documentation Center, Bowling Green University, Ohio is in Philosopher Index and the system DIALOG)
6. Mizar-HPF, Studies in Logic, Papers of Warsaw University, Białystok Branch Humanities Vol.9. Logic. Studies in Logic, Grammar and Rhetorics IV, Białystok 1984. pp. 135-142 (with Czesław Byliński, Stanisław Żukowski)
7. Computer Assisted Reasoning with Mizar, in: Proc. of IJCAI'85, pp.26-28, Los Angeles, 1985 (with Howard Blair)
8. Computer Aided Reasoning, in: Logics of Programs, Brooklyn, June 1985, Proc., pp.406-412 Lectures Notes in Computer Science,193, Springer Verlag 1985 (with Howard Blair)
9. New standard of Mizar MSE syntax. Mizar News, vol.2, 1987, No 1(2), pp.1-7