The South African Institute of Computer Science and Information Technology

The 1997 National Research and Development Conference

Riverside Sun
Vanderbijlpark
13 & 14 November

Hosted by

Potchefstroomse Universiteit
vir Christelike Hoër Onderwys

The Department of Computer Science and Information Systems
Potchefstroom University for Christian Higher Education
Vaal Triangle Campus

PROCEEDINGS

Edited by L.M. Venter & R.R. Lombard
The South African Institute of Computer Science
and
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Proceedings
of the
The 1997 National
Research and
Development
Conference
Towards 2000

Riverside Sun
Vanderbijlpark
13 & 14 November

Edited by
L.M. Venter
R.R. Lombard
Foreword

This book contains a collection of papers presented at a Research and Development conference of the South African Institute of Computer Scientists and Information Technologists (SAICSIT). The conference was held on 13 & 14 November 1997 at the Riverside Sun, Vanderbijlpark. Most of the organization for the conference was done by the Department of Computer Science and Information Technology of the Vaal Triangle Campus, Potchefstroom University for Christian Higher Education.

The programming committee accepted a wide selection of papers for the conference. The papers range from detailed technical research work to reports of work in progress. The papers originate mainly from Academia, but also describe work done in and for Industry. It is hoped that the papers give a true reflection of the current research scene in Computer Science and Information Technology in South Africa. Since one of the aims of the conference is Research development, the papers were not subjected to a refereeing process.

A number of people spent numerous hours helping with the organization of this conference. In this regard, we wish to thank the members of the Organizing committee, and the Programming committee who had very little time to screen the abstracts and compile the program. A special thanks goes to the secretary of the department, Mrs Helei Jooste, whose very able work was interrupted by the birth of her first child.
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Abstract:

End-user computing is a compulsory course that all first year technikon students who are not registered for a computer-related diploma. However, most students (especially those from disadvantaged educational backgrounds) experience much difficulty in grasping theoretical computing concepts. For this reason we are currently developing CAI tools to assist students overcome learning difficulties. One of the problems experienced by students is interpreting and answering questions in tests and examinations. Consequently, we are currently developing an CAI application, namely INTELLIQUEST, to provide students with practice with respect to answering questions.

End-user computing tests are usually comprised of three types of questions:

- multiple choice
- explanation of terms
- short questions

This paper looks at the technical aspects of developing such a system. In order to implement a multiple choice tutor traditional procedural programming techniques are sufficient. However, in order to mark responses to the second two types of questions these techniques are inadequate. An examination of different artificial intelligence constructs and methods for this purpose is presented in the paper. In order to reduce the variety of responses to a particular question lecturers are required to set questions and solutions to questions using templates in a structured editor. Students are also required to use the editor to respond to questions. Finally, the paper discusses a pilot evaluation of the system to determine how accurate the system is in marking responses and advising students.