

Title of the technical session: Intelligent and Expert Systems in Education

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Short Bio:

Prof Z.J. Pudlowski is presently Professor and Director of the UNESCO International Centre for Engineering Education (UICEE) in the Faculty of Engineering at Monash University, Clayton, Melbourne, Australia. He was Associate Dean (Engineering Education) of the Faculty of Engineering between 1994 and 1998.

His research interests include circuit analysis, electrical machines and apparatus, implementation of computer technology in electrical engineering, software engineering, methodology of engineering education and industrial training, educational psychology and measurement, as well as human aspects of communication in engineering. His achievements to date have been published in books and manuals and in over 250 scientific papers, in refereed journals and conference proceedings.

Professor Pudlowski is a Fellow of the Institution of Engineers, Australia. He is a member of the editorial advisory boards of many international journals, including the International Journal of Engineering Education, the International Journal of Electrical Engineering Education and the European Journal of Engineering Education. He is the founder of the Australasian Association for Engineering Education (AAEE) and the Australasian Journal of Engineering Education (AJEE), and was the 1st Vice-President and Executive Director of the AAEE and the Editor-in-Chief of the AJEE since its inception in 1989 until 1997. Currently he is the Editor-in-Chief of the Global Journal of

Engineering Education. He is the Foundation Secretary of the International Liaison Group for Engineering Education (ILG-EE).

Professor Pudlowski was a member of the UNESCO International Committee on Engineering Education (ICEE) (1992-2000). He has chaired and organised several international conferences and meetings. He was the Academic Convener of the 2nd World Conference on Engineering Education, the General Chairman of the East-West Congresses on Engineering Education. He was General Chairman of the UNESCO 1995 International Congress of Engineering Deans and Industry Leaders, and General Chairman of the Global Congress on Engineering Education.

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ABSTRACT

Numerous research and studies show that the Web-based intelligent learning is becoming more effective. Due to the rapid growth of the use of computers in education, as well as the introduction of the World Wide Web (WWW), a large number of Web-based educational applications have been developed and implemented. However, very few of them are pedagogically intelligent and interactive for learning purposes.

The principle of AI made computers more useful, as well as intelligent, in order to utilise them in all the fields of human life. The application of AI principles is the next advanced step to a Web-based

ITS, which began in the 1970s and 1980s. Since then, the influence of AI on software technology has considerably increased. As a result, the use of AI techniques in teaching/learning, such as expert systems, simulations and robotics, etc, has become a major factor in the development of Web-based intelligent authoring systems. AI is an advanced scientific technology that is used for efficient computer-based problem-solving techniques in various disciplines.

The important contribution of AI in computer-based education is to provide knowledge-based access to resources. Wilson and Welsh (1991) divided AI into three broad areas where knowledge-based systems or expert systems can have important implications for education and training. The history of computerised educational measurement system shows that each generation of educational measurement has shown an increased use of AI and expert systems approaches in order to improve educational measurement activities. The four important generations highlighted by Olsen (1991) are:

- Computerised testing;
- Computerised adaptive testing;
- Continuous measurement;
- Intelligent measurement.

Although educationalists are fascinated by the applications of AI techniques in various courseware developments, McArthur et al (1993) claim that the application of AI in education has somewhat diversified and the approaches are more fractured.

The proposed session on intelligent and expert systems in education will create important opportunities to the educational developers and experts so as to discuss important challenges, issues and developments of AI application in teaching/learning for various levels of courses in classroom based as well as Web-based educational system.

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