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Editorial

Conferences

Two recent engineering education conferences attended by the editor were the American Society for Engineering Education annual conference, habitually held in June, and the IEEE first International Conference on Multimedia Engineering Education, held in Melbourne, Australia at the beginning of July.

This year the venue of the ASEE conference was Edmonton, Canada—and Canadians had contributed heavily to the organization and contents. The conference—attended by some 2,000 participants—is always the biggest affair on engineering education taking place anywhere. In addition to a multitude of parallel sessions, there are timely plenaries. The conference is also the time of year when all sections of the ASEE have their business meetings, and plan activities for the coming year. The conference usually has a theme, which in fact may set some of the tone for the plenaries, but otherwise technical and educational issues papers prevail. With many parallel sessions, a single attendee can only gain very selected impressions.

One impression that I came away from the conference with is the potential of distance communication for education. With the reduction in the numbers of engineering students, which is already apparent in industrialized countries, and the concurrent developments in telecommunications, the pressure to rationalize the quantity of faculty is mounting. Demand for continuing education is destined to increase, as put forward by **Antonio Fernandes** in this issue. Telematics in the form of video- and computer-conferencing, and Internet are on the scene to accelerate this process. In particular, the advent of Mosaic, and World Wide Web facilities with Internet, and the promised improvements in transfer rates augur the possibility of a vast array of educational materials becoming available for instant file transfer directly into the classroom. Such facilities already exist, at **Iowa State University**, as a source of engineering educational materials, including graphics and moving images. At the moment the bottleneck is data transfer rate, as files take too long to download. World-wide, many institutions cannot as yet transfer files at much more than 9600 baud, which is hopelessly slow for anything but text transer. The 'information superhighway', or the recoined 'information autobahn', promises a lot more. In fact, jumping to my visit to Melbourne for the IEEE conference, I have witnessed experiments leading to gigabit telecommunications transmission rates in the photonics research facility of the University of Melbourne. The Melbourne conference offered a very well selected choice of presentations on multimedia applications in engineering education. The conference, organized by **Mohammed Aldeen** and **Francesco Crusca** of the Electrical Engineering Department at Melbourne, attracted over 50% overseas contributions. Almost all contributions were of a high standard, with many interactive multimedia presentations. The university has state-of-the-art modern classroom presentation facilities whereby all media presentations can be controlled from a touchscreen panel. The advent of computer-based multimedia is creating a new area of education and research related to the work of educators.

In my summary at the conference, presented together with **Peter Hicks**, of the University of Manchester, Institute of Science and Technology, I argued that the development of multimedia in engineering education can be viewed as occurring on three levels: the direct application of authoring systems for tutorial applications; the incorporation of simulations with or without tutorials; and a new area of research on media-related educational activities. This last development is noteworthy because a new area of research related to education has been taken up mostly by information scientists at universities. This is exemplified by new system architectures for knowledge-based computer-aided learning systems (**Professor Bodendorf, University of Nürnberg-Erlangen, Germany**). In this issue we investigate this area in our paper **Frame-oriented Intelligent Tutoring Systems**. There is a lot more to come from this corner.

The Australian conference also included a video-conferencing line with Hamburg, where panels on both sides discussed the development in distance education and multimedia live between Australia and Europe. To some, all these developments may be a little frightening, but they are part of what we all need to face, disseminate, and hopefully remain sane while it is happening to us.

Michael S. Wald