Editorial

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Biographical notes: Marina Čičin-Šain is a Professor at the Faculty of Economics and Business Administration, University of Rijeka, Croatia. She obtained her degree in Mathematics from the University of Zagreb, Croatia. Before her academic career, she has spent ten years in industry, working for Ina Institute and IBM Systems as a Software Engineer. She has an extensive publication list with over a hundred scientific papers. She is Chair and Founder of MIPRO's Computer of Education conference.

Jadranka Sunde received her degree in Mathematics from the University of Zagreb, Croatia in 1984 and her PhD from the University of Adelaide, Australia in 1997. She was involved in teaching mathematics using computers during her time with University of Adelaide before joining Defence Science and Technology Organisation (DSTO) in 1997. Since 2009, she is also an Adjunct Assoc. Prof. at School of Electrical and Information Engineering, University of South Australia. Her main fields of interest are simulation and modelling and human system interfaces.

Micro and processor (MIPRO, http://www.mipro.hr) is both the name of the Croatian Society for Information and Communication Technology, Electronics and Microelectronics, and the name of the international convention organised by this society. MIPRO was established in 1978 as one of the first gatherings on the application of micro-computers in central part of Europe. Today, MIPRO is not only an academic gathering, but a meeting of researchers and practitioners from the areas of economy,

science, profession, education, state administration and local government and it is organised as 11 conferences, several tutorials, workshops and exhibition:

1   MEET – microelectronics, electronics and electronic technology

2   GVS – grid and visualisation systems

3   CTI – telecommunications and information

4   CTS – computers in technical systems

5   CIS – intelligent systems

6   CE – computers in education

7   DE – digital economy

8   ISS – information systems security

9   BIS – business intelligence systems

10 GLGPS – government, local government, public services

11 MIPRO junior.

All of the papers selected for this special issue are from the 'Computers in Education' conference founded by Marina Čičin-Šain and Pavle Dragojlović. The scope of this conference is education and methods of teaching computer science, implementation of computer technology in schools, distance learning, computer aided learning and computer aided education.

The first Computers in Education (CE) conference organised under MIPRO was held in 1997, with seven contributed papers in the Croatian language only. From 1998, English was added as an official language and since then, the number of papers contributed has grown steadily from 17 that year; 24 in 1999, 25 in 2000, to 94 in 2010. In 2001, reviewing by two independent reviewers was introduced.

Teaching computer science is not like teaching other subjects, mainly due to intensive developments in information and computing technologies. Apart from computer science, new technologies are being used in other educational subjects and often they both frighten and excite teachers. There are also requirements for specialised knowledge and different ways of doing business brought about by globalisation. Because of this, continuing education of teachers is needed.

MIPRO's CE conference provides a forum where teachers and others involved in continuing education can meet and exchange ideas and experiences. Its audience is mainly those who take care of education and the application of new technology and those who use computers when educating others. It attracts interest from teachers of computer science, from primary school to undergraduate and postgraduate level, including teachers of other subjects, such as mathematics, economy, or geography. There is also interest from industry (those using computers in their business have an interest in continuing education of their staff), early childhood educators, teachers working with people with disability, students, school principals with organisational issues, and hardware, software and web maintenance specialists.

First two papers are addressing education only as a side issue, but it is important for teachers to be aware of education issues in industry, as the authors have managed to present current, complicated real life examples in simple way.

The paper by Jaakkola et al., 'From local to global – path towards multicultural software engineering', brings together results from many years of research on problems faced in a multicultural environment. The aim of this paper is to analyse multicultural information and communication technology companies. The viewpoints discussed cover the global organisation as an adaptive and learning network and the maturity of the global organisation.

The paper by Johnson et al., 'Scenario testing methodology for the assessment of screening technologies', is designed to help security agencies to educate their screeners and operators. This paper presents methodology for assessment of the performance of security devices to detect contraband concealed on a person. These protocols are classified as scenario evaluations because they test the devices in a controlled environment that mimics crucial aspects of the airport environment (e.g., baggage and mock passengers) using trained operators. Such evaluations provide a range of data including reliability rates and timing estimates as well as detection and error rates which are very difficult to determine in either technical or full operational evaluations. The ability to detect and recognise dangerous objects at a safe distance is a very important task in a number of other defence, police and security applications and these protocols may be useful in other environments.

The next five papers deal with improvement of education, each in their own, different way.

The paper by Lamza-Maronić et al., 'Primary school education system in Croatia – improvements through a strategic management model (case study)', is interesting as Croatia is currently going through the process of joining the European Union (EU), and this process includes adjusting the schooling system to EU's. This presents an opportunity for changes in the education system, by embracing and conducting a process of strategic thinking aimed at enhancing all of the segments in the Croatian education system. The ultimate goal is to help create a more efficient and more competitive economy.

The paper by Čupić and Franović, 'Scheduling problems at a university: a real-world example', describes a program for lecture scheduling (including lecture rooms) needed for every school and faculty. This scheduling program is part of the Ferko programme, which has been under development at Electrical Engineering Faculty at University of Zagreb for number of years.

The paper by Vidaček-Hainš et al., 'Students with disabilities and other special needs in the process of higher education: inclusion issues', deals with a problem which unfortunately is not given enough importance in Croatia. This paper presents initial experiences in organising a supportive/effective academic environment for students with disabilities by means of contemporary information and communications technology. Although the described experiences have arisen from the early stage of establishing an effective learning environment for students with disabilities, they can be valuable in future implementation of such an environment.

The paper by Mohorovičić and Tijan, 'Blended learning model of teaching programming in higher education', is the work of young authors developing parallel traditional and e-learning systems. The paper describes the use of ICT in programming courses in higher education (such as learning management systems, web conferencing systems, etc.). Teaching and learning programming has been implemented and preliminary research has been conducted at the University of Rijeka in which 94 students

who attended at least one programming course expressed their experience and opinions regarding e-learning and e-learning systems.

The paper by Vukmirović et al., 'Informatics education, practical training and choosing the optimal career in business informatics', examines which skills are needed by economists who intensively using IT. Graduate economists often graduating gain positions in IT, where their knowledge of business processes is valuable, but their IT skills are not adequate. General and specific skills are defined, and also the attitudes of economy graduates to IT aspects of specific profession.

The following two papers are about creativity in education.

The paper by Požgaj and Vlahović, 'Students' readiness for informal learning using Web 2.0 services', looks at informal teaching and new technologies. The paper presents some of the results of a survey carried out at Faculty of Economy and Business into students' attitudes to social networking, wiki, blog, video sharing and other services and their potential as informal learning tools.

The paper by Duh and Krašna, 'Aesthetics and creativity in e-learning material', provides an interesting perspective and identifies common mistakes in creating e-learning materials. The article presents a discussion on the aesthetic conditions for designing of e-learning materials. The fundamental parameters for the assessment of aesthetically suitable e-learning materials are reviewed as well as options for involving students in the learning process. The paper attempts to answer questions such as 'What are the right ways to use interactive technologies?', 'How much should we automate?' and 'Where should we stop?'

The last paper addresses issues of certification, which in addition to formal study can often provide additional economic and training advantages.

The paper by Lukač, 'New dimensions in the CAE/CAD standardisation and certification process in the industrial and the educational sector', describes a link between industry and education. This paper presents a model in CAE/CAD quality standardisation and certification for the industrial and educational sector. The new model is a deductive realisation of the certification and assessment procedure, based on online testing of an open source learning management system. The success factors of the standardisation and certification model are examined further by investigating the conceptual development, the technical-didactical form of the concept and the interface management. It concludes that, on the whole, joint industry-university collaboration models have expedient side effects, such as mutual financial benefits or the development of high-quality training opportunities for both the students and the industrial participants.

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