Editorial

This issue of the IJEE is divided into two sections. The first section is a special issue on Human Computer Interaction in Engineering Education. I would like to express my gratitude to Professors Miroslav Minović , Dušan Starčević, and Emil Jovanov for the effort, time and expertise they put toward guest-editing this special issue. In this section there are 14 papers with contributing authors from Japan, USA, Poland, Taiwan, Serbia, Spain, Morocco, Turkey, Mexico, and China,

The second section has nine contributions related to a variety of engineering education topics, including: Engineering Skills, Ethics, Interdisciplinary Skills, First Year Students, Spatial Ability, Active Learning, Power Electronics, Robotics, and Remote Laboratories.

The authors discussing these issues are from Denmark, USA, Colombia, Spain, Australia, and Serbia. In the first paper, Haase et al. address the interesting question: What Does It Take to Become a Good Engineer? The authors investigate what engineering students think it takes to become a good engineer. The results of a large-scale survey-based investigation of the perceptions of first year engineering students in the USA and in Denmark are reported and analyzed. This is followed by a paper by Burt et al. who present the first phase of a national study to assess the ethical development of engineering undergraduates in the USA. The investigation aims to determine how out-of-classroom experiences influence students' ethical development. The authors also discuss the implications of their findings. Next, the development of a measure of interdisciplinary competence of engineering undergraduate is presented by Lattuca et al. They describe the development and testing of a survey-based, self-report measure to assess the interdisciplinary competence. They used a sample of 5249 undergraduates from 31 institutions in the USA.

Cooperative work issues are addressed by the next two papers. Ramirez et al. investigate the perceptions of students using a new building with laboratories, halls and spaces that were developed specially to promote collaborative learning and research. The authors analyze the results from a survey of a group of students who took courses in the newly designed building and in one with an infrastructure over forty years of age. The survey focused in particular on how the new spaces affected the ways the students work and interact with their peers. The development of teamwork efficacy factors is presented by Mujika et al. They designed and implemented an activity program to develop a number of important teamwork factors. The authors used a pre-post test to compare the level of compliance prior to completion and then subsequent experiences after completion of the activity program. The authors also evaluated the importance that the students gave to each of the designated factors

Maeda et al. report on the results of study with to characterize the item- and test-level functions of the Revised PSVT:R (the Purdue Spatial Visualization Tests: Visualization of Rotations) for the use of First Year Engineering students. They investigate its relationship to academic related variables in order to provide validity evidence. Approximately 2400 first year students from a single university were involved in the study.

Issues related to laboratories are discussed in the final three papers. Maseda et al. present a laboratory for teaching and learning power electronics and electric machine control. The laboratory includes software and hardware elements. The lab has its own web platform to expand its accessibility beyond the school campus. The authors also present the results and analysis of an assessment survey. Borrero et al. present an augmented reality-based lab system for teaching and leaning robotics. It enables educators and students to work remotely via Internet/intranet. The labs presented were carried out in three different modes as: classroom, virtual and augmented reality based labs. The authors present a preliminary pedagogical assessment of their approach. Stefanovic presents the development and implementation of automation, regulation and measurement of heating energy consumption in a university auditorium. The author explains the use of the system for training and education in varied engineering fields. The author proposes that by using a remotely controlled system, educators could demonstrate the applications of the principles of thermodynamics, fluid mechanics, and controls. It would also be helpful to students to compare data from actual systems to those based on modeling and simulations.

I wish to thank all the authors for their valuable contributions. I hope, as usual, that the readers find this issue of the IJEE interesting, useful and thought provoking.

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