From the Symposium Chairs

Welcome to the first AlBaha University – Uppsala University Collaborative Symposium on Quality in Computing Education (ABU3QCE), held in AlBaha, Saudi Arabia, 24-25 February 2015.

ABU3QCE 2015 is a local symposium dedicated to the exchange of research and practice focusing on enhancing quality in computing education. Contributions cover a broad spectrum of computing education challenges ranging from; computer science, computer engineering, computer information systems, computer information technology to software engineering education. ABU3QCE aims to publish research that combines teaching and learning experience with theoretically founded research within the field. The proceedings papers cover a wide range of topics such as cultural aspects of teaching and learning, technology enhanced teaching, and professional competencies and their role in the curriculum and in higher education.

The symposium is a collaborative initiative of AlBaha University, Saudi Arabia, and Uppsala University, Sweden.

It is our hope that this symposium will highlight current efforts, and also be the starting point for discussions, and inspire others to contribute to take the quality of computing education one step further.

Welcome to AlBaha!

Aletta Nylén, Uppsala University, Sweden

Mohamed Shenify, AlBaha University, Saudi Arabia

ABU3QCE 2015 Symposium Chairs
Symposium program

Tuesday, Feb 24

  9.00  Opening Ceremony
  10.00  Photo Session
  10.20  Exhibition: Scientific Showcase, Coffee
         Moderator: Nadeem Hassan Daupota
  11.00  Keynote 1: Stephen T. Frezza
         Professionalism and Quality: What can accreditation offer Engineering?
         Moderator: Arnold Pears
  12.30  Prayer, Lunch
  14.00  Paper session 1
         Session chair: Fokrul Alom Mazarbhuiya
  15.30  Prayer, Coffee
  16.15  Paper session 2
         Session chair: Farooq Ahmad
  17.45  End of day

  20.30  Dinner

Wednesday, Feb 25

  9.00  Keynote 2: Sultan Aljahdali
         Title to be announced
         Moderator: Mohamed Shenify
  10.30  Coffee
  11.00  Paper session 3
         Session chair: Neena Thota
  12.30  Prayer, Lunch
  14.00  Paper session 4
         Session chair: Åsa Cajander
  15.30  Prayer, Coffee
  16.15  Discussion: Our Future
         Moderators: Rahmat Budiarto and Arnold Pears
  17.15  Closing ceremony
  17.30  End of day

  20.30  Dinner
Keynotes

Tuesday, Feb 24, 11.00

**Keynote 1: Stephen T. Frezza**
*Professionalism and Quality: What can accreditation offer Engineering?*
*Moderator: Arnold Pears*

Wednesday, Feb 25, 9.00

**Keynote 2: Sultan Aljahdali**
*Title to be announced*
*Moderator: Mohamed Shenify*
Paper Sessions

Tuesday, Feb 24, 11.00
Paper session 1
Session chair: Fokrul Alom Mazarbhiya

Neena Thota and Anders Berglund. Integrating International Students into CS Programs.
Krichen, Moez. Some Hints to Improve Teaching Quality in Computer Science Courses.
Ismat Aldmour. Video Recorded Lectures as a Supplementary Resource in Teaching Electrical and Electronic Circuits: Students’ Perception and Instructor’s Insights.

Tuesday, Feb 24, 16.15
Paper session 2
Session chair: Farooq Ahmad

Anders Berglund. Learning to program: A discussion on the interplay of theory and practice.
Aletta Nylén. Developing writing competence in IT-engineering students.
Bedine Kerim. Impact of Mathematics in Computer Science Education.
Mohammed Husamuddin and Fokrul Mazarbhiya. A Study on Emerging technologies in Computing Education.

Wednesday, Feb 25, 11.00
Paper session 3
Session chair: Neena Thota

Åsa Cajander, Bengt Sandblad, Thomas Lind, Roger McDermott and Mats Daniels. Vision Seminars and Administration of University Education – A Case Study.
Virginia Grande Castro. Massive Open Online Courses (MOOCs): Lessons Learned from a Student’s Perspective.
Ismat Aldmour. Social Networks as Effective Students-Instructor Communication and Collaboration Tool: Case Study of Computer Engineering Students.
Farooq Ahmad. E-learning and Ethical Development - impact on the student learning experience.

Wednesday, Feb 25, 14.00
Paper session 4
Session chair: Åsa Cajander

Arnold Pears. Envisioning the Education of the Future.
Matteo Magnani. Data science and engineering education at the IT Department of Uppsala University.
Farooq Ahmad. Enhancing Ethics in the Computing Education Curriculum.
Professionalism and Quality: What can accreditation offer Engineering?

Stephen T. Frezza

At its core, engineering employs principles of science, mathematics and design for a practical purpose. These skills include developing and managing the economic, legal, and political constraints of the particular challenge. Engineering Education aims to prepare students to become effective practicing engineers – professionals armed with technical skill matched with personal qualities such as common sense, integrity, resourcefulness, initiative, tact, thoroughness, accuracy, efficiency, and understanding of people.

These character traits (qualities) reflect the professionalism expected of engineering graduates. This is problematic, as the educational challenge is fundamentally dualistic: balancing technical with social knowledge and skills. This challenge is further complicated by the expanding technical specializations in engineering. What the best balance is lacks universal agreement.

To this end, engineering educators are not without resources. With the professionalization efforts of the early 19th Century came the development of standards bodies for engineering education – particularly in the America, Europe and Australia. In the same sense that engineered products have quality process and product standards and assessments, so too does engineering education.

These standards associations apply a predominantly production metaphor for education with its own limits and challenges, yet at the same time provide a path for addressing the foundations of educational quality: standards and processes for a good product, and a good process for producing that product reliably. From an engineering perspective, accreditation applies engineering process of quality assurance to engineering education. Accreditation bodies provide reasonable, reliable assertion of what content makes for a good engineer, and what makes for a good engineering program.

From this quality perspective, accreditation provides the framework for achieving professionalism – both of engineering graduates and engineering educators. Accreditation lays out the minimum standards expected of engineers in a particular social/national context, as well as the professionalism of educators, that we create and manage a system to reliably and consistently support the education of the students we graduate.

This address explores various aspects of these quality relationships: the professional qualities expected of the engineering graduate, the quality of the engineering graduate, and the quality of the process by which we educate engineering students.
Session 1

This paper discusses the utility of the revised 2 factor study process questionnaire (R-SPQ-2F) to conduct a preliminary study of the study process of computer students at AlBaha University in the Kingdom of Saudi Arabia. The responses collected from 26 student volunteers are analysed to confirm the internal reliability of the instrument. Clustering of the responses by statistical construct reveals the main components of the students’ learning approach. We conclude that the R-SPQ-2F can be recommended for use as an instrument for assessing aspects of student learning outcomes and study processes as a part of efforts towards fulfilling academic accreditation requirements.

Neena Thota and Anders Berglund. Integrating International Students into CS Programs.
In recent years there has been a rapid increase in the intake of international students at universities. Integrating foreign students into the disciplinary and social culture prevalent at the university is a challenging task. In this paper, first, we summarize the findings of three of our previous studies on the experiences of Chinese students studying at the Department of Information Technology, Uppsala University, Sweden. Then, based on our findings we make recommendations on how to integrate international students into academic life at Computer Science departments. We focus on the program and course levels, and also at the level of individual students in their new social and cultural environment.

Krichen, Moez. Some Hints to Improve Teaching Quality in Computer Science Courses.
The main purpose of this paper is to provide interested readers with a collection of scientific references dealing with different aspects of improving the quality of teaching in computer science (CS). Several recommendations are extracted from these articles as well from my modest and short experience in teaching in this field.

Ismat Aldmour. Video Recorded Lectures as a Supplementary Resource in Teaching Electrical and Electronic Circuits: Students’ Perception and Instructor’s Insights.
Video recording of active classroom lectures in two courses; electric circuits II and Microelectronics I were made available to third-year computer engineering classes for use as a supplementary resource. The videos were recorded and edited by the instructor himself using special video software. Lectures were conducted using smart board and a smart board software. This technique was found to appeal to computer engineering students and was shown to be effective regardless of a student’s academic level. Students resorted to this resource in reviewing the material, in solving homework assignments, and in preparing for the exams. Based on students’ feedback using a survey questionnaire and the instructor’s notes, the videos proved to be as a valuable resource that can support the traditional in-classroom instruction. It was also found to be effective in overcoming some English related obstacles to teaching-learning process such as difficulties in notes taking, difficulties in text book review and difficulties in dealing with English terms.
Session 2

Anders Berglund. *Learning to program: A discussion on the interplay of theory and practice.*
In this paper we discuss an on-going research project on learning to program and present some insights. The project aims to reveal the complex interplay between the learning of theory and the learning of practice, both which are needed, for learning to program. We unfold certain patterns in how the interaction between the two takes place, and draw some preliminary conclusions for teaching relevant in a Western culture. As learning and teaching of computer science, as well as computer science itself, is culturally situated, we argue that similar research, focusing on how collaborating students, learning about the discipline per se, ought to be performed in the Kingdom of Saudi Arabia.

Aletta Nylén. *Developing writing competence in IT-engineering students.*
The ability to present technical material and results in writing is a necessary competence for professional engineers. In this work, we present a three-year program aiming at developing writing competence in IT-engineering students at a Swedish university and preliminary results from running the program for two years. The program is a writing across the curriculum program where writing is practiced in the discipline, i.e., in regular information technology courses spread throughout the education. It has affected the attitude towards writing in both faculty and students resulting in students having a better understanding of how to write and why it matters.

Bedine Kerim. *Impact of Mathematics in Computer Science Education.*
Mathematics has an impact on the development of computer science outcomes. In computer science, mathematics serves as a tool that allows us to reason about, model, and solve problems. To become successful professional computer scientists, students need to acquire mathematics competence during their education. In fact, the students' mathematics proficiency reflects on their outcomes in computer science education.

Mohammed Husamuddin and Fokrul Mazarbhuiya. *A Study on Emerging Technologies in Computing Education.*
Technology and education have wandered many separate but rarely intersecting paths throughout the 20th Century. In the 21st Century, the convergence of cost effective computing and networking products, methodologies, and services is finally enabling more researchers and practitioners than ever before to explore innovative ways to use computer technologies to manage and enhance the teaching and learning experience. Technology has made its way into the classroom and is changing the way education is delivered. Emerging technologies have been heralded as providing the opportunities and affordances to transform education, learning and teaching. In this paper we discuss about the different emerging technologies in computing education.
Session 3

 Åsa Cajander, Bengt Sandblad, Thomas Lind, Roger McDermott and Mats Daniels. Vision Seminars and Administration of University Education – A Case Study.
The deployment of new IT systems in an organisation is a critical phase. If the deployment fails, problems in the organization can remain for many years, even if the technical systems that are implemented are of a high quality. One main reason is that the focus has been on implementation of the technical system and not on the organisational changes and the new work processes. The purpose of the vision seminar process discussed here is to allow skilled professionals from the organization to participate in a series of seminars with the aim to specify the new work processes, necessary organisational changes and basic requirements for the new supportive IT systems. The visions, specifying the future work and its support systems, can be used as a basis for the deployment activities. It is e.g. important to base information, education and user support on how to perform the new work and not (only) on how to handle the new IT systems. In this paper we also present a case study, where the vision seminar process is applied in a project where a new system for the administration of student records for Swedish universities is developed.

Virginia Grande Castro. Massive Open Online Courses (MOOCs): Lessons Learned from a Student’s Perspective.
Massive Open Online Courses (MOOCs) are a current topic of discussion regarding their impact on education. This paper presents the lessons learned from the perspective of a student of this kind of course, having participated in different types of MOOCs. Experiences on topics such as assessment, collaboration and learning strategies are included here to contribute to the discussion.

Ismat Aldmour. Social Networks as Effective Students-Instructor Communication and Collaboration Tool: Case Study of Computer Engineering Students.
The instructor of third-year computer engineering students resorted to the use of social networks (WhatsApp group) as a supplementary method of communicating with the students outside lecture times. The group was used by the instructor to make announcements, reminders and to comment on or answer students’ questions. The group was used by the students to ask questions and to communicate with the instructor to provide feedback on difficulties and other issues. They also resorted to direct communication with the instructor to discuss their own difficulties privately. Assessment was carried out using students’ feedback through a survey questionnaire together with the instructor’s insights and notes. This method of communication was found to appeal to the students and was shown to have different positive impacts. The method proved to be a valuable communication tool that can support the traditional office meetings.

Farooq Ahmad, E-learning and Ethical Development - impact on the student learning experience.
A study is performed to investigate the state of ethical development in e-Learning environments. Efforts are made to identify the main factors required for the ethical development of student and to investigate their need in e-Learning environments. The work also surveyed the state of e-Learners on various ethical behavior. The study emphasized that the physical presence of teacher, an ethically conducive institutional environment and the involvement of the society members (family friends and society in general) are among the main factors helping in the ethical development of a student. The results of the study showed that the moral behavior of e-Learners is at decline and the factors important for the ethical development of e-Learners are missing. The work would also provide suggestions on how to improve the ethical development of e-Learners.
Session 4

Arnold Pears. Envisioning the Education of the Future.
The digital information revolution has enormous implications for education. "University education, with its historical reliance on spatial and temporal co-location of learners, and focus on transmission of information through lectures, becomes increasingly irrelevant in the emerging high-tech information society of the future. In this paper we explore avenues towards a radical paradigm shift in higher education. The basic premises are ubiquitous access to information, the integration of virtual and physical networking and the emergence of augmented spaces which draw on emerging technologies, such as google glass, to overlay virtual representations with the physical world, augmenting our perception and experience through a powerful melding of virtual and physical resources and stimuli.

Drawing on our technological and pedagogical research we propose a new epistemology of education in which the knowledge ecology of each individual can be nurtured and supported as it develops. We integrate results from e-learning, socio-constructivist learning theory and cognitive change theory to propose a new interactive learner-centric paradigm for the education of the future.

This study aims to analyze empirically the enhancements Student Response Systems (SRS) can bring into English listening classes. The researchers aim to provide support to the claim that SRS provides the solution for the time, accuracy and misapplication of formative assessment in English listening classes. The sample consisted of (46) Saudi third year secondary male students from the same English level. The experiment group (23) students, used e-Instruction’s Pulse clickers and the control group (23) did not. Both groups completed five listening clicker classes. Data included pre- and post-listening tests and evaluation of students’ perceptions about the value SRS added to listening classes via an eighteen question questionnaire. Findings indicate that there is statistically significant difference at a level lower than 0.05 between posttest mean scores in favor for the experimental group. Questionnaire results report positive responses.

Matteo Magnani. Data science and engineering education at the IT Department of Uppsala University.
This paper describes current teaching practices in the area of data science and engineering at Uppsala University, from the high level relationships between different courses to detailed lecturing methods and examination approaches. Specificities of discipline-based education in this area are also highlighted.

Farooq Ahmad. Enhancing Ethics in the Computing Education Curriculum.
Although ethical understanding and its following is essential for every member of a society it becomes more crucial for professionals in general and Computing Professional in specific. Recent literature has many reports on the misuse of ICT and the unethical or misconduct of Computer Professionals. The work tries to identify the specific reasons why Ethics Education is essential for Computing Professional. After giving a survey of models and factors of ethical development in general, the work proposes an integrated ethical development approach to be incorporated in the Computing Education Curriculum. The approach on one hand emphasizes the value based ethical development of students to enhance the personality and the values are generic in nature and would need the judgement of the individual in application. On the other hand it suggests course specific case-based contents to be taught to the student to prepare them for the agile issues specifically arising in the technical areas. The work would also propose the establishment of a National Center for Ethics in Computing at Al Baha University.