



SCIENCE IN PRACTICE

23-24 February, 2017 | Pécs, Hungary



SIP 2017

35TH INTERNATIONAL CONFERENCE

SCIENCE IN PRACTICE

23-24 February, 2017 Pécs, Hungary

Publisher Responsible: Dr. Zoltán KVASZNICZA, PHD

> Editor: Dr. István GYURCSEK

Design and Layout: Gábor SIPOS

Published by: University of PécsFaculty of Engeneering and Information Technology, Hungary 2017

ISBN-number: 978-963-429-131-2

TABLE OF CONTENTS

PREFACE	4
TIME TABLE	5
Dr. Zoltán Kvasznicza EMC issues of State-Of-The-Art elevator drives	
Peter Möhringer An unusual? way to calculate mean and mean square values of deterministic signals	13
Raab Sebastian, Arndt Bernhard Bidirectional Charging of Electric Vehicles	16
F. Oberdorf, S. Moros, J. Kempkes MATLAB based automated and parameterized 3D-FEA modeling in ANSYS Maxwell	19
Marc Zänglein, Roland Seubert, Jürgen Hartmann Development of a Calliper to Determine Thermal Conductivity	21
Póth Miklós, Fürstner Igor Digital Image Compression Using Bit Plane Slicing Method	28
Zlatko Čović, Janoš Šimon Hackathon based learning – new approach in study of Informatics	32
Filip Sušac, Ivan Aleksi, Željko Hocenski Wireless Sensor Network based on nRF24L01 module for Microprocessors	36
Bojan Kuljić, Anita Sabo and Tibor Szakáll Bridging the Gap Between the Industry and Education	39
Anita Sabo, Bojan Kuljić, Szakáll Tibor Practical application of the drone technology in civil engeneering	43
Ildikó Perjési-Hámori Maxwell Equations in the Courses of Mathematics	48
György Elmer, Ildikó Perjési-Hámori, Ildikó Horváth Calculations with Arithmetic Purpose Memristors	51
Istvan Ervin Haber, Balint Bachmann, Istvan Kistelegdi Passive ventillating optimization at buildings on city climate	54
István Gyurcsek Innovative Scanning Method in Non-Destructive Roof Moisture Diagnostics	
Géza Várady Colors and White Balance in Images	
Tamás Storcz, Zsolt Ercsey, Géza Várady A fast method for shadow detection of uncontrolled outdoor leaf images	67
Peter Müller, Adam Schiffer Predictive drone control	

PREFACE

I am sincerely greeting the readers of this publication about the 35th "Science in Practice" international conference.

This series of conferences demonstrates the durability and power of science and education spanning through boundaries and systems because the the Pollack Mihály Polytechnic as the predecessor of the Faculty of Engineering and Information Technology of the University of Pécs came into contact with the Bavarian University of Applied Sciences Fachhochschule Würzburg-Schweinfurt in 1983 and as a result the first official Contract of Co-operation was signed on 21 May 1985 in Würzburg. A relationship of this kind was very rare at that time between institutions separated by the "iron curtain", not only in Hungary but it was also unique in the Federal Republic of Germany. Students' and lecturers' mobility is an important area of this co-operation, which has remained intense up to this day (within its framework mutual visits of guest professors and study abroad visits of students take place regularly). Other areas of co-operation include research and development, curriculum development, participation in the partner institution's professional and scientific events, and preparation of joint EU projects.

This relationship made it possible for the lecturers of the Institute for Information Technology and Electrical Engineering of our Faculty to join in the international conference series "Science in Practice" the other participants of which are the following institutions apart from those mentioned above:

- · Hochschule Bremen, Germany,
- Josip-Juraj Strossmayer University of Osijek, Croatia,
- Óbuda University, Hungary,
- · Subotica Tech. Serbia.

The first university of Hungary was founded by King Louis the Great in 1367 in Pécs. As part of the jubilee programme series, the Institute for Information Technology and Electrical Engineering of the Faculty of Engineering and Information Technology of the University of Pécs had the honour to welcome the participants of the 35th "Science in Practice" conference.

This conference provides an opportunity for lecturers and researchers to present their scientific and educational results achieved in the fields of electrical engineering, information technology, computer sciences, automation, robotics, as well as interdisciplinary fields, including mathematics, physics, mechanical engineering, medicine, etc.

The Pollack Expo 2017, the international exhibition of the Faculty of Engineering and Information Technology of the University of Pécs was organised with the participation of 130 companies at the time of the conference. The exhibition provided a possibility for the visitors and conference participants to collect information about the companies and their products in the fields of construction industry, information technology, mechanical and electrical engineering.

You probably participate in several conferences every year. There are conferences presenting outstanding events or thematic seminars. However, in my view we remember those conferences with pleasure where we could have friendly conversations besides professional ones. And we remember the cities where we could not only see the conference rooms but also get acquainted with the attractions, the restaurants and the tastes.

I recommend you our publication hoping that the 35th "Science in Practice" conference in Pécs provided such pleasant experiences for the participants.

YWa 52 nicZa. Zoltán Kv<u>aszniez</u>a dr.

Pécs, March 2017.