

# PROCEEDINGS

OF 12<sup>TH</sup> INTERNATIONAL CONFERENCE ON  
COMMUNICATIONS, ELECTROMAGNETICS AND MEDICAL  
APPLICATIONS (CEMA'17)

*Organized by:*



FACULTY OF TELECOMMUNICATIONS  
TECHNICAL UNIVERSITY OF SOFIA, BULGARIA



NATIONAL TECHNICAL UNIVERSITY OF ATHENS, GREECE,  
SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING

NATIONAL TECHNICAL  
UNIVERSITY OF ATHENS,  
GREECE



SCHOOL OF ELECTRICAL  
AND COMPUTER  
ENGINEERING

Sofia, Bulgaria  
12th – 14th October, 2017

KING 2001, Sofia

Edited by Prof. Dr. Eng. **Dimiter Tz. Dimitrov**

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*P. Frangos*



*D. Dimitrov*



*K. Dimitrov*

*Dear Colleagues,*

It is our privilege to thank all of you for your contributions submitted at 12<sup>th</sup> regular International Conference on 'Communication, Electromagnetic and Medical Applications' CEMA'17. This is a conference which should help future collaboration in the area of engineering, especially in the area of communication technologies and medical applications. This is an important scientific event not only in Balkan region, but in Europe, also. The International Conference on Communication, Electromagnetism and Medical Applications CEMA'17 is dedicated to all essential aspects of the development of global information and communication technologies, and their impact in medicine, as well. The objective of Conference is to bring together lecturers, researchers and practitioners from different countries, working on the field of communication, electromagnetism, medical applications and computer simulation of electromagnetic field, in order to exchange information and bring new contribution to this important field of engineering design and application in medicine. The Conference will bring you the latest ideas and development of the tools for the above mentioned scientific areas directly from their inventors. The objective of the Conference is also to bring together the academic community, researchers and practitioners working in the field of Communication, Electromagnetic and Medical Applications, not only from all over Europe, but also from America and Asia, in order to exchange information and present new scientific and technical contributions.

Many well known scientists took part in conference preparation as members of International Scientific Committee or/and as reviewers of submitted papers. We would like to thank all of them for their efforts, for their suggestions and advices.

We are extremely grateful to the company INTRACOM Bulgaria for its regular support of our conference.

On behalf of the International Scientific Committee, we would like to wish you successful presentations of your papers, successful discussions and new collaborations for your future scientific investigations.

Engineering and medicine should provide high level of living for all people.

***D. Dimitrov***  
*Conference Chairman*

***P. Frangos***  
*Conference Vice Chairman*

***K. Dimitrov***  
*Conference Vice Chairman*



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USHEVA, A.	University of Boston, USA

## REGISTRATION

**October, 12<sup>th</sup>, 09h – 16h**  
Building of Library, fourth floor  
Technical University of Sofia, Bulgaria

# CONFERENCE PROGRAM

**12<sup>th</sup> October**

## OPENING CEREMONY

**9h 30min – 10h**

Building of Library, fourth floor  
Technical University of Sofia, Bulgaria

*Coffe Break*

**10h – 10h 30min**

## SCIENTIFIC PROGRAM

**12<sup>th</sup> October**

### FIRST SESSION

**10h 30min – 12h**

Building of Library, fourth floor  
Technical University of Sofia, Bulgaria

*Chairman: Prof. Rasa Bruzgiene, Kaunas University of Technology, Lithuania*

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- 1. AN APPROACH FOR COLORECTAL POLYP SEGMENTATTION,**  
*Veska Georgieva, Plamen Petrov, Technical University of Sofia, Bulgaria*
- 2. 3D VISUALISATION OF THE SPLEEN FROM MRI SEQUENCES,**  
*Antonia Mihaylova, Technical University of Sofia, Bulgaria*
- 3. FRACTAL ANALYSIS METHODS IN INVESTIGATION OF ULTRALIW DOS-ES EFFECTS,**  
*Nataly Ampilova, Igor Soloviev, St. Petersburg State University, St. Petersburg, Russia*
- 4. USER ACTIVITY RECOGNITION IN AUTOMATED CONTROL OF SMART ENVIRONMENT,**  
*Artem Kirienko, St. Petersburg State University, St. Petersburg, Russia*
- 5. PREPROCESSING AND CLUSTERING RAW ACCELEROMETER DATA FROM SMARTPHONES FOR HUMAN ACTIVITY RECOGNITION,**  
*Pavel Dinev, Ivo R. Draganov, Ognian L. Boumbarov, Technical University of Sofia, Bulgaria, Darko Brodić, University of Belgrade, Serbia*

*Lunch*

**12h – 13h 30min**

## SECOND SESSION

**13h 30min – 15h**

Building of Library, fourth floor  
Technical University of Sofia, Bulgaria

*Chairman: Prof. N. Ampilova, St. Petersburg State University, St. Petersburg, Russia*

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- 1. EM EXPOSURE STUDY OF A HUMAN INSIDE THE CAR,**  
*Veriko Jeladze, Tamar Nozadze, Vasil Tabatadze, Ivan Petoev, Revaz Zaridze, Tbilisi State University, Tbilisi, Georgia*
- 2. THE EFFECT OF WEATHER ON QUALITY OF EXPERIENCE IN OPTICAL WIRELESS COMMUNICATION SYSTEM,**  
*Rasa Bruzgiene, Lina Narbutaite, Kaunas University of Technology, Lithuania, Erich Leitgeb, Pirmin Pezzei, Thomas Plank, Graz University of Technology, Graz, Austria*
- 3. PHASE NOISE OF THE EFFECTIVE LOCAL OSCILLATOR WAVEFORM IN HARMONIC REJECTION MIXER,**  
*Ludwig Lubich, Technical University of Sofia, Bulgaria*
- 4. FREQUENCY DOMAIN ANALYSIS OF BIOMEDICAL SIGNALS,**  
*Viktor A. Nedialkov, Technical University of Sofia, Bulgaria*
- 5. MULTIFUNCTIONAL SYSTEM FOR PHYSIOTHERAPY,**  
*Atanas Dimitrov, Sasho Guergov, Dimiter Tz. Dimitrov, Technical University of Sofia, Bulgaria*
- 6. DEVICE FOR ACCUPRESURE WORKING IN MAGNETIC FIELD,**  
*Sasho Guergov, Dimiter Dimitrov, Atanas Dimitrov, Technical University of Sofia, Bulgaria*

*Coffe Break*

**15h – 15h 30min**

## CLOSING CONFERENCE SESSIONS

**15h 30min– 16h**

Building of Library, fourth floor  
Technical University of Sofia, Bulgaria

## SOCIAL PROGRAM

- **Conference Dinner**, 19h, October 12th
- **Trip**, October, 13th.

More information regarding Conference dinner and trip will be provided during the first day of the Conference (October 12th)

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### CONTACT US:

[http://oldweb.tu-sofia.bg/eng\\_new/fktt/cema16](http://oldweb.tu-sofia.bg/eng_new/fktt/cema16)

*Submission of contributions*

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*Cultural programme and hotel reservation*

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