# NEUROPARKINSCREEN – A HEALTH CARE SYSTEM FOR NEUROLOGICAL DISORDERS SCREENING AND REHABILITATION

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**Abstract** — Parkinson's disease is the most common degenerative movement disorder and a progressive nervous system disorder that affects body movement, memory, speaking and daily mental and physical activities. In Romania are over 75.000 Parkinson patients and the government spends over 1.5 million USD with them. Nowadays, there is no screening test for early detection of Parkinson's disease. In this paper is presented a noninvasive low cost health care system for Neurological Disorders Screening and Rehabilitation that can be used by doctors and patients, and also for research purposes. The system can assist the doctors/medical experts in monitoring, screening and rehabilitation of patients with Parkinson's disease or other Neurological Disorders, leading to an early and efficient diagnosis. From a technical point of view, the system uses the latest and most appropriate methods for medical signals acquisition and processing.

**Keywords** — neurological disorders; health care system; tremor measurement; accelerometer sensor; Wiimote.

This paper presents a health care system for Neurological Disorders Screening and Rehabilitation (NPS). The system manages data in order to support physicians in diagnosis, treatment and monitoring of patients with Parkinson's disease and also to facilitate the interaction between doctors and patients.

The NPS system uses the remote controller, known as a Wiimote, component of the Wii console. The Wiimote has an infrared (IR) image sensor that can track up to five objects simultaneously, Bluetooth connectivity, and three-axis accelerometer. Different applications that use the image sensor capabilities and the accelerometers have already been developed, but few have been applied to tremor acquisition.

The NeuroParkinScreen system supports the health care services by facilitating communication in real time between doctor and patient through a friendly user interface that is accessible at any time and from any device such as PC, tablet or laptop (see Fig. 1). The user interface provides access in real-time to data acquisition using Wiimote accelerometer sensors and has live sessions capabilities. Users are not required to have sophisticated computer skills in order to use services provided by the health care system (see Fig. 2).

The system collects acceleration data from Wiimote accelerometer sensor via a Bluetooth linked to a personal computer. In order to make an adequate tremor acquisition, it's necessary for patient to try to keep the hand with Wiimote in a horizontal position facing to PC or laptop for about 5 or 10 seconds. After the patient releases the Wiimote A button, the tremor acquisition session is finished and the patient will receive a message about data collection. Data are automatically saved into an external *.txt* file. The file is uploaded continuously, through FTP protocol, in a database stored to network server (see Fig. 2).

The main objective of this paper is to design and develop an integrated intelligent system for Parkinson's screening in its early stages of development followed by an automatic decision making strategy leading to prescription of treatment methodology and rehabilitation.
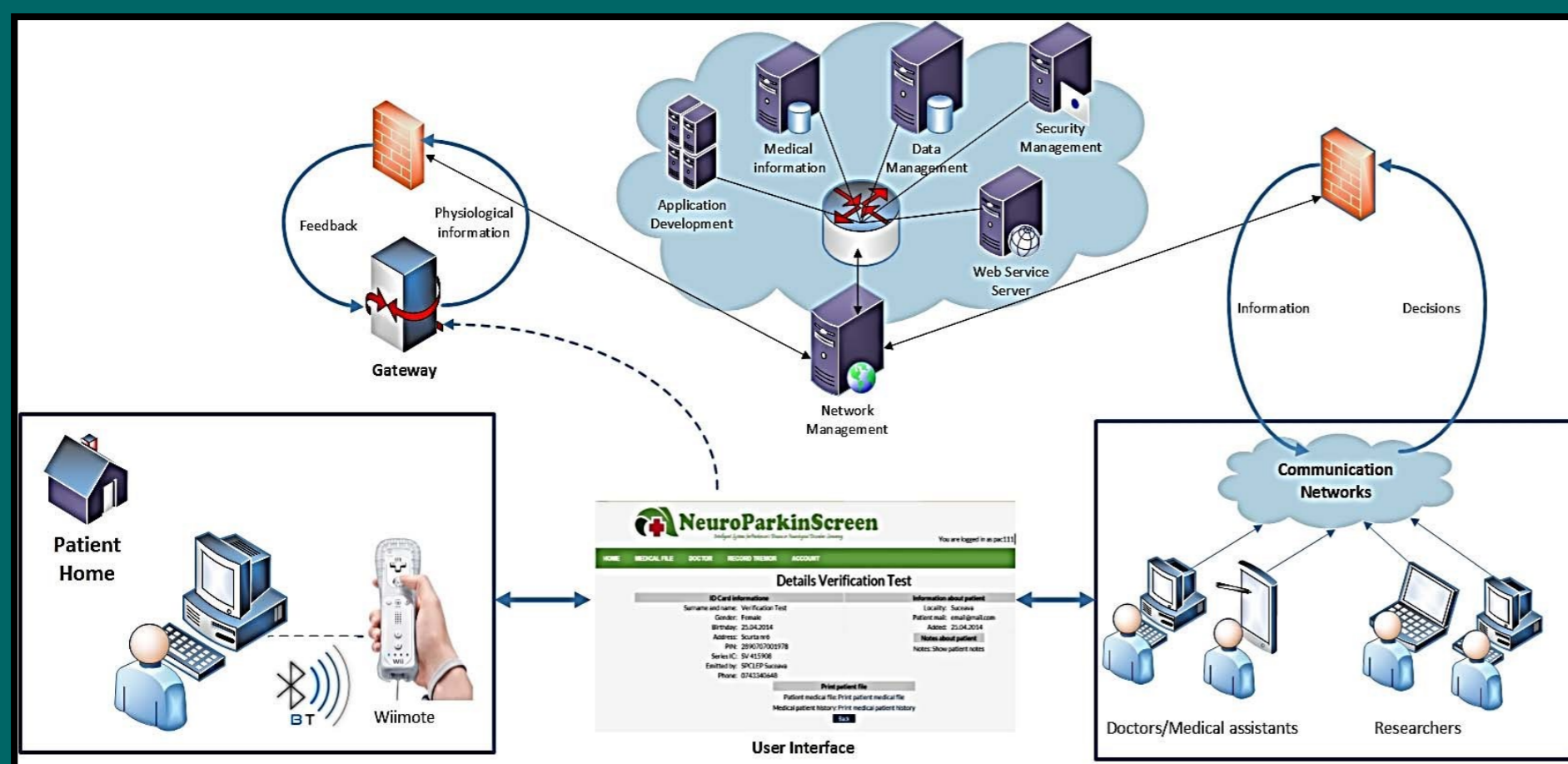


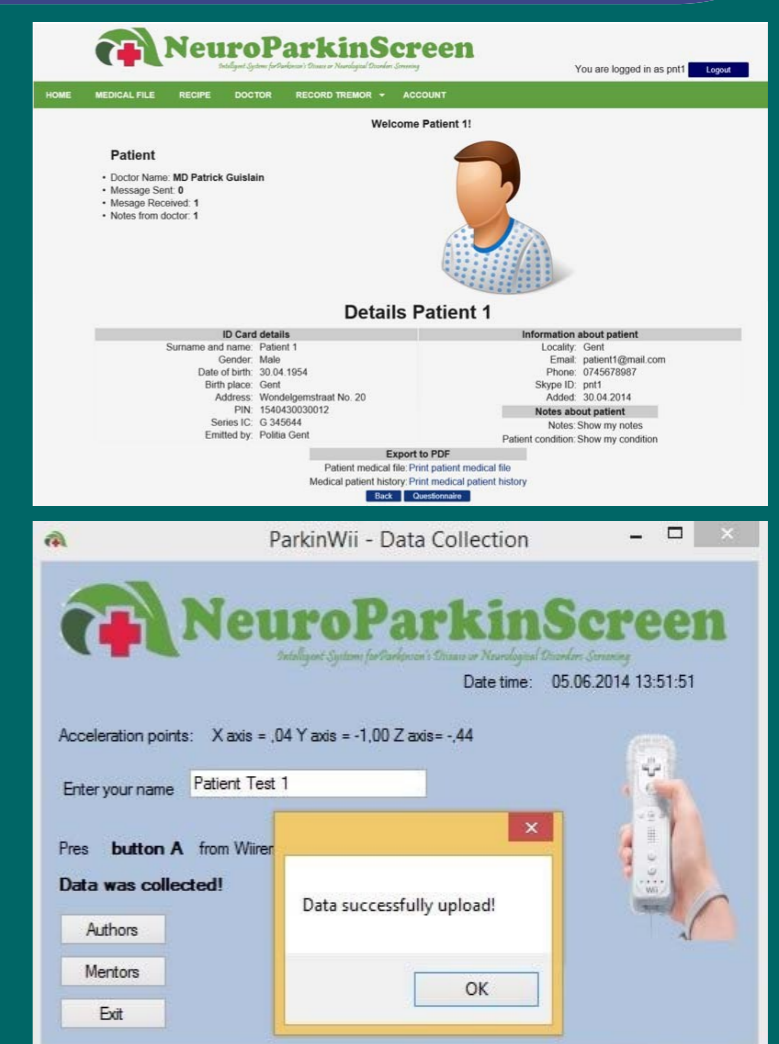Figure 1 The general architecture of the NeuroParkinScreen system



Figure 2 User Interface of the NPS system

## Conclusions and Future Work

The NeuroParkinScreen System presented in this paper has the potential to improve the health care service and provide an efficient and cost effective system. The system is a health care system, part of a more complex system for Neurological Disorders screening and rehabilitation. The described system presents the following features: gather data from sensors; support user interface; has network connectivity for access to infrastructural services; has requirements such as low power, robustness, durability, accuracy and reliability.

In future research, an expert tremor analysis system will be designed in order to compare data from Parkinson's patients with data from normal (control) subjects in order to generate an early prediction of the disease. This correlation will represent a novel diagnosis procedure, much less invasive and cheaper than imaging diagnosis of the PD.

IEEE · Romania Section · SETIS

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This is to certify that:

## Iuliana Chiuchișan

has presented a scientific contribution at

the 8th INTERNATIONAL CONFERENCE AND EXPOSITION ON

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Conference Chair,
Prof. Marcel Istrate
Dean of Electrical Engineering Faculty

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FACULTY OF ELECTRICAL ENGINEERING

# EPE 2014

## PROCEEDINGS

### of the

## 2014 INTERNATIONAL CONFERENCE AND EXPOSITION ON ELECTRICAL AND POWER ENGINEERING

# PROCEEDINGS OF THE 2014 INTERNATIONAL CONFERENCE AND EXPOSITION ON ELECTRICAL AND POWER ENGINEERING

Organized by:

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# 2014 International Conference on Electrical and Power Engineering EPE 2014

## Iași, 16-18 October 2014

## Technical Program
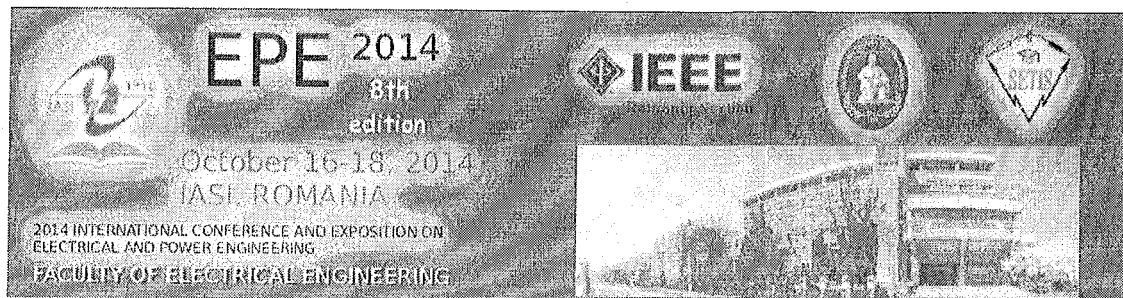
# EPE 2014 Technical Program

## 16 October 2014

| | |
|---|---|
| 08.30 - 10.00 | Greeting and reception of participants |
| 10.00 - 10.45 | Opening Ceremony |
| 10.45 - 11.00 | Presentation project COMMIT |
| 11.00 - 11.30 | Coffee Break |
| 11.30 - 13.00 | Keynote lectures |
| 13.00 - 14.30 | Lunch |
| 14.30 - 16.00 | Oral Sessions 1 and Poster Session 1 |
| 16.00 - 16.30 | Coffee Break |
| 16.30 - 18.00 | Oral Sessions 2 |
| 18.30 - 23.00 | Gala Dinner |

## 17 October 2014

| | |
|---|---|
| 09.30 - 11.00 | Oral Sessions 3 and Poster Session 2 |
| 11.00 - 11.30 | Coffee Break |
| 11.30 - 13.00 | Keynote Lectures |
| 13.00 - 14.30 | Lunch |
| 14.30 - 16.00 | Oral Sessions 4 |
| 16.00 - 16.30 | Closing Ceremony |

# Detailed Technical Program

## 16 October 2014

08.30 - 10.00

### Greeting and reception of participants

Faculty Hall, Building E

10.00 - 10.45

### Opening Ceremony

"Dragomir Hurmuzescu" Conference Hall, Building E

10.45 - 11.00

### Presentation of project COMMIT

"Dragomir Hurmuzescu" Conference Hall, Building E

| | |
|---|---|
| **Prof. Irina Lungu,(RO)** Vice Rector of "Gheorghe Asachi" Technical University of Iasi | EU COMMIT Project - Tools to develop the Social Dimension of Universities |

11.00 - 11.30

Coffee Break

11.30 -13.00

### Keynote Lectures

"Dragomir Hurmuzescu" Conference Hall, Building E

Chairman: Romeo Ciobanu (RO)

| | |
|---|---|
| **Prof. Janusz Mindykowski,(PL)** Gdynia Maritime University, Poland | Power Quality on Ships: Today and Tommorow's Challenges |
| **Prof. Goran Stojanovic, (RS)** University of Novi Sad, Serbia | Design and characterization of different sensors fabricated on flexible substrate |
| **Prof. Cristian Nichita, (FR)** Université du Havre, Le Havre, France | Simulation methods for distributed generation systems based on wind and tidal energy conversion systems |

13:00-14:30

Lunch

14:30-16:00

## Oral sessions

## Applied Informatics and Automation 1

14:30-16:00, E108 Hall, Building E
Chairmen: Mikulas Huba (SK), Gheorghe Livinţ (RO)

| 805 | Resonant jumps in feedback nonlinear systems containing gain-changing nonlinearity | (AIAU) | Mitica Temneanu, (RO), José Francisco Blanco Villalba, (ES) |
|---|---|---|---|
| 784 | Resonant jumps in feedback nonlinear systems containing saturation-type nonlinearity | (AIAU) | Mitică Temneanu, (RO), Mariana Sireteanu, (RO) |
| 654 | Design of the PID controllers by the maximum stability degree criterion | (AIAU) | Ion Fiodorov, (MD), Bartolomeu Izvoreanu, (MD), Irina Cojuhari, (MD) |
| 726 | Fuzzy Logic Controller Design and Implementation for Industrial Applications | (AIAU) | Lucian Mastacan, (RO), Catalin Constantin Dosoftei, () |
| 720 | Demonstrating effects of a dynamical feedforward control for the first order system | (AIAU) | Peter Tapak, (SK), Mikulas Huba, (SK) |
| 714 | Comparing FOPDT and IPDT model based PI controllers with disturbance observer | (AIAU) | Peter Tapak, (SK), Mikulas Huba, (SK) |

## Electromagnetic Field and Electrical Circuits

14:30-16:00, E102 Room, Building E
Chairmen: Camelia Petrescu (RO), Radu Ciupa (RO)

| 533 | Numerical modelling of an electromagnetic actuator for vacuum contactors | (EFEC) | Alexandru Radulian, (RO), Nicolae Mocioi, (RO) |
|---|---|---|---|
| 570 | Analysis of a novel type of ferrofluid actuator with permanent magnets in Halbach pattern | (EFEC) | Camelia Petrescu, (RO), Radu Olaru, (RO) |
| 621 | Ignition modelling of a double spark | (EFEC) | Bogdan E. Hnatiuc, (RO), M. Hnatiuc, (RO), C.Petrescu (RO), D. Astanei, (RO) |
| 703 | Multiobjective optimization of an induction heating device using evolutionary algorithms | (EFEC) | Camelia Petrescu, (RO), Lavinia Ferariu, (RO) |
| 649 | Case studies on electromagnetic interference between HVPL and buried pipelines | (EFEC) | Denisa Liliana Şteţ, (RO), Dan Doru Micu, (RO), Levente Czumbil, (RO) |
| 551 | Uncertainty assessment in ship magnetic field measurement with fluxgate magnetometer | (EFEC) | Georgiana Marin, (RO), Gheorghe Samoilescu, (RO), Octavian Baltag, (RO), Serghei Radu, (RO) |

| 689 | Magnetic coil design for evaluating the response of the spinal cord during magnetic stimulation | (EFEC) | Mihaela Cretu, (RO), Radu V. Ciupa, (RO) |

## Electrical Machines 1

14:30-16:00, E106 Hall, Building E
Chairmen: Aurel Câmpeanu (RO), Cociu Voinea Radu (RO)

| 561 | New winding solution for the improvement of the three-phase induction motor performance | (ELMA) | Leonard Livadaru, (RO), Alecsandru Simion, (RO), Ana-Maria Mihai, (RO), Adrian Munteanu, (RO), Florin Lazăr, (RO), Andreea Adam, (RO) |
|-----|-----|-----|-----|
| 562 | Considerations regarding modelling, simulation and monitoring of dynamic regimes for asynchronous motors | (ELMA) | Monica-Adela Enache, (RO), Aurel Campeanu, (RO), Sorin Enache, (RO), Toma Cimpeanu, (RO) |
| 793 | Transitory processes determined by the shunt-reactors in the high voltage networks. Theoretical synthesis and simulation | (ELMA) | Aurel Campeanu, (RO), Monica-Adela Enache, (RO), Ladislau Augustinov, (RO), Elisabeta Spunei, (RO), Gheorghe Oprea, (RO) |
| 754 | Efficient finned housing | (ELMA) | Aurel Ionut Chirilă, (RO), Anca Simona Deaconu, (RO), Ioan Dragoş Deaconu, (RO),Valentin Năvrăpescu, (RO), Constantin Ghiţă, (RO), Mihaela Scorţescu, (RO), |
| 687 | Coupled software analysis of a 9/10 poles BLDC machine | (ELMA) | Florin Lazăr, (RO), Alecsandru Simion, (RO), Leonard Livadaru, (RO), Andreea Zbanţ, (RO) |
| 742 | Operation of the synchronous generators with permanent magnets in parallel to the power grid | (ELMA) | Ambros Tudor, (MD), Kiorsak Mihail, (MD) |

## Metrology and Measurement Systems 1

14:30-16:00, E202 Room, Building E
Chairmen: Janusz Mindykowski (PL), Marinel Temneanu (RO)

| 536 | Algorithm for automatic wear estimation of railway contact strips based on 3D scanning results | (MMSY) | Slawomir Judek, (PL), Leszek Jarzebowicz, (PL) |
|-----|-----|-----|-----|
| 609 | Comparative analysis of power quality on bus-bars of the main switchboard and terminal of exemplary load at marine microgrid | (MMSY) | Andrzej Pilat, (PL), Tomasz Tarasiuk, (PL) |
| 610 | Realization of digital LCR meter | (MMSY) | Mitar Simić, (RS) |

| 670 | Electrochemical interdigitated conductimetric pH sensor based on $RuO_2$ thick film sensitive layer | (MMSY) | Libu Manjakkal, (PL), Katarina Cvejin, (PL), Jan Kulawik, (PL), Krzysztof Zaraska, (PL), Dorota Szwagierczak, (PL) |
|-----|------|--------|------|
| 728 | Planar impedancemetric NO sensor with thick film mixed Dy-based oxides sensing electrodes | (MMSY) | Katarina Cvejin, (PL), Libu Manjakkal, (PL), Jan Kulawik, (PL), Krzysztof Zaraska, (PL), Dorota Szwagierczak, (PL) |
| 801 | Automated electrospinning system | (MMSY) | Cristian Zet, (RO), Catalin Ionescu, (RO) |

# Power Electronics and Electrical Drives

14:30-16:00, EN001 Room, Building EN
Chairmen: Iulian Birou (RO), Mihai Albu (RO)

| 549 | Error analysis of calculating average d-q current components using Regular Sampling and Park transformation in FOC drives | (PEED) | Leszek Jarzebowicz, (PL) |
|-----|------|--------|------|
| 853 | Characterization of ferrite materials used as a core for multi-phase coupled inductors | (PEED) | Nikola Lečić, (RS), Akhil Chandran Mukkattu Kuniyil, (RS), Goran Stojanović, (RS) |
| 638 | A speed servo drive with disturbance observer and the moment of inertia identification | (PEED) | Igor Bélai, (SK), Mikuláš Huba, (SK) |
| 860 | Real-time robust controlled driving system with permanent-magnet synchronous motor | (PEED) | Iulian Mircea Tudor BIROU, (RO), Calin RUSU, (RO), Sorin PAVEL, (RO), Virgil MAIER, (RO) |
| 890 | Low-cost low-power microgrid with photovoltaic panels | (PEED) | Mihai Albu, (RO), Daniel Sticea, (RO), Cristian Fosalau, (RO), Gabriel Chiriac, (RO) |
| 894 | Rehabilitation of the tram DC traction with modern power converters | (IA) | Nuca Ilie, (MD), Nuca Iurie, (MD), Motroi Alexandr, (MD), Eşanu Vitalie (MD) |

# Power Systems 1

14:30-16:00, EN212 Room, Building EN
Chairmen: Constantin Bulac (RO), Mihai Gavrilaş (RO)

| 518 | Research on black-start of HVDC power transmission system based on pseudo-deicer mode | (POSY) | Chen Bing, (CN), Li Qun, (CN), Song Jingxian, (CN), Wang Chenggen, (CN) |
|-----|------|--------|------|
| 543 | Overload protection of power lines | (POSY) | Aneta Hazi, (RO), Gheorghe Hazi, (RO) |
| 668 | A review of impedance-based fault approaches for transmission lines | (POSY) | M. Dragomir, (RO), A. Miron, (RO), M. Istrate, (RO), A. Dragomir, (RO) |

| 775 | On-line overhead transmission line and transformer parameters identification based on PMU measurements | (POSY) | Bogdan Vicol, (RO) |
|------|------|------|------|
| 575 | Offline battery pack model optimization | (POSY) | Turos Laszlo, (RO), Iuliu Szekely, (RO), Géza Csernáth, (RO), Katalin György, (RO) |
| 696 | Management and energy efficiency Study case concerning CHP implementation | (POSY) | Liviu Eduard Pungaru, (RO), Marcel Istrate, (RO), Cătălin Diaconu, (RO) |

## Renewable Energy 1

14:30-16:00, EN114 Room, Building EN
Chairmen: Mircea Guşă (RO), Dan L. Milici (RO)

| 825 | The study of the electric parameters of an autonomous supply system with photovoltaic panel | (REEN) | Ioan Baciu, (RO), Corina Daniela Cuntan, (RO), Bella Gabor, (RO) |
|------|------|------|------|
| 542 | Environmental and economic effect of losses in a photovoltaic system | (REEN) | Aneta Hazi, (RO), Gheorghe Hazi, (RO) |
| 541 | EMpower university efficiency. On some case studies applied on the buildings belonging to Technical University of Cluj-Napoca | (REEN) | Andrei Ceclan, (RO), Krisztina Vezer, (RO), Dan D. Micu, (RO), Levente Czumbil, (RO) |
| 835 | The impact of the support scheme on the installed capacity in renewable energy sources in Romania | (REEN) | Pavel Atănăsoae, (RO), Eugen Hopulele, (RO) |
| 832 | To use a microcontroller in a small energy power plant management | (REEN) | Dan L. Milici, (RO), Mariana Rodica Milici, (RO), Win Flore, (BE) |

## Poster Session 1

14:30-16:00, Faculty Hall, Building E
Chairmen: Marinel Temneanu (RO), Alexandru Sălceanu (RO), Valeriu David (RO)

| 524 | Appliance characterization based on spectral components analysis | (MMSY) | Marinel Temneanu, (RO) |
|------|------|------|------|
| 565 | Evolution in calibration of electronic non-automatic weighing instruments | (MMSY) | George Florian Popa, (RO), Brânduşa Pantelimon, (RO) |
| 572 | Contribution to determination of magnetic properties of weights by susceptometer method | (MMSY) | George Florian Popa, (RO), Brânduşa Pantelimon, (RO) |
| 577 | Wet road surfaces detection by measuring the infrared reflected radiation | (MMSY) | Ştefan Silion, (RO), Cristian Foşalău, (RO) |

| 578 | Wet road surfaces detection by measuring the air humidity in two points | (MMSY) | Ştefan Silion, (RO), Cristian Foşalău, (RO) |
|------|------|------|------|
| 587 | Determination of the indication error for the automatic mass comparator, auxiliary of national prototype kilogram, using micromass standards | (BNMT) | Adriana Vâlcu, (RO) |
| 592 | ROBOTVOICE - Voice command of a robot | (MMSY) | Marius Branzila, (RO), Constantin Sarmasanu, (RO), Gabriel Fanaru, (RO) |
| 613 | Graphene layers used as cryogenic temperature sensor | (MMSY) | Eusebiu Ilarian Ionete, (RO), Bogdan Florian Monea, (RO), Mihai Vijulie, (RO), Amalia Soare, (RO), Stefan Marian Iordache, (RO), Ana-Maria Iordache, (RO), Ioan Stamatin, (RO), Alexandru Salceanu, (RO) |
| 625 | Expanding the functionality of an EMF spectrum analyzer with self-performed near field probes | (MMSY) | Oana-Maria Neacsu, (RO), Marius Valerian Paulet, (RO), Andrei Salceanu, (RO) |
| 664 | The impact of three-dimensional morphological changes and local properties induced by plasma treatment on polyimide films at the interface with some electronic components | (BNMT) | Iuliana Stoica, (RO), Andreea Irina Barzic, (RO), Camelia Hulubei, (RO), Daniel Țîmpu, (RO), Iuliana Stoica, (RO), Dan Sorin Vasilescu, (RO) |
| 667 | Electronic recording of radiation effective doses in medical imaging investigations | (BNMT) | Lidia Dobrescu, (RO) |
| 673 | Evaluating the influence of DECT transmission systems on sensitive medical devices | (MMSY) | Alexandru Sălceanu, (RO), Ionuţ Nica, (RO), Gabriel Lupuleasa, (RO), Marius Păuleţ, (RO) |
| 749 | Analysis of endodontic therapy results: radiodensitometric study | (MMSY) | Mihaela Sălceanu, (RO), Andrei Sebastian Ardeleanu, (RO) |
| 764 | A photopyroelectric measurement device for liquid investigation and monitoring | (MMSY) | Mircea Nicolae Pop, (RO) |
| 779 | Battery regeneration technology by dielectric method | (MMSY) | Macovei Stefan Cristian, (RO), Curelaru Alina Cornelia, (RO), Ursache Stefan, (RO) |
| 783 | Design of data acquisition system for environmental sensors manufactured in LTCC technology | (MMSY) | Sireteanu Mariana, (RO), Iavorschi Anatolie, (MD), Libu Manjakkal, (PL), José Francisco Blanco Villalba, (RO) |
| 788 | Obtaining and testing of metallic waste thermosetting powders with different grain sizes and components | (MMSY) | Ursan George-Andrei, (RO), Šooš Ľubomír, (SK), Juraj Beniak, (SK), Tugui Costel, (RO), Macovei Stefan Cristian, (RO), Grapina Razvan Ioan, (RO) |

| 789 | Testing of physical, mechanical and chemical properties of flakes and granules from thermoplastic WEEE selected by components | (MMSY) | Ursan George-Andrei, (RO), Maria Ursan, (RO), Tugui Costel, (RO), Bejenaru Cristian, (RO) |
|---|---|---|---|
| 806 | Modeling and simulation of polymer-based chemiresistor sensors | (MMSY) | José Francisco Blanco Villalba, (ES) |
| 808 | Panels and profiles for constructions based on bio-composites | (MMSY) | Plopa Olga, (RO), Ursan Maria, (RO), Tabrea Adrian, (RO) |
| 811 | Realization of polymeric coatings in special electrochemical conditions based on electroactive polymer networks for supercapacitor purposes | (MMSY) | Curelaru Alina Cornelia, (RO), Macovei Stefan Cristian, (RO), Arădoaei Sebastian, (RO), Coman Adrian Viorel, (RO) |
| 812 | Equivalent electrical circuit modeling in order to characterize polymers in terms of electrochemical for supercapacitor purposes | (MMSY) | Alina-Cornelia Curelaru, (RO), Macovei Stefan Cristian, (RO), Coman Adrian Viorel, (RO) |
| 830 | A LabVIEW based data acquisition system for temperature measurement of animal liver tissue with different procentage of magnetic insertions in microwave frequency range | (MMSY) | Romeo Ciobanu, (RO), Radu Damian, (RO), Thomas Schreiner, (RO), Radu Iliescu, (RO) |
| 857 | Considerations on the dielectric properties and thermal profile of geopolymeric composites with ferro / ferrimagnetic inserts | (MMSY) | Mihaela Aradoaei, (RO), Ioan Pepenar (RO) |
| 525 | Influence of knitting techniques on ESD performances | (EMC&EMB) | Marinel Temneanu, (RO), Andrei Sebastian Ardeleanu, (RO), Asim Egemen Yilmaz, (TR), Mihai Penciuc, (RO), |
| 627 | Study upon the disturbing potential of TETRA electromagnetic traffic | (EMC&EMB) | Silviu Ursache, (RO), Marius Păuleț, (RO), Andrei Sălceanu, (RO), Cătălina Luca (RO) |
| 630 | Approach on simulating and measuring the SAR | (EMC&EMB) | Bogdan-Dumitru Alistar, (RO), Andrei Salceanu, (RO), Gabriel Lupuleasa, (RO) |
| 636 | Monitoring the environment by enhancing the capabilities of a fleet tracking system | (EMC&EMB) | Andrei Salceanu, (RO), Valeriu David, (RO), Ionut Nica, (RO) |
| 642 | Researches concerning a bioelectromagnetic laboratory for microwave radiometry | (EMC&EMB) | Baltag Octavian, (RO), Rau Miuta Carmina, (RO) |
| 663 | 10 Hz-20 kHz single-axis magnetic field meter | (EMC&EMB) | Eduard Lunca, (RO), Emilian Staicu, (RO), Mihai Balauca, (RO) |
| 671 | An evaluation of the measurement uncertainty for the electrostatic discharge current parameters | (EMC&EMB) | Silviu Ursache, (RO), Alexandru Salceanu, (RO), Eduard Lunca, (RO) |
| 674 | Electromagnetic field strength distribution in Wi-Fi signals covered areas: an experimental analysis of the variables that influence the exposure levels | (EMC&EMB) | Paul Bechet, (RO), Simona Miclaus, (RO), Dimitrios Stratakis, (GR), Andreas Miaoudakis, (GR) |

| 678 | Comparative characterization of the electromagnetic near field radiated by mobile phones in GSM and UMTS communication technologies | (EMC&EMB) | Simona Miclaus, (RO), Paul Bechet, (RO) |
|---|---|---|---|
| 688 | Analysis of current pulse generated by electrostatic discharge simulator | (EMC&EMB) | Oana Maria Neacsu, (RO), Marius Valerian Paulet, (RO), Alexandru Salceanu, (RO) |
| 697 | Sensing the hemodynamic of the brachial-ulnar-radial arterial system | (EMC&EMB) | Cristiana Savastru, (RO), Alexandru Morega, (RO), Mihaela Morega, (RO) |
| 702 | Operating theatre electromagnetic pollution generated by radio/electrosurgery. Medical devices electromagnetic interference | (EMC&EMB) | Ştefan Drăgan, (RO), Elena-Niculina Drăgoi, (RO), Daniel Constantinescu, (RO), Ioan Tudosă, (IT), Vlad Dafinescu, (RO) |
| 710 | Near-field level emitted by professional radio communication devices: preliminary measurements and simulations for an occupational exposure assessment approach | (EMC&EMB) | Paljanos Annamaria, (RO), Simona Miclaus, (RO), Calin Munteanu, (RO) |
| 735 | Evaluation of environmental low frequency magnetic fields in occupational exposure | (EMC&EMB) | Mihaela Morega, (RO), Ileana Maria Baran, (RO), Alexandru Mihail Morega, (RO) |
| 760 | Intelligent system for a personalized diet of obese patients with cancer | (EMC&EMB) | Oana Geman, (RO), Iuliana Chiuchisan, (RO), Andrei Coriolan Iuresi, (RO), Iulian Chiuchisan, (RO), Mihai Dimian, (RO), Anca Bosancu, (RO), Daniela Buliga, (RO), Mihai Covasa, (RO) |
| 761 | Adopting the internet of things technologies in health care systems | (EMC&EMB) | Iuliana Chiuchisan, (RO), Hariton Nicolae Costin, (RO), Oana Geman, (RO) |
| 762 | NeuroParkinScreen –A health care system for neurological disorders screening and rehabilitation | (EMC&EMB) | Iuliana Chiuchisan, (RO), Oana Geman, (RO), Iulian Chiuchisan, (RO), Andrei Coriolan Iuresi, (RO), Adrian Graur, (RO) |
| 776 | EMF exposure measurements on 4G/LTE mobile communication networks | (EMC&EMB) | Eduard Lunca, (RO), Catalin Damian, (RO), Alexandru Salceanu, (RO) |
| 777 | Automatic prediction of paroxysmal atrial fibrillation in patients with heart arrhythmia | (EMC&EMB) | Dragos Arotaritei, (RO), Cristian Rotariu, (RO) |
| 797 | Virtual device for recovering the hand functions | (EMC&EMB) | Marius Valerian Paulet, (RO), Oana Maria Neacsu, (RO), Alexandru Salceanu, (RO) |
| 798 | Wireless monitoring system of the heart rate | (EMC&EMB) | Marius Valerian Paulet, (RO), Oana Maria Neacsu, (RO), Andrei Salceanu, (RO) |
| 836 | 1GHz low-thermal microwaves effect on mitotic division of vegetal tissues | (EMC&EMB) | Mihaela Răcuciu, (RO), Cora Iftode, (RO), Simona Miclăuş, (RO) |

| 849 | Investigation of the textile structures with different design used in electromagnetic shielding | (EMC&EMB) | Alina - Lăcrămioara Apreutesei, (RO), Antonela Curteza, (RO), Valeriu David, (RO), Ionuţ Nica, (RO) |
|------|------|------|------|
| 855 | Electrostatic discharge testing of several ESD protective textiles used in electronic industry | (EMC&EMB) | Gabriela G Telipan, (RO), Mircea Ignat, (RO), Laurentiu Catanescu, (RO), Beatrice Moasa, (RO) |
| 886 | Methods for planar integrated low pass filter performance improvements in high frequency | (EMC&EMB) | Adina Racasan, (RO), Calin Munteanu, (RO), Vasile Topa, (RO), Claudia Pacurar, (RO), Claudia Hebedean, (RO), Mihaela Cislariu, (RO) |
| 887 | High frequency modeling of square spiral inductor | (EMC&EMB) | Claudia Pacurar, (RO), Vasile Topa, (RO), Adina Racasan, (RO), Calin Munteanu, (RO), Claudia Hebedean, (RO), Dan Rafiroiu, (RO), Mihaela Cislariu, (RO) |
| 888 | Efficiency determination for the improvement methods used for planar structures applied on EMI filters | (EMC&EMB) | Claudia Alana Hebedean, (RO), Calin Munteanu, (RO), Adina Racasan, (RO), Claudia Pacurar, (RO) |
| 895 | The study of high frequency electromagnetic shielding performance by numerical modeling | (EMC&EMB) | Florin Miron, (RO), George Mihai, (RO), Marius Purcar, (RO), Calin Munteanu, (RO) |
| 883 | Automatic transfer switch using IEC 61850 protocol in smart grids | (POSY) | Aurel Botezan, (RO), Radu Tirnovan, (RO), Ioan Boiciuc, (RO), Silviu Stefanescu, (RO), Dan Rafiroiu, (RO) |
| 859 | Efficient distribution through the medium voltage network belonging to Cluj-Centre electrical power station | (POSY) | Sorin Gheorghe Pavel, (RO), Virgil Maier, (RO), Iulian Birou, (RO), Horia Gheorghe Beleiu, (RO), Vasile Fărcaş, (RO) |
| 707 | Considerations about power system grounding for different soil structure | (POSY) | Liviu Neamţ, (RO), Olivian Chiver, (RO), Cristian Barz, (RO), Cristinel Costea, (RO), Zoltan Erdei, (RO) |

# Workshop EMC&EMB 1

14:30-16:00, "Dragomir Hurmuzescu" Conference Hall, Building E
Chairmen: Mihaela Morega (RO), Octavian Postolache (PT)

| 698 | Percutaneous microwaves hyperthermiastudy by numerical simulation | (EMC&EMB) | Mihaela Morega, (RO), Alexandru M. Morega, (RO), Ignacio Martin Diaz, (ES), Alina M. Săndoiu, (RO) |
|------|------|------|------|
| 879 | KSGphysio – Kinect serious game for physiotherapy | (EMC&EMB) | Nuno Duarte, (PT), Octavian Adrian Postolache, (PT), Jacob Scharcanski, (BR) |

| 880 | PhysioMate - Pervasive physical rehabilitation based on NUI and gamification | (EMC&EMB) | Rui Neves Madeira, (PT), Luís Costa, (PT), Octavian Adrian Postolache, (PT) |
|-----|-----|-----|-----|
| 829 | Wearable impedance analyzer based on AD5933 | (EMC&EMB) | Liviu Breniuc, (RO), Valeriu David, (RO), Cristian-Győző Haba, (RO) |
| 727 | fECG delineation from abdominal signals using wavelet transform | (EMC&EMB) | Bogdan Hurezeanu, (RO), G.M. Ungureanu, (RO), D.D. Țarălungă, (RO), R. Strungaru, (RO), I. Gussi, (RO), Werner Wolf, (DE) |

## 16:00-16:30

## Coffee Break

## 16:30-18:00

## Applied Informatics and Automation 2

16:30-18:00, E108 Hall, Building E
Chairmen: Peter Tapak (SK), Lucian Mastacan (RO)

| 885 | Control strategies for hybrid electrical vehicles with two energy sources on board | (AIAU) | Gheorghe Livint, (RO), Alina-Georgiana Stan (Baciu), (RO) |
|-----|-----|-----|-----|
| 773 | Remote administration of hardware resources using TCP/IP Protocol and WEB technologies | (AIAU) | Catalin Damian, (RO), Eduard Lunca, (RO), Mircea Ilinca, (RO) |
| 759 | Model reference control of nonlinear time-delayed 1-st order plants | (AIAU) | Pavol Bisták, (SK), Mikuláš Huba, (SK) |
| 715 | Robust tuning of the simplest dead time compensator | (AIAU) | Mikulas Huba, (SK) |
| 731 | Robustness analysis of a disturbance-observer based PI control | (AIAU) | Mikulas Huba, (SK) |
| 733 | Optimal tuning for a double integrator plus dead time | (AIAU) | Pavol Bisták, (SK), Mikuláš Huba, (SK), Igor Bélai, (SK) |

## Electrical Machines 2

16:30-18:00,E106 Hall, Building E
Chairmen: Alecsandru Simion (RO), Leonard Livadaru (RO)

| 563 | Aspects regarding optimal design of low power synchronous motors | (ELMA) | Ion Vlad, (RO), Aurel Campeanu, (RO), Sorin Enache, (RO), Monica-Adela Enache, (RO) |
|-----|-----|-----|-----|

| 606 | Frequency domain numerical analysis of rotor cage induction motor | (ELMA) | Olivian Chiver, (RO), Liviu Ioan Neamt, (RO), Cristian Barz, (RO), Cristinel Costea, (RO) |
|---|---|---|---|
| 651 | Study about influence of power system operation and control of the piezoelectric actuators | (ELMA) | Dan L. Milici, (RO), Ilie Nitan, (RO), Mariana R. Milici, (RO), Vasilis Chatziathanasiou (GR), Konstantinos Papakostas (GR) |
| 691 | The advantages of numerical analysis for claw pole alternator | (ELMA) | Barz Cristian, (RO), Oprea Constantin, (RO), Olivian Chiver, (RO), Erdei Zoltan, (RO), Neamt Liviu, (RO), Horgos Mircea, (RO), Pop Vadean Adina, (RO) |
| 874 | Influence of rotor design over the back EMF of permanent magnet synchronous generators | (ELMA) | Zbanţ (Adam) Andreea, (RO), Simion Alecsandru, (RO), Livadaru Leonard (RO), Lazăr Florin Ioan, (RO) |
| 872 | Analysis of transient short circuit current and fluxes expressions of induction machines | (ELMA) | Voinea Radu Cociu, (RO), Livia Cociu, (RO) |

## Metrology and Measurement Systems 2

16:30-18:00, E202 Room, Building E
Chairmen: Romuald Masnicki (PL), Emil Vremera (RO)

| 531 | Data acquisition system for testing the insulation between the stator laminations of high power electrical machines | (MMSY) | Florin Călin, (RO), Constantin-Daniel Oancea, (RO) |
|---|---|---|---|
| 622 | Designing wearable textile structures with embeded conductive yarns and testing their heating properties | (BNMT) | Marian Silviu Poboroniuc, (RO), Antonela Curteza, (RO), Viorica Cretu, (RO), Laura Macovei, (RO) |
| 672 | A low frequency current transducer using amorphous materials | (MMSY) | Cristian Fosalau, (RO), Stefan Silion, (RO), Cristian Zet, (RO) |
| 699 | A low cost non-contact linear transducer for dynamic measuring small displacements of the ferrofluid magnetic actuators | (MMSY) | Alexandru Arcire, (RO), Dinu Patelli, (RO) |
| 757 | The time relationship in registration of data from electrical power system | (MMSY) | Romuald Masnicki, (PL), Janusz Mindykowski, (PL), Damian Hallmann, (PL) |
| 828 | Embedded system for increasing home comfort and security | (MMSY) | Liviu Breniuc, (RO), Cristian-Győző Haba, (RO) |

## Power Systems 2

16:30-18:00, EN212 Room, Building E
Chairmen: Dorin Bică (RO), Mircea Guşă (RO)

| 532 | Study, design and industrial implementation of capacitive power factor controller for large load fluctuations in steel industry | (POSY) | Sorin Ioan Deaconu, (RO), Gabriel Nicolae Popa, (RO), Radu Babău, (RO) |
|---|---|---|---|
| 614 | Knowledge extraction from smart meters for consumer classification | (POSY) | Gheorghe Grigoras, (RO), Florina Scarlatache, (RO) |
| 831 | Application of virtual power plants approaches | (POSY) | Lucian Ioan Dulău, (RO), Mihail Abrudean, (RO), Dorin Bică, (RO) |
| 631 | Considerations regarding implementation of wide area monitoring, protection and control in North-East of Romanian power grid | (POSY) | Alexandru Miron, (RO), Marian Dragomir, (RO), Crenguta Elena Bobric, (RO), Cezar Popa, (RO) |
| 662 | Aeration solution of water used by hydraulic turbines to respect the environmental policies | (POSY) | Florentina Bunea, (RO), Gabriel Dan Ciocan, (CA), Diana Maria Bucur, (RO), Georgiana Dunca, (RO) |
| 823 | Domain specific languages in power systems engineering | (POSY) | Marius Stefan Muji, (RO), Dorin Bică, (RO), Micea Dulău, (RO) |

## Quality, Reliability and Safety

16:30-18:00, EN109, Building EN
Chairmen: Michael Gerke (DE), Florin Munteanu (RO)

| 571 | Visual inspection of power lines by U.A.S. | (QRSA) | Michael Gerke, (DE), Peter Seibold, (DE) |
|---|---|---|---|
| 598 | The diagnosis of non-operation states of switch electromechanism | (QRSA) | Elisabeta Spunei, (RO), Ion Piroi, (RO), Cristian Muscai, (RO), Florina Piroi, (AT) |
| 877 | The determination Nitrogen Oxide Emissions by Monitoring the Steam Temperature of the Boiler | (QRSA) | Staviri Florin Vlad, (RO) |
| 865 | Street lighting power quality | (QRSA) | Radu Pentiuc, (RO), Dorin-Dumitru Lucache, (RO), Valentin Vlad, (RO), Sorin Pavel, (RO) |
| 821 | Information on manufactured nanomaterials occupational exposure in the construction sector | (QRSA) | Pintea Anca, (RO), Razvan Grapina, (RO) |

# Renewable Energy 2

16:30-18:00, EN114 Room, Building EN
Chairmen: Aneta Hazi (RO), Ciprian Nemeş (RO)

| 566 | Schemes of the use of heat pumps as the component of the node of energy consumption of meat - processing plant | (REEN) | M. Sit, (MD), V. Berzan, (MD), B. Sit, (MD) |
|-----|---|---|---|
| 552 | Biogas potential assessment for Moldova | (REEN) | Olga Şveţ, (MD) |
| 730 | Study on three-phase photovoltaic systems under grid faults | (REEN) | Ioan Viorel Banu, (RO), Marcel Istrate, (RO) |
| 897 | On reducing the environmental impact by harnessing and burning combustible gases from urban sewage water | (REEN) | Constantin Asaftei, (RO), Nicoleta Mariana Iftimie, (RO) |
| 620 | A new solar energy converting system with vertical photovoltaic panels | (REEN) | Adochitei Mihaela, (RO), Harabagiu Catalin, (RO), Astanei Dragos, (RO), Burlica Radu, (RO) |

# Workshop EMC&EMB 2

16:30-18:00, "Dragomir Hurmuzescu" Conference Hall, Building E
Chairmen: Calin Munteanu (RO), Cristian Zet (RO)

| 682 | CAD/CAE modelling of the human exposure to electric field inside a high voltage substation | (EMC&EMB) | Calin Munteanu, (RO), Marius Purcar, (RO), Dan Bursasiu, (RO), Emil Merdan, (RO), Vasile Farcas, (RO) |
|-----|---|---|---|
| 666 | AC interference assessment and impact on personnel safety | (EMC&EMB) | Marius Purcar, (RO), Calin Munteanu, (RO), Leslie Bortels (BE), Christophe Baeté, (RO) |
| 618 | Assessment of electromagnetic radiation exposure of embarked personnel on Romanian naval ships | (EMC&EMB) | Georgiana Marin, (RO), Gheorghe Samoilescu, (RO), Octavian Baltag, (RO), Serghei Radu, (RO) |
| 547 | Nonlinear model identification of waste water decomposition processes in a hybrid plasma torch | (EMC&EMB) | Adrian Danila, (RO) |
| 568 | Control analysis through co-simulation approach of a high-speed electrical machine | (EMC&EMB) | Petru Cristinel Irimia, (RO), Mihail Grovu, (RO), Calin Husar, (RO), Daniel Fodorean, (RO) |

18:30-22:00

## Gala Dinner

Golden Stone Restaurant

9:30-11:00

## Oral sessions

## Electrical Apparatus

9:30-11:00, EN109 Hall, Building EN
Chairmen: Adrian Baraboi (RO), Maricel Adam (RO)

| 766 | Asset management system - software application on power substation level | (ELAP) | Mihai Andrușcă, (RO), Maricel Adam, (RO), Alin Dragomir, (RO), Costică Roman, (RO), Liviu Andrușcă, (RO) |
|---|---|---|---|
| 769 | Modeling and simulation characteristics PHV sources | (ELAP) | Irimia Florin Daniel, (RO), Adrian Baraboi, (RO), Maricel Adam, (RO), Vasile Bahrin, (RO) |
| 782 | About thermal stresses monitoring and diagnosis of electrical equipment | (ELAP) | Alin Dragomir, (RO), Maricel Adam, (RO), Mihai Andrușcă, (RO), Mihai Molodeschi, (RO), Răzvan Pantelimon, (RO) |
| 765 | Using fuzzy logic for diagnosis of technical condition of power circuit breakers | (ELAP) | Mihai Andrușcă, (RO), Maricel Adam, (RO), Adrian Baraboi, (RO), Alin Dragomir, (RO), Adrian Munteanu, (RO) |
| 619 | Fault current protection control by di/dt | (ELAP) | Radu Burlica, (RO), Eugen Hnatiuc, (RO), Dragos Astanei, (RO) |
| 780 | Power flow control equipment | (ELAP) | Adrian Cotruș, (RO), Maricel Adam, (RO), Mihai Andrușcă, (RO), Mihai Molodeschi, (RO), Răzvan Pantelimon, (RO) |
| 545 | Two-phase cryogenic flow meter | (ELAP) | Eusebiu Ilarian Ionete, (RO), Bogdan Monea, (RO), Ionut Spiridon, (RO), Marian Vacaru, (RO), Alexandru Salceanu, (RO) |

## Metrology and Measurement Systems 3

9:30-11:00, E202 Room, Building E
Chairmen: Brandusa Pantelimon (RO), Constantin Sarmasanu (RO)

| 535 | Some considerations about time delay estimation of seismic signals | (MMSY) | Cristian Ghita, (RO), Razvan Doru Raicu, (RO), Cristian Teofil Oroian, (RO) |
|---|---|---|---|
| 579 | Analysis of the deforming regime generated by different light sources, using reconfigurable system - CompactRIO | (MMSY) | Gabriela Rata, (RO), Mihai Rata, (RO), Cristina Prodan, (RO) |

| 582 | RASPIMON- Smart sensory system for environmental monitoring | (MMSY) | Marius Branzila, (RO), Constantin Sarmasanu, (RO), Spataru Liviu, (RO) |
|---|---|---|---|
| 681 | Monitoring the electromagnetic traffic in an intensive care unit | (MMSY) | Alexandru Salceanu, (RO), Eduard Luncă, (RO), Cătălina Luca, (RO), Silviu Ursache (RO) |
| 802 | Detection of positions and recognition of brand logos visible on images captured using mobile devices | (MMSY) | Marcin Skoczylas, (PL) |
| 881 | Transducer electronic data sheets:why not print them? | (MMSY) | Vitor Viegas, (PT), Pedro Silva Girão, (PT), Octavian Adrian Postolache, (PT), Jose Miguel Dias Pereira, (PT) |

## Poster Session 2

9:30-11:00, Faculty Hall, Building E
Chairmen: Livia Cociu (RO), Viorel Varvara (RO), Maricel Adam (RO)

| 739 | Discrete-time feedback linearization method for dynamical adaptive control of electronic throttle | (AIAU) | Mihaela Doina Zamfir, (RO) |
|---|---|---|---|
| 554 | Neural network used in thunderstorm prediction | (AIAU) | Bostan (Damian) Viviana Mihaela, (RO), Brândusa Pantelimon, (RO) |
| 803 | Control Architecture for power distribution systems based on IEC 61850, IEC 61499 and holonic concepts | (AIAU) | Valentin Vlad, (RO), Cezar Dumitru Popa, (RO), Radu-Dumitru Pentiuc, (RO), Corneliu Buzduga, (RO) |
| 751 | Integrated system for prosodic features detection from speech | (AIAU) | Marius-Dan Zbancioc, (RO), Silvia Monica Feraru, (RO) |
| 750 | Using the Lyapunov exponent from Cepstral coefficients for automatic emotion recognition | (AIAU) | Marius-Dan Zbancioc, (RO), Silvia Monica Feraru, (RO) |
| 585 | Intelligent hierarchical structures for house management | (AIAU) | Dinu Cerasela, (RO) |
| 526 | About robust control on nonlinear chaotic oscillators | (AIAU) | Mihaela Cleju, (RO) |
| 738 | A study of changes in image contrast with various algorithms | (AIAU) | Catalin Ionescu, (RO), Cristian Fosalau, (RO), Daniel Petrisor, (RO) |
| 653 | Integrated service management and energy efficiency system through cloud computing technology | (AIAU) | Laura Davlea, (RO), Bogdan Teodorescu, (RO) |
| 569 | Objective erythema assessment of psoriasis lesions for psoriasis area and severity index (PASI) evaluation | (AIAU) | Simona Maria Banu, (RO), Gheorghe Toacşe, (RO), Gabriel Danciu, (RO) |

| 521 | Design and development of air temperature and relative humidity monitoring system with AVR processor based web server | (AIAU) | Mitar Simić, (RS) |
|------|------|------|------|
| 758 | SALEIE: An EU project aiming to propose new EIE curricula oriented to key global technical challenges | (EEPE) | Marian Poboroniuc, (RO), Anna Friesel (DK), Gheorghe Livinţ (RO), Laura Grindei, (RO), Juan José Marcuello Pablo, (ES), Anthony Ward, (UK) |
| 605 | Client-server measurement system using LabVIEW for educational use | (EEPE) | Adela Vintea, (RO), Paul Schiopu, (RO), Octavian Ghita, (RO), Sorin Grigorescu, (RO) |
| 683 | Computer tools in electrical engineering education | (EEPE) | Sorin Enache, (RO), Aurel Campeanu, (RO), Ion Vlad, (RO), Monica-Adela Enache, (RO) |
| 591 | Implementation of software changes in programming techniques learning | (EEPE) | Catalin Damian, (RO), Mircea Ilinca, (RO) |
| 576 | A solution for the study and understanding of PID controllers | (EEPE) | Mihai Rata, (RO), Gabriela Rata, (RO), Vasilis Chatziathanasiou (GR) |
| 590 | Modeling and faults detection of small power wound rotor induction machine | (ELMA) | David Tsivalalaina Razafimahefa, (MG), Eric Jean Roy Sambatra, (MG), Emile Randrianarisoa, (MG), Nicolas Heraud, (FR) |
| 596 | Synchronous reluctance motors for small electric traction vehicle | (ELMA) | Florin Nicolae Jurca, (RO), Ruba Mircea, (RO), Claudia Martis, (RO), Radu Martis, (RO), Pop Piglesan Florin, (RO) |
| 597 | Analysis of maximum torque per ampere control strategy for variable reluctance synchronous machines for traction applications | (ELMA) | M. Ruba, (RO), F. Jurca, (RO), C. Martis, (RO), R. Martis, (RO), P.F. Piglesan, (RO) |
| 607 | On the calculation of the Carter factor in the slotted electric machines | (ELMA) | Alina Cristina Viorel, (RO), Ioan Adrian Viorel, (RO), Larisa Strete, (RO) |
| 626 | Contributions concerning the clock hour figure mathematical model graphical defining through the trivalent variable of Lagrange matrix | (ELMA) | Mihaela Poienar, (RO), Ovidiu - Magdin Ţanţa, (RO), Adrian Neculai Romanescu, (RO), Dorel Cernomazu, (RO) |
| 655 | Special three-phase to multiple different polyphase systems electric transformer | (ELMA) | Adrian Munteanu, (RO), Alecsandru Simion, (RO), Dorin Alexandru Hagianu, (RO), Leonard Livadaru, (RO), Dan Bidei, (RO) |
| 723 | Weighted value analysis on the perception of various functions of electrical products | (ELMA) | Cristina Mihaela Gheorghe, (RO) |
| 763 | Thermal study of an electric vehicle servo PMSM housing | (ELMA) | Anca Simona Deaconu, (RO), Aurel Ionut Chirila, (RO), Ioan Dragos Deaconu, (RO), Valentin Năvrăpescu, (RO), Constantin Ghiţă,(RO), Mihaela Chefneux, |

| | | | (RO) |
|---|---|---|---|
| 871 | Transient short circuit currents and fluxes expressions of induction machines | (ELMA) | Voinea Radu Cociu, (RO), Livia Cociu (RO) |
| 873 | On the transient short circuit torque expression of Induction machines | (ELMA) | Livia Cociu, (RO), Voinea Radu Cociu, (RO) |
| 889 | F.E.M. analysis of a 3 kW line-start permanent magnet synchronous machine | (ELMA) | Florin Lazar, (RO), Alecsandru Simion, (RO), Leonard Livadaru, (RO), Irimia Daniel, (RO) |
| 564 | Electrical command methods for driving linear magnetic actuators | (EFEC) | Alexandru Arcire, (RO), Dinu Patelli, (RO) |
| 709 | 1.2V CMOS cascaded low noise amplifier for IR-UWB receivers | (EFEC) | Bilal Hussain, (PT), Iman Kianpour, (PT), Vitor Garade Tavares, (PT), Helio Sousa Mendonca, (PT) |
| 734 | A low power clocked integrate-and-fire modulator for UWB application | (EFEC) | Iman Kianpour, (PT), Bilal Hussain, (PT), Vitor Grade Tavares, (PT), Helio Souca Mendonca, (PT) |
| 752 | A temperature stable 130 nm CMOS current source | (EFEC) | Aleksandar Pajkanovic, (RS), Mirjana Videnovic-Misic, (RS) |
| 628 | Hybrid backup power source behaviour in a microgrid | (IA) | Elena Dănilă, (RO), Daniel Sticea, (RO), Gheorghe Livint, (RO), Dorin Dumitru Lucache, (RO) |
| 629 | Dynamic modelling of supercapacitor using artificial neural network technique | (IA) | Elena Dănilă, (RO), Gheorghe Livint, (RO), Dorin Dumitru Lucache, (RO) |
| 641 | New energy harvesting systems, designed for new piezoelectric transducers, with charging energy management | (IA) | Lucian Pîslaru-Dănescu, (RO), Ioana Pisică (RO), Laurenţiu Constantin Lipan (RO), Ion Daniel Ilina, (RO), Alina Dumitru, (RO) |
| 756 | One possibility for the synthesis of autonom Petri nets | (IA) | Mihai Leca (RO) |
| 815 | Topicalities and perspectives regarding retention of dust in flue gas following the burning of charcoal In heavy-duty power boilers in power plants | (IA) | Ciochiu Ion Teodor, (RO), Gheorghe Marius Leonard Ciurezu, (RO), Osiac Viorel, (RO), Anemona Madalina Mousavi, (RO), Huza Bebe, (RO) |
| 816 | New technical solutions on the modernisation of electrical cyclones related to 1045 t/h boilers with lignite operation, to be classified in the international rules on environmental protection | (IA) | Ciochiu Ion Teodor, (RO), Gheorghe Marius Leonard Ciurezu, (RO), Osiac Viorel, (RO), Anemona Madalina Mousavi, (RO), Huza Bebe, (RO) |
| 822 | Robust control of electro-discharge processing machine | (IA) | Mircea Dulău, (RO), Dorin Bica, (RO) |
| 861 | Developing embedded control system platform for testing PMSM drives | (IA) | Calin Rusu, (RO), Iulian Birou, (RO), Mircea M. Radulescu, (RO), Alexandru Bara, (RO) |

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|---|---|---|---|
| 869 | Irradiance scenario of a non-Lambertian intensity LED assembly | (IA) | Dragomir Radu, (RO), Dragomir Radu Bogdan, (RO), Pantelimon Brandusa, (RO) |
| 884 | Starting of large compressor motors on a weak grid – case study | (IA) | Adrian Aparaschivei, (RO), Gabriel Chiriac, (RO), Dorin D. Lucache, (RO) |
| 700 | The PMSM efficiency at variable speed for pumping applications | (PEED) | Ioan Mugur Ducar, (RO), Corneliu Marinescu, (RO) |
| 870 | Numerical simulation of BLDC electrical drive systems. Closed-loop control and sensorless control | (PEED) | Gheorghe Băluță, (RO), Marius Olariu, (RO) |
| 875 | The bidirectional power exchange using a DC/DC converter with coupled inductances | (PEED) | Sticea Daniel, (RO), Mihai Albu, (RO), Gheorghe Livint, (RO) |
| 529 | AC-DC operation influence on voltage stability and control strategies | (POSY) | Shi Rui, (CN), Zhang Baoqun, (CN), Chi Zhongjun, (CN), Chen Yanxia, (CN), Jiao Ran, (CN), Ma Longfei, (CN), Gong Cheng, (CN), Wu Xiaodan, (CN) |
| 633 | Aspects regarding the monitoring possibilities and steady-state analysis of electric energy repartition networks | (POSY) | Bogdan Constantin Neagu, (RO), Gheorghe Georgescu, (RO) |
| 704 | Optimization of a combined cool, heat and power plant based on genetic algorithms and specialized software | (POSY) | Eugen Hopulele, (RO), Mihai Gavrilaş, (RO) |
| 648 | Establishing the optimal solution for retrofit of district heating networks. Case study | (QRSA) | Lefter Razvan Corneliu, (RO), Popescu Daniela, (RO), Ioan Paul Gabriel, (RO) |
| 772 | Software module for switch electromechanics failure detection | (QRSA) | Elisabeta Spunei, (RO), Ion Piroi, (RO), Cristian Muscai, (RO), Florina Piroi, (AT) |
| 820 | Manufacturing process of $TiO_2$ nanopowders. Potential releases and occupational exposure. | (QRSA) | Pintea Anca, (RO), Razvan Grapina, (RO) |
| 876 | Comparative study of methods of burning coal in a boiler of 2 MW | (QRSA) | Staviri Florin Vlad, (RO) |

## Workshop EMC&EMB 3

9:30-11:00, "Dragomir Hurmuzescu" Aula, Building E
Chairmen: Hariton Costin (RO), Cristian Fosalau (RO)

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|---|---|---|---|
| 796 | Approaching a career in bioengineering or biomedical engineering. 20 years of bioengineering education in Iaşi, Romania | (EMC&EMB) | Hariton Costin, (RO), Liliana Verestiuc, (RO), Dan Zaharia, (RO), Radu Ciorap, (RO), Cristian Rotariu, (RO) |

| 790 | Assessment of rehabilitation degree in case of stroke by using image analysis of range of motion | (EMC&EMB) | Hariton Costin, (RO), Silviu-Ioan Bejinariu, (RO), Bogdan Dimitriu, (RO), Bogdan Anton-Prisăcariu, (RO) |
|------|---------------------------------|-----------|----------------------------------------|
| 778 | Automatic analysis of the fetal heart rate variability and uterine contractions | (EMC&EMB) | Cristian Rotariu, (RO), Alexandru Pasarica, (RO), Gladiola Andruseac, (RO), Hariton Costin, (RO), Dragos Nemescu, (RO) |
| 693 | Correlations between muscular contraction type and muscle electrical activity | (EMC&EMB) | Danut Constantin Irimia, (RO), Marian S. Poboroniuc, (RO), Iuliana Pasol, (RO), Rupert Ortner, (AT) |
| 685 | RR interval prediction in ECG signals | (EMC&EMB) | Zoltan German-Sallo, (RO), Calin Ciufudean, (RO) |

# 1st Workshop on Lighting: From Energy Efficiency to Light Pollution

9:30-11:00, E107 Lecture Hall, Building E
Chairmen: Dorin Beu (RO), Daniel Galatanu (RO), Dorin Lucache (RO)

| 845 | Street lighting control system based on large-scale WSN: A step towards a smart city | (WOL) | Alexandru Lavric, (RO), Valentin Popa, (RO), Stefan Sfichi, (RO) |
|------|---------------------------------|-----------|----------------------------------------|
| 862 | High energy saving for Africa street lighting using individual automatic dimming of HID ballasts | (WOL) | Lovasoa F.F.Rakotomalala (MG), R. Zely (MG), Fadel C.M. Kebe (SN), Elena Danila, (RO), Dorin D.Lucache, (RO) |
| 893 | Light pollution assessment using photographical methods | (WOL) | Cătălin Daniel Gălăţanu (RO) |
| 799 | The influence of LED street lighting upon power quality in electrical networks | (QRSA) | Radu-Dumitru Pentiuc, (RO), Andrei Dascalu, (RO), Cezar-Dumitru Popa, (RO), Pavel Atănăsoae, (RO) |

# Workshop on Modern Technologies for Electricity Networks

9:30-11:00, EN212 Room, Building EN

| Development concept for distribution automation system in medium voltage networks of E.ON Moldova Distributie | (MTEN) | Catalin Strugaru, (RO), Stelian Constantin Buliga, (RO), Emil-Marius Iuzic, (RO), Valeriu Cocioarba, (RO), Gheorghe Ursan, (RO) |
|---------------------------------|-----------|----------------------------------------|
| Load profiling techniques based on hybrid metaheuristic methods | (MTEN) | Avishek Banerjee (IN), Mihai Gavrilas, (RO), Ovidiu Ivanov, (RO) |
| Influence of renewable sources integration on technical energy losses in the high voltage distribution network | (MTEN) | Mihai Gavrilas, (RO), Gheorghe Grigoras, (RO), Stelian Constantin Buliga, (RO), Catalin Strugaru, (RO) |

| Solutions for the efficient use of transformers in electric distribution networks. | (MTEN) | Gheorghe Grigoras, (RO), Mihai Gavrilas, (RO), Stelian Constantin Buliga, (RO), Catalin Strugaru, (RO) |
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## 11.30 -13.00

## Keynote Lectures

"Dragomir Hurmuzescu" Conference Hall, Building E

Chairman: Prof. Cristian-Győző Haba (RO)

| **Prof. Miro Zeman, (NL)** Delft University of Technology, The Netherlands | Solar Energy in Future Electricity Systems |
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| **Prof. Fabrizio Scarpa, (UK)** University of Bristol, United Kingdom | Auxetic and Kirigami systems in multiphysics and EMC applications |
| **Prof. Octavian Postolache, (PT)** Instituto de Telecomunicações, Lisbon, Portugal | Unobstrusive Smart Sensing and Pervasive Computing for Healthcare |

## 13:00-14:30

Lunch

## 14:30-16:00

## Oral Sessions

## Power Systems 3

14:30-16:00, EN212 Room, Building EN
Chairmen: Gheorghe Grigoraş (RO), Ovidiu Ivanov (RO)

| 623 | Implementation of the attractive radius method for the estimation of the lightning protection zones for a 110 kV power substation | (POSY) | Machidon Dragos-Lucian, (RO), Marcel Istrate, (RO) |
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| 616 | State estimation with neural networks and PMU voltage measurements | (POSY) | Ovidiu Ivanov, (RO), Mihai Gavrilaş, (RO) |
| 781 | The impact on voltage stability of the integration of renewable energy sources into the electricity grids | (POSY) | Radu Toma, (RO), Mihai Gavrilas, (RO) |
| 634 | Wind farm cable route optimization using a simple approach | (POSY) | Bogdan Constantin Neagu, (RO), Gheorghe Georgescu, (RO) |

| 639 | Influence of wind power plants on power systems operation | (POSY) | Florina Scarlatache, (RO), Gheorghe Grigoraş, (RO) |
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| 717 | Smart energy management in distribution networks with increasing number of electric vehicles | (POSY) | Alexandru Kriukov, (RO), Mihai Gavrilas, (RO) |

## Workshop EMC&EMB 4

14:30-15:30, "Dragomir Hurmuzescu" Conference Hall, Building E
Chairmen: Alexandru Morega (RO), Liviu Breniuc (RO)

| 794 | Magnetic fields generated by power systems. Some representative case studies | (EMC&EMB) | Nica Ionuţ, (RO) |
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| 795 | Electromagnetic pollution in urban areas | (EMC&EMB) | Nica Ionuţ, (RO) |
| 617 | Influence of mobile communication systems on the EKG signal | (EMC&EMB) | Luca Catalina, (RO), Alexandru Sălceanu, (RO) |
| 722 | Dynamics analysis of heart rate during magneto-therapy session | (EMC&EMB) | Doru Andriţoi, (RO), Valeriu David, (RO), Radu Ciorap (RO) |
| 767 | A portable device for ECG and photoplehysmographic signal acquisition | (EMC&EMB) | Doru Andriţoi, (RO), Valeriu David, (RO), Radu Ciorap (RO) |

## International Workshop on Advances in Medical and Rehabilitation Engineering Applications

14:30-16:00, E303 Room, Building E
Chairmen: Mandru Dan (RO), Popescu Dorin (RO)

| 743 | Robotic glove development with application in robotics rehabilitation | (AMREA) | Dorin Popescu, (RO), Mircea Ivanescu, (RO), Sorin Manoiu-Olaru, (RO), Marian-Ionut Burtea, (RO), Nirvana Popescu, (RO) |
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| 713 | Abdominal signals processing: power line interference removing by applying notch filters | (AMREA) | Dragos Daniel Taralunga, (RO), Georgeta Mihaela Ungureanu, (RO), Bogdan Hurezeanu, (RO), Rodica Strungaru, (RO), Ilinca Gussi, (RO), Werner Wolf, (DE) |
| 686 | Preliminary tests on a hybrid upper arm exoskeleton for upper arm rehabilitation in disabled patients | (AMREA) | Florin Serea, (RO), Marian Poboroniuc, (RO), Sergiu Hartopanu, (RO), Radu Olaru, (RO) |
| 732 | A web-based e-training platform for biomedical engineering education | (AMREA) | Dorin Popescu, (RO), Elena Taina Avramescu, (RO), Livia Carmen Popescu, (RO), Ioannis Pratikakis, (GR) |

| 753 | Hardware design and implementation of an intelligent haptic robotic glove | (AMREA) | Nirvana Popescu, (RO), Decebal Popescu, (RO), Alexandru Cozma, (RO), Alexandru Jan Vaduva, (RO) |
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| 684 | Towards human arm rehabilitation in stroke patients by means of a hybrid FES-mechanical robotic glove | (AMREA) | Sergiu Hartopanu, (RO), Marian Poboroniuc, (RO), Florin Serea, (RO), Gheorghe Livint, (RO) |
| 891 | A study of suitable resistive torque mechanisms for rehabilitation exoskeletons | (AMREA) | Beniamin Chetran, (RO), Olimpiu Tătar, (RO), Simona Noveanu, (RO), Dan Mândru, (RO) |

## IEEE EMC&EMB Meeting
15:30-16:00, "Dragomir Hurmuzescu" Conference Hall, Building E

16:00-16:30

## Closing Ceremony
16:00-16:30, "Dragomir Hurmuzescu" Conference Hall, Building E