2017 CBEES-BBS VESZPRÉM, HUNGARY CONFERENCE ABSTRACT

July 22-24, 2017

Veszprém, Hungary

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2017 CBEES-BBS Veszprém, Hungary
Conference Introduction

Welcome to 2017 CBEES-BBS Veszprém, Hungary conference. The objective of Veszprém, Hungary conference is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Bio-Signal and Image Processing and Molecular Biology and Bioinformatics.

2017 International Conference on Bio-Signal and Image Processing (ICBSIP 2017)

Papers will be published in one of the following conference proceedings or journal:

**International Conference Proceedings Series by ACM.** Archived in the ACM Digital Library, and indexed by Ei Compendex and submitted to be reviewed by Scopus and Thomson Reuters Conference Proceedings Citation Index (ISI Web of Science).

*International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638).* Included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Crossref, ProQuest.

Conference website and email: [http://www.icbsip.org/; icbsip@cbees.net](http://www.icbsip.org/; icbsip@cbees.net)

2017 International Conference on Molecular Biology and Bioinformatics (ICMBB 2017)

Papers will be published in the following journals:

**International Journal of Pharma Medicine and Biological Sciences (IJPMBS, ISSN: 2278-5221).** Included in the Engineering & Technology Digital Library, and indexed by Embase (Under elsevier), ProQuest, Google Scholar, Chemical Abstracts Services (CAS), Indian Science, ICMJE(International Committee Medical Journal Editors), HINARI(World Health Organization), and NYU(Health Sciences Library).

*International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638).* Included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Crossref, ProQuest.

Conference website and email: [http://www.icmbb.org/; icmbb@cbees.net](http://www.icmbb.org/; icmbb@cbees.net)
Presentation Instruction

Instruction for Oral Presentation

Devices Provided by the Conference Organizer:
Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)
Digital Projectors and Screen
Laser Stick

Materials Provided by the Presenters:
PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):
Regular Oral Presentation: about 12 Minutes of Presentation and 3 Minutes of Question and Answer
Keynote Speech: about 45 Minutes of Presentation and 5 Minutes of Question and Answer
Plenary Speech: about 40 Minutes of Presentation and 5 Minutes of Question and Answer

Instruction for Poster Presentation

Materials Provided by the Conference Organizer:
The place to put poster

Materials Provided by the Presenters:
Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg

Best Presentation Award
One Best Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on July 23, 2017.

Dress code
Please wear formal clothes or national representative of clothing.
Keynote Speaker Introduction

Keynote Speaker I

Prof. Bórtfai György
University of Szeged, Hungary

Studies:
1995 Acquisition of the title Dr. med. habil
1974 Specialization in Obstetrics and Gynaecology

Academic qualifications:
1999 Doctor of the Hungarian Academy of Science
1984 Ph.D. Degree

Professional assignments:
2014- Emeritus Professor
2000-2014 Professor

Professional memberships and awards:
2008- Head of the working group of the “Reproductive Health” at the Secretariat of the South-Hungarian Regional Committee of the Hungarian Academy of Sciences
2008- Honorary member of the Society of the Serbian Obstetricians & Gynaecologists
2008- Honorary member of the Society of the Romanian Obstetricians & Gynaecologists
2010- European Society of Contraception, member of the Board of Directors
2012- President of the ESC Internal Scientific Committee
2013 Doctor Honoris Causa, Arad University
2013 Batthyány-Strattmann Award by the Ministry of Education and Heath, Hungary

Other activities:
President of the Egon and Ann Diczfalusy Foundation (at present)
World Health Organisation (WHO) obligations:
Temporary Advisor and Principal Investigator in the following multicentre studies:
Multicenter IUD trials
Cardiovascular diseases & hormonal contraception
Emergency postcoital contraception
Vaginal Ring study B300
Pericoital contraception with Levenorgestrel
Topic: “Telemedicine in the Ob/Gyn – New Era in Education and Diagnostics”

Abstract—The telemedicine might provide a special service in the Healthcare. This technique utilizes all of the advantages what we learn and use recently in telecommunication. Nowadays, everyone uses mobile phone and almost every family has computer at home. Therefore, we should change the old, paper-based archive of medical records. The exchange of diagnostic results became much easier and quicker between the patients and medical doctors. The aim of using telemedicine is to provide a better healthcare for the patient. The most important fields are: e-learning, distance diagnosis, distance surveillance, remote consilium and perform operations with computers. In this presentation I would like to touch only three subjects: e-learning, home monitoring and distant consilium. E-learning is an important tool on the field of ultrasound diagnostics as well as cardiotocography to increase the doctors’ knowledge. For example, there are some very rare conditions diagnosed by cardiotocography like sinusoidal fetal heart rate which occurs in about every 4000 traces. Therefore, some residents working in small hospitals never see this kind of record. To discuss this type of cardiotocograms with a professional can lead to the proper diagnosis. The home monitoring of fetal wellbeing or blood sugar changes of the patient also could be a good diagnostic tools which can improve the medical service and the patient satisfaction. In this presentation I would like to show some examples on the uses of telemedicine.
István Vassányi received the MSc degree in Electrical Engineering in 1993, and the PhD degree in computer science in 2000, from the Technical University of Budapest, Hungary. Specialized in medical informatics, data modeling, ontologies, electronic health records, data mining and analysis, medical expert systems, nutrition counseling, he has been the leader for several national and European research projects, and has published extensively, in the field of medical informatics. His past projects include an ontology based data store of stroke patients federated from European stroke clinics, intelligent home monitoring systems, automated and personalized dietary menu generation, a lifestyle log based assessment and counseling expert system, nationwide analysis of the healthcare reimbursement databases to characterize regional and temporal care patterns, basic research for the prediction of blood glucose levels and for the identification of stress based on the lifestyle log, and several other topics in the healthcare domain.

Topic: “Biomedical Signal Processing and Data Analysis Research at the University of Pannonia”

Abstract—The Medical Informatics Research and Development Centre at the University of Pannonia, Veszprém, runs national and European research projects in the field of cardiological signal processing, EEG processing, population level health care data analysis and mobile lifestyle support for diabetes. The talk will summarize the scope, objectives, methods and recent results of selected projects. In our malignant ventricular arrhythmia risk assessment project, we develop a robust tool for clinical risk assessment based on body surface potential maps. Our dietary and lifestyle logging and counseling expert system supports diabetics in their daily life with personalized advice on glycemia. The EEG processing framework is applied to detect and visualize sources of neural activity. Finally, the medical data mining for cardiovascular health care project provides new evidence for long term strategic planning of the care system. The projects are highlighted with examples and concrete areas of application.
Károly Pálfy is a research fellow at the Balaton Limnological Institute of the MTA Centre for Ecological Research (Tihany, Hungary). His research interests mainly focus on the functional composition of algal assemblages and its relationship with short- and long-term changes in the aquatic environment. Phytoplankton ecophysiology was the main subject of his PhD work, studying the effect of ultraviolet radiation on the growth, photosynthesis, pigment content and phytohormone production of planktonic algae and cyanobacteria. After years of working in the industry as an environmental engineer, he returned to the field of ecology and hydrobiology as a researcher with a keen interest in trait-based algal community dynamics. Since that time he has been studying how various driving factors, such as environmental filtering, disturbances and connectivity, influence the functional variability of phytoplankton and what consequences these effects implicate on an ecosystem level. Besides research, he is also the site manager of the Balaton LTSER platform of the LTER-Europe (Long-Term Ecosystem Research) network.

Károly Pálffy and Lajos Vörös

Abstract—Lake Balaton, the largest shallow lake in Central Europe, is a perfect example of ecological restoration efforts. From the 1970s onwards, increased nutrient loads affecting the lake caused a considerable rise in the biomass of planktonic algae, particularly in summer. This eutrophication process eventually leads to unfavourable conditions from both an ecological and an economical perspective. Summer blooms were increasingly dominated by filamentous N2-fixing cyanobacteria, particularly in the western basin showing a shift from eutrophic to hypertrophic state. Research conducted at the Balaton Limnological Institute of the Centre for Ecological Research (CER BLI) had found that increased anthropogenic phosphorus loading was the major cause of eutrophication, thus, in order to eliminate the sources of this excessive nutrient input, the 1980s saw the elaboration of specific restoration efforts, including the adoption of phosphorus removal in wastewater treatment, sewage water diversion and the establishment of the Kis-Balaton reservoir. Due to these regional investments, eutrophication has been reversed, and since 1995, the lake has gone through considerable water quality improvement. The role of ecological research was vital in finding a sound solution, and with the help of new techniques and approaches, research efforts at BLI still represent a fundamental contribution to the long-term conservation of the lake.
# Brief Schedule for Conference

### Day 1
**July 22, 2017 (Saturday)**
**Venue: Lecture Room (2F )**
Arrival Registration 13:00~17:00

### Day 2
**July 23, 2017 (Sunday)** 9:00~17:10
**Venue: Lecture Room (2F )**
Keynote Speech, Plenary Speech and Conference Presentation

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>9:00~9:10</td>
<td>Opening Remarks</td>
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<td>9:10~10:00</td>
<td>Keynote Speech I</td>
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<tr>
<td>10:00~10:30</td>
<td>Group Photo &amp; Coffee Break</td>
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<tr>
<td>10:30~11:15</td>
<td>Plenary Speech I</td>
</tr>
<tr>
<td>11:15~12:00</td>
<td>Plenary Speech II</td>
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</table>

Lunch 12:00~13:30  **Venue: Oliva Restaurant**

### Day 3
**9:00-18:00 July 24, 2017 (Monday)**
One Day Tour

**Tips:** Please arrive at the Conference Room 10 minutes before the session begins to upload PPT into the laptop.
Detailed Schedule for Conference

July 22, 2017 (Saturday)

Venue: Lecture Room (2F)

<table>
<thead>
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<th>Time</th>
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<tbody>
<tr>
<td>13:00~17:00</td>
<td>Arrival and Registration</td>
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July 23, 2017 (Sunday)

Venue: Lecture Room (2F)

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<th>Time</th>
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<tr>
<td>9:00~9:10</td>
<td>Opening Remarks</td>
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<td>Prof. Bártfai György</td>
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<td>University of Szeged, Hungary</td>
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<td>9:10~10:00</td>
<td>Keynote Speech I</td>
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<td>University of Szeged, Hungary</td>
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<td>Topic: “Telemedicine in the Ob/Gyn – New Era in Education and Diagnostics”</td>
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<td>Plenary Speech I</td>
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<td></td>
<td>Assoc. Prof. István Vassónyi,</td>
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<td>University of Pannonia, Hungary</td>
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<td>Topic: “Biomedical Signal Processing and Data Analysis Research at the University of Pannonia”</td>
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<tr>
<td>11:15~12:00</td>
<td>Plenary Speech II</td>
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<td>Dr. Károly Pálfy</td>
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<td></td>
<td>Balaton Limnological Institute of the MTA Centre, Hungary</td>
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</tbody>
</table>

Note: (1) The registration can also be done at any time during the conference.

(2) The organizer doesn’t provide accommodation, and we suggest you make an early reservation.

(3) One Best Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on July 23, 2017.

Let’s move to the session!
Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, July 23, 2017 (Sunday)

Time: 13:30~15:15

Venue: Lecture Room (2F)

Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

M0011 Presentation 1 (13:30~13:45)

Using a Systematic Framework to Filter Duplicate Reads for NGS Data Analysis

Yung-Hsien Hsieh, Fang-Rong Hsu, and Nguyen Dinh Chien

Feng Chia University, Taiwan

Abstract—Next generation sequencing (NGS) has become a very useful tool to identify gene alterations in genomes. It grows as a powerful approach to investigate gene variants. Lots of RDDs (RNA-DNA Differences) were found through previous research. But some studies have shown a different view that there should not be such a large number of RDDs. With this point, they suggest using different analysis methods, such as adding conditions to filtration processes to improve truth positive rate (TPR)/false positive rate (FPR), respectively. However, there is no consistent conclusion on this subject. In this paper, a systematic framework was proposed to filter duplicate reads in NGS data. This framework was applied to detect Single nucleotide polymorphism (SNPs). Whole genome sequencing data NA12878 from 1000 genomes project were used to perform our experiment. If all duplicate reads were discarded directly, there are 24,321 SNPs cannot be detected (false negatives). By using our framework, there are only 2,219 (8.8%) SNPs undetected. Compared with other previous works, this new method, Truth positive rate (TPR), Specificity (SPC) and Accuracy (ACC) are all better than previous works.
Afternoon, July 23, 2017 (Sunday)

Time: 13:30~15:15

Venue: Lecture Room (2F)

Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

M0006 Presentation 2 (13:45~14:00)

Evaluation of Amino Acids Change in Structural Protein of Filoviridae Family during Evolution Process

Maryam Mohammadlou
I. Azad University, Iran

Abstract—In current research some programming and software tools are used to determine how seven structural proteins of Ebolavirus undergo some evolution changes and what results of these alternations in amino acid framework are. First, the Gene-protein sequence data for structural proteins (nucleoprotein (NP), glycoprotein (GP), RNA-dependent RNA polymerase (L), VP24, VP30, VP35, and VP40) were downloaded. Then, Translator X+T-Coffee, EMBOSS Seqret from Sequence Format Conversion tools of EMBL-EBI and nexus/paup interleaved format were applied. PAUP* tool was utilized for inferring and interpreting phylogenetic trees. These trees and phylip interleaved format text were implemented in the CODEML program of the PAML package. Finally, the obtained results are: 1- In case of VP24, VP30, VP35 and VP40, there is not meaningful difference between models and investigation with two-ratios model on these proteins was not performed and with Two-ratios model in all cases there are only two different ω ratios. 2- using Site model For VP24, VP30, VP35, VP40 and NP proteins, there was not considerable difference between LnL (log-Likelihood) value of model M1(neutral) and M2 (selection) and between LnL value of model M7 (beta) and M8 (beta & ω). When the alternative models (M2, M3, and M8) suggest the presence of sites with ω > 1, all three tests can be considered. Finally the possible conclusion is that Results of likelihood ratio test using positive selection models give evidence for relation between change of amino acids in special sites of proteins structure of Ebola different species and change of mortality rate in these species.
Afternoon, July 23, 2017 (Sunday)

Time: 13:30~15:15

Venue: Lecture Room (2F)

Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

P3002 Presentation 3 (14:00~14:15)

Preparation of Placental and Umbilical Vessels for Studies in Pharmacodynamics

Mária Jakó, Andrea Surányi, Dóra Domokos, Róbert Gáspár, and György Bártfai

University of Szeged, Hungary

Abstract—The abnormal blood flow in the umbilical artery is a reliable clinical sign of the malfunction of the fetoplacental circulation. To better understand the change in placental and umbilical blood flow we performed pharmacodynamic measurements on these vessels. The placenta and the umbilical cord were stored in Krebs-Henseleit solution, pH 7.4, 4°C. Within 24 hours vessels were dissected from Wharton’s jelly from the placental insertion of the cord. The placental vessels were prepared from its edge. The 3-5 mm long vessel rings were suspended on stainless steel hooks in a tissue bath of Krebs-Henseleit solution at 37°C, bubbled with carbogen (95% O₂, 5% CO₂) and exposed to 2g initial tension. After the spontaneous basal tone developed, vasoconstrictors and vasodilators were added in a cumulative logarithmic pattern. The change in the vascular tone was detected and analyzed by ISOSYS S.P.E.L. computer software. The results are dose-effect curves that are interpreted as the percentage of the basal vascular tone. This method is proven to be reproducible and not only the case-control studies can be evaluated but the effects of different agents are comparable too. With experiments combined with antagonists, the receptor spectrum of these vessels could be discovered.
Afternoon, July 23, 2017 (Sunday)

Time: 13:30~15:15

Venue: Lecture Room (2F)

Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

P3004 Presentation 4 (14:15~14:30)

ARAIADNE Multigenerational Health-Development Project in the Hungarian Higher-Education

Ivan Devosa, Melinda Vanya, and Katalin Barabás

University of Szeged, Hungary

Abstract—Problem: the health education level in the Hungarian education system is very low. Solution: ARIADNE Multigenerational Health-Development Project in the Hungarian Higher Education is a complex health development program, including and covering all participants in the education system: the organizing and lecturing higher educational institutes – focusing on teacher training faculties -, the public educational institutes, as a venue of the program. This program focuses on the students of teacher training schools, as young persons themselves (age 18-23); as peer educators, how can transfer health literacy to their age group; and as future teachers, how can develop the health literacy of the pupils. Conclusions: What except from ARIADNE project: The essential component of the program is that the college and the school and nursery works harmoniously work together, so students can transpose the acquired knowledge into practice. In addition, young people become familiar with the concept of the hidden curriculum, so in addition to the taught material with teacher behavior as role models contribute to the students’ behavior, and the children at home affect the behavioral patterns of the family. This model has direct impact on the university and public educational institutions, and only indirect on the children's families.
Afternoon, July 23, 2017 (Sunday)

Time: 13:30~15:15

Venue: Lecture Room (2F)

Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

P1001 Presentation 5 (14:30~14:45)
Nanoneedle Cell Penetration for Intracellular Drug Delivery

Mohamed Marouf and Lazar Saranovac
Belgrade University, Serbia

Abstract—In this paper the usage of noise level approximation for adaptive Electromyogram (EMG) noise reduction in the Electrocardiogram (ECG) signals is introduced. To achieve the adequate adaptiveness, a translation-invariant noise level approximation is employed. The approximation is done in the form of a guiding signal extracted as an estimation of the signal quality vs. EMG noise. The noise reduction framework is based on a bank of low pass filters. So, the adaptive noise reduction is achieved by selecting the appropriate filter with respect to the guiding signal aiming to obtain the best trade-off between the signal distortion caused by filtering and the signal readability. For the evaluation purposes; both real EMG and artificial noises are used. The tested ECG signals are from the MIT-BIH Arrhythmia Database Directory, while both real and artificial records of EMG noise are added and used in the evaluation process. Firstly, comparison with state of the art methods is conducted to verify the performance of the proposed approach in terms of noise cancellation while preserving the QRS complex waves. Additionally, the signal to noise ratio improvement after the adaptive noise reduction is computed and presented for the proposed method. Finally, the impact of adaptive noise reduction method on QRS complexes detection was studied. The tested signals are delineated using a state of the art method, and the QRS detection improvement for different SNR is presented.
Afternoon, July 23, 2017 (Sunday)

Time: 13:30~15:15

Venue: Lecture Room (2F)

Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

P0010 Presentation 6 (14:45~15:00)

Gene Entity Recognition of Full Text Articles

Chunyu Tan, Liming Zhang, and Hau-tieng Wu

University of Macau, China

Abstract—This paper presents a novel electrocardiogram (ECG) compression method based on adaptive Fourier decomposition (AFD). AFD is a newly developed signal decomposition approach, which can decompose a signal with fast convergency as well as positive analytic instantaneous frequencies. Unlike most of the high performance algorithms, our method does not make use of any preprocessing operation before compression. AFD can reconstruct ECG signals fast with high fidelity. Huffman coding is employed for further compression. Validated with 48 ECG recordings of MIT-BIH arrhythmia database, the proposed method achieves the compression ratio (CR) of 35.53 and the percentage root mean square difference (PRD) of 1.47% on average with N=8 decomposition times and a robust PRD-CR relationship. The results demonstrate that the proposed method has a good performance compared with the state-of-the-art ECG compressors.
Session 1: 7 presentations- Topic: “Bioinformatics and Drug Analysis”

Session Chair: Prof. Bártfai György

M0010 Presentation 7 (15:00~15:15)

The Anti-Proliferative Effects of Glycyrrhetinic Acid and 6-(Methylsulfinyl) Hexyl Isothiocyanate on the Brain Cancer Cells U-251

Hideaki Yamaguchi

Meijo University, Japan

Abstract—The number 1 cause of death in Japan is cancer and about 370,000 people die of cancer every year. Cancer is a major challenge for humans and a lot of energy and resources have been being invested to overcome the major cancers such as lung, stomach and colon cancers. Brain cancer is a rare cancer (about 0.4% of total cancer death) and being poorly invested in terms of exploring potential cures. But it is the 2nd major cancer for children (under the age of 14) and has the worst survival rate.

There is a growing interest in elucidating the biological and pharmacological roles of naturally occurring compounds, and we have been focusing our attention on triterpenoids and isothiocyanates from plants as multifunctional agents for the prevention and treatment of cancer. Recently, we found that some triterpenoids, such as ursolic acid and glycyrrhetinic acid (GA) were not only selectively toxic to the central nervous system-related cancer cells but also more potent than some clinically available anti-cancer agents. We also found that an isothiocyanate, 6-(methylsulfinyl)hexyl isothiocyanate (6MITC) was effective on inhibiting the growth of some brain cancer cells.

Utilization of medicinally important plants plays a great role in the development of anti-cancer drugs. In the presentation, the anti-proliferative effects of GA from licorice and 6MITC from wasabi on the brain cancer cells U-251 will be discussed.
Session 2

Tips: The schedule for each presentation is for reference only. In order not to miss your presentation, we strongly suggest that you attend the whole session.

Afternoon, July 23, 2017 (Sunday)

Time: 15:40~17:10

Venue: Lecture Room (2F)


Session Chair: to be added

P3001 Presentation 1 (15:40~15:55)

Measurement of Hand Grip Strength-a New Way to Asses Physical Strength and Quality of Life

Anita Zubrecki, Iván Devosa, and György Bártfai

University of Szeged, Hungary

Abstract—During the last decades the society has changed in many ways. The number of births is decreasing which has led to the decrease and ageing of the population and finally to the increase of the average age. Handgrip strength provides information about the muscular state. It reflects all the positive and negative effects which had affected a man through his life. All kind of mortality risks can be predicted by measuring handgrip strength. 424 person took part in the research. 243 women and 181 men aged 40-79 years were recruited in Szeged (Hungary). The results show that quality of life and handgrip strength decreases with age. Handgrip strength is the lowest among those participants who valued the worst quality of life. Blood pressure values are in inverse ratio to quality of life and also to handgrip strength. It is very important to keep quality of life on high level even at older ages. Factors that negatively affects the quality of life are correlated to handgrip strength. Measuring handgrip strength could be a good method to asses quality of life.

P3003 Presentation 2 (15:55~16:10)

Development of Smart Hydrogel Films for Controlled Drug Delivery

László Janovák, Ágota Deák, and Imre Dékány

University of Szeged, Hungary

Abstract—Polymers are hydrogel networks that can swell in water and hold a large amount of water while maintaining the structure. These polymer or polymer-hybrid materials are also termed “intelligent” or “smart gels”, because depending on their chemical composition and network structure, they perceive changes in one or several environmental parameters and respond with a functional reaction. Due to the properties of this material it has a number of advantages for drug delivery applications. pH-sensitive hydrogels are probably the most commonly studied class of environmentally sensitive polymer systems in drug delivery research. Our objective is the preparation of a pH-sensitive hydrogel, whose swelling at pH values higher than 4.5–5.5 is significantly enhanced as compared to lower pH values, in order to enable the release of active agents (e.g. PVP-iodine, Ag or Ag-Cu nanoparticles alloys and other biocidal substances) encapsulated within the gel matrix into the environment. The pH-controlled release of the antibacterial nanoparticles reduce the effects of microbial inflammation thus the developed pH-sensitive hydrogels and composites are advantageously applicable for prevention and treatment of female genital infections.
Afternoon, July 23, 2017 (Sunday)

Time: 15:40~17:10

Venue: Lecture Room (2F)


Session Chair: to be added

P0003 Presentation 3 (16:10~16:25)

Amino Acids of Hemagglutinin and Neuraminidase that Provoke Human-to-Human Infection in Avian Influenza Virus

Tzu-Chao Lin, Chao-Chun Chen, and Cheng-Jian Lin

National Cheng Kung University, Taiwan

Abstract—The bone density of edentulous region might cause the instability of surgical guide. To investigate the relation between bone density and accuracy of guide surgery is still clinical interest. The aim of this study is to evaluate the relation between the factor and accuracy of surgical guide by in vivo test. Five edentulous patients were chosen for implant surgery with surgical guides. The preoperative CBCT photography images were imported into MIRDC Dental software for implant planning. The surgical guides were fabricated by CAM machine. The deviation between planned and placed implants was calculated in implant’s head and apex. The bone density of each implant site was measured from gray value (Hu number) of CBCT image. From the results, total of 10 implants sites were evaluated. The deviation between planned and placed implants were 1.54±0.79mm in implant’s head and 1.74±0.77mm in implant’s apex. The mean bone density was 992±0.79 in Hu number. The correlation coefficients between each deviation and bone density was R=0.83. Based on the present results, the bone density seem to affect the accuracy of surgical guide.
Afternoon, July 23, 2017 (Sunday)

Time: 15:40~17:10

Venue: Lecture Room (2F)


Session Chair: to be added

P0004 Presentation 4 (16:25~16:40)

The Modeling of Temperature Distributions of an Interstitial Two-Tine Antenna for Hepatic cancer Microwave Ablation

Shammi L Rahangdale, Lennard Voortman, and P. Kruit

Delft University of Technology, Netherlands

Abstract—There is an increasing demand towards large biological and semiconductor specimen with high resolution in two or three dimensions. However, although with single beam Scanning Electron Microscope (SEM) we can achieve a resolution in the order of 5 nm to 10 nm, but we are limited in terms of throughput, which leads to a typical scan area of, 1 x 1 µm. The Multi Beam Scanning Electron Microscope (MBSEM) is developed to keep the resolution while increasing the speed of acquisition by scanning with 196 parallel beams. Each beam creates one tile in a full SEM image. The acquired multi beam image tiles have to be combined into one final output image by a process called stitching and blending. Usually stitching and blending is performed by image processing on the acquired image (as in creating a panorama image on your phone). However, we also have the information on the exact relative position of the 196 beams, which can be used for stitching. Blending between overlapping tiles is done using either linear blending, minimum or maximum intensities, or simple stamping. As a result of all relative intensities of the beam tile, can be used for contrast correction. The advantage of our method is the much reduced computation effort and our technique is well suited for 2D image mosaicing. The figure shows the result obtained from our method for 4 x 4 tiles of the 14 x 14 full image.
Transmission Map Estimation and Refinement of Weather Degraded Images Using a Hybrid of Fuzzy Inference System and Artificial Neural Networks

Chin-Ling Lee, Cheng-Jian Lin, Tzu-Chao Lin, and Chao-Chun Chen
National Cheng Kung University, Taiwan

Abstract—The attenuation of the light transmitted through the medium in air can reduce image quality when taking a photograph outdoors, especially in the hazing environment. Hazy images often lack sufficient information for image recognition systems to operate effectively. In order to eliminate the hazy effect on images and improve the visual quality, this study presents an efficient method combining the fuzzy inference system and the artificial neural network for solving image dehazing problem. During image dehazing process, the fuzzy inference system is adopted to estimate the variation in light attenuation, whereas the erosion of morphological operation and the artificial neural network are used to eliminate the halation and refine transmission map. In order to eliminate color cast, the brightest 1% of the atmospheric light is utilized to calculate the color vector of atmospheric light. Experimental results indicate that the proposed method is superior to other dehazing methods.
Afternoon, July 23, 2017 (Sunday)

Time: 15:40~17:10

Venue: Lecture Room (2F)


Session Chair: to be added

P0005 Presentation 6 (16:55~17:10)

Visualization of Multi-Phase Contrast-Enhanced CT Images

László Ruskó, Balázs Laczi, Sándor Csizmadia, Fanni Kerekes, Judit Eszter Dobos, and Endre Szabó

GE Hungary Healthcare Division, Hungary

Abstract—Multi-phase contrast-enhanced CT is routinely used in clinical practice because it allows better separation of different soft-tissue types based on their characteristic contrast intake. This work presents a technique to visualize 3-phase contrast information to facilitate image reading. In the first step of the proposed approach the images belonging to the different phases are normalized and registered using a non-rigid registration method. In the second step the joint information of the three phases is fused into a color image (using red, green, and blue channels) such that static voxels appear in gray-scales and contrast-enhanced voxels are displayed with various colors. The proposed technique was evaluated by 3 young radiologists on 3-phase abdominal CT exams. According to the physicians’ opinion organs and vessels structures were easier to separate, abnormalities were easier to detect, and lesion boundaries were easier to see in the fused images. However, registration inaccuracy and the complex interpretation of colors made the reading more challenging. Further evaluation involving an experienced radiologist confirmed the presented technique can increase the sensitivity of the reader. However, the assessment the fused image cannot substitute reading the original phases, so it does not save time for the radiologist.

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- 25 -
Poster Session

July 23, 2017 (Sunday)

Time: 9:00~17:10

Venue: Lecture Room (2F)

Poster Session: 1 presentation

P0008 Poster 1

Spatial and Spectral Analysis of Corneal Epithelium Injury Using Hyperspectral Images

Siti Salwa Md Noor, Kaleena Michael, and Stephen Marshall

University of Strathclyde, UK

Abstract—Eye assessment is essential in preventing blindness. Currently, the existing methods to assess corneal epithelium injury are complex and require expert knowledge. Hence, we have introduced a non-invasive technique using hyperspectral imaging (HSI) and an image analysis algorithm of corneal epithelium injury. Three groups of images were compared and analysed, namely healthy eyes, injured eyes, and injured eyes with stain. Dimensionality reduction using principal component analysis (PCA) was applied to reduce massive data and redundancies. The first 10 principal components (PCs) were selected for further processing. The mean vector of 10 PCs with 45 pairs of all combinations was computed and sent to two classifiers. A quadratic Bayes normal classifier (QDC) and a support vector classifier (SVC) were used in this study to discriminate the eleven eyes into three groups. As a result, the combined classifier of QDC and SVC showed optimal performance with 2D PCA features (2DPCA-QDSVC) and was utilised to classify normal and abnormal tissues, using color image segmentation. The result was compared with human segmentation. The outcome showed that the proposed algorithm produced extremely promising results to assist the clinician in quantifying a cornea injury.
One Day Tour

9:00~18:00 July 24, 2017 (Monday)

1. Gathering at VEAB at 9:00.

2. Transport to Balatonfüred, visiting the historical citycenter and promenade

Balatonfüred (German: Bad Plattensee) is a popular resort town in Veszprém county, in Hungary, with a population of 13,000, situated on the northern shore of Lake Balaton. It is considered to be the capital of the Northern lake shore and is a popular yachting destination. It is also a favorite location for fishing, carp being the most common catch, although the introduction of eels and other non-indigenous species has caused ecological damage in recent years.

3. Transport to Tihany Peninsula and visiting the 1000 years old Benedict Abbey

Tihany is a village on the northern shore of Lake Balaton on the Tihany Peninsula (Hungary, Veszpréms County). The whole peninsula is a historical district.

The center of the district is the Benedictine Tihany Abbey, which was founded in 1055 AD by András (Andrew) I, who is buried in the crypt. The founding charter of this abbey is the first extant record of Hungarian language, preserved in Pannonhalma Benedictine Archabbey. The church itself was rebuilt in baroque style in 1754. The still functioning abbey is a popular tourist attraction due to its historical and artistic significance. It also has the best view of Lake Balaton.

4. Lunch and winetasting at Koczor winecellar in Balatonfüred

Both traditional and modern solutions are present simultaneously in the process of winemaking, thus our every wine receives ideal care and attention. Enthusiasts can enjoy full-bodied wines, aged in traditional wooden barrels and handled with reductive technologies, which brings out their light and fruity flavours as well.

5. Transport to Veszpréms at 18:00

Useful links

- Lake balaton:
- Wine and Gastronomie:
  http://www.iththon.hu/site/upload/mtrt/kiadvanyok/gasztro/de/IndexDe.html

Itinerary: Veszprém-Balatonfüred-Tihany-Koczor Winery- Veszprém  ca.72 km
Conference Venue

Headquarters of the Veszprém Regional Centre of the Hungarian Academy of Sciences (VEAB), Veszprém, Hungary

http://www.veab.mta.hu/szekhaz_en

Add: Vár u. 37, Veszprém, H-8200, Hungary / Tel: (36)-88-428859

The headquarters of VEAB, the Veszprém Academic Headquarters is at 37 Vár utca in the former house of Canon Dravecz built between 1769 and 1773 in Louis-seize style. The historic building originally owned by the Church was secularized in 1953 and put into the charge of the town council. At first it housed a primary school, later private flats. Administratively, it was handed over to the Academic Centre in 1975. The building, after being converted and restored, was officially inaugurated on 19 July 1978.

The Veszprém Centre of the Academy was founded under government resolution 48/1972 by the Presidium of the Hungarian Academy of Sciences at a session in September 1972. The steering committee of the Academy commissioned the Centre to organize scientific life in the Northern Transdanubian region within the framework of the Hungarian Academy of Sciences. According to the decision of the Academy, the Centre has created a network of academic committees now regarded as the regional organization of the Hungarian Academy of Sciences in Northern Transdanubia. This organization is made up of specialist and working committees with the participation of experts in the region.

Transportation tips for Budapest Airport to VEAB:

Option 1: Hire a van at the Liszt Ferenc airport, then drive to VEAB. It's the most convenient and most expensive way to come to Veszprem.

Option 2: Take a taxi to the Nepliget coach terminal (Budapest), and take a coach to Veszprem, they run every hour. The coach takes you about 10 EUR to Veszprem and you can walk from the coach station to VEAB in 15 minutes. The walking map can be found from: https://drive.google.com/open?id=1ZjbUoD41GxAlhsOfTC2RbmuHFK4&usp=sharing
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## Feedback Information

(Please fill this form and return it to conference specialist during the conference days.)

### Personal Information

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### Please indicate your overall satisfaction with this conference with “√”

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**Did the conference fulfill your reason for attending?**

- Yes—Absolutely □
- Yes- But not to my full extent □
- No □

(If “No”, please tell us the main reason)
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Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!