International Academic Conference
e-methodology

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Book of Abstracts

Edited by
Martyna Madej & Luba Ślósarz

Table of contents

International Academic Conference
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April 21, 2022

CONFERENCE VENUE
Wroclaw Medical University
Scientific Medical Information Centre
Karola Marcinkowskiego 2-6, 50-368 Wrocław

& online via Microsoft Teams

https://teams.microsoft.com/conference

April 22, 2022

Online workshops:

Andrzej Buda, Interdisciplinary Research Institute, Głogow Poland
Detecting hierarchical structures by correlations

Maciej Pondel, Wroclaw University of Economics and Business, Poland
Medical data exploration with Decision Trees

https://teams.microsoft.com/workshops

International Academic Conference
e-methodology

INTRODUCTION

Dear Conference Participants,

we are honoured to once again welcome you to the international scientific conference E-methodology, now in its seventh edition. Moreover, this edition will be the first one held in a hybrid format.

This year, based on our past experience, we decided to build on the skills and knowledge we have gained. This is how the idea of holding the conference in a hybrid form was born. We also believe that this way of conducting the conference will be more comfortable for some of you, not only because of the still-present topic of the pandemic and the problems associated with travel during this period, or fear for your health but also because you can quickly connect from anywhere in the world to present the results of your research without having to significantly adjust your other plans to this event. I know how much work and commitment it takes to prepare a conference like this, so I would like to sincerely thank all the members of the scientific and organising committee and others who have supported us in other ways.

Due to the specificity of the topics submitted to us, this year's conference has been divided into three sections: (1) Infodemiology: information, epidemiology, methodology, (2) AI in Medicine and Healthcare and (3) Education. It is worth mentioning that the second section is supported by HeartBIT_4.0 - an international Horizon 2020 project of the European Commission. We are also very pleased to announce that this year's conference has been enriched with workshops, which will take place a day later. The workshop topics are: Medical data exploration with Decision Trees and Detecting hierarchical structures by correlations.

Despite the turbulent situation in the world, we are trying with all our strength to provide you with the best possible conditions to present your research to others, share your knowledge and experiences, and develop yourself in an international environment. We sincerely hope that we will provide you with many intellectual experiences and that you will want to participate in our conference in the years to come. We are very grateful that you are with us.

With the best wishes of fruitful academic discussions and cooperation,

Martyna Madej
Conference Secretary

International Academic Conference
e-methodology

PROGRAM OF THE CONFERENCE

April 21, 2022 CONFERENCE	
Inauguration of the conference	9.00 – 9.15
15 minutes for each presentation + 5 minutes for discussion after each presentation Poster session available at the conference's webstie and during breaks	
SESSION 1: **Infodemiology: information, epidemiology, methodology**	9.15 – 11.15
Coffee break	11.15 – 11.35
SESSION 2: **AI in Medicine and Healthcare**	11.35 – 14.45
Lunch break	13.35 – 14.05
SESSION 3: **Education**	15.00 – 18.05
The end of the conference	18.05
April 22, 2022 WORKSHOPS	
Maciej Pondel, PhD Wroclaw University of Economics and Business, Poland **Medical data exploration with Decision Trees**	9.00
Andrzej Buda, MA Interdisciplinary Research Institute, Głogow, Poland **Detecting hierarchical structures by correlations**	11.00

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Day 1

SESSION 1: **Infodemiology: information, epidemiology, methodology** Chaired by Mateusz Lickindorf	9.15 – 11.15
Paolo Di Sia, Prof. University of Padova, Italy **Current Perception of Epidemic between Traditional and Social Media:** **an Italian Case Study**	9.15 online
Alexander Semenov, PhD University of Florida, USA Yixin Zhang, PhD University of Gothenborg, Gothenborg, Sweden Catherine Ridings, PhD Lehigh University, Bethlehem, USA **What to post? Understanding engagement cultivation in microblogging with big** **data-driven theory building**	9.35 online
Simona Valenti, MA University of Bari Aldo Moro, Italy **Phenomenological analysis of mass media communication distortions and the** **effects of ''virtual surveillance'' in institutional communication**	9.55 online
Dominika Kunc, MSc, Joanna Komoszyńska, MSc, Bartosz Perz, MSc, Przemyslaw Kazienko, Prof, Stanislaw Saganowski, PhD Wroclaw University of Science and Technology, Poland **Validation of emotion detection system in everyday life**	10.15
Jakub Majkowski, BA University of Wroclaw, Poland **Studying at the Faculty of Social Sciences in the opinions of students and** **graduates – online interviews during the pandemic**	10.35
Andrzej Buda, MA, Katarzyna Kuźmicz MA, Kornelia Cypryjańska-Perucka MA, Interdisciplinary Research Institute, Głogow, Poland **Taking care about planet earth and customers in the local way**	10.55
Coffee break and poster session	**11.15 – 11.35**

SESSION 2: **AI in Medicine and Healthcare** **(Section supported by HeartBIT_4.0 - international project Horizon 2020 of the** **European Commission)** Chaired by Katarzyna Kaczmar	11.35 – 14.45
Agnieszka Siennicka PhD, Katarzyna Kaczmar, MA Wroclaw Medical University, Poland **Description of the project HeartBIT_4.0 Application of innovative Medical Data** **Science technologies for heart diseases**	11.35
David Chudán, PhD Prague University of Economics and Business, Czech Republic **PUEB´s contribution to the HeartBIT_4.0 project**	11.55 online

Maciej Pondel, PhD Wroclaw University of Economics and Business, Poland **How to discuss AI with medical scientists and physicians?**	12.15
Szymon Urban, MD Wroclaw Medical University, Poland **Artificial Intelligence and new possibilities in cardiovascular research**	12.35
Mikołaj Błaziak, MD Wroclaw Medical University, Poland **Machine learning in guiding management of heart failure patient**	12.55
Maksym Jura, MD Wroclaw Medical University, Poland **Machine learning techniques in identifying distinct phenotypes of patients with acute heart failure. Preliminary results**	13.15
Lunch break and poster session	**13.35 – 14.05**
Agnieszka Siennicka, PhD Wroclaw Medical University, Poland **AI in medicine and health psychology: Identifying variability of structures of beliefs about health locus of control in cardiac patients**	14.05
Andrzej Jarynowski, C.Sc. AIDMED, Gdańsk, Poland **AIDMED: IoT and AI for pulmonological diseases**	14.25
Short coffee break	**14.45**

SESSION 3: EDUCATION Chaired by Martyna Madej	15.00 – 18.05
Agnieszka Siennicka, PhD Wroclaw Medical University, Poland **A pilot study on standardised in-hospital education about heart failure**	15.00
Maria Augusta Romão Da Veiga Branco, PhD Polytechnic Institute of Bragança - Agricultural School, Portugal **Emotional e-education - presentation of the BIP Blended Intensive Programme at Polytechnic Institute of Bragança (Portugal)**	15.20
Hyrije Mehmeti, MA University of Pristina, Kosovo **Challenges and opportunities of learning journalism online during COVID-19**	15.40 online
Viviana De Angelis, PhD University of Bari Aldo Moro, Italy **Well-being and global affective education with screen**	16.00 online

Ildikó Szabó, PhD Károli Gáspár University, Hungary **Online Hungarian, Slovakian and Slovenian Language for Specific Purposes teaching resources in QuILL Project**	16.20 online
Debabrata Baral, PhD Bennett University, India **COVID-19, Internet and self diagnosis**	16.40 online
Short coffee break	**17.00**
Iwona Mazur, PhD Wroclaw Medical University, Poland **The role and importance of the Internet in public health**	17.20
Koyal Verma, PhD Bennett University, India **Health and Technology during the COVID 19 pandemic: The role of Internet**	17.40 online
M|ădălina Moraru (Buga-Moraru), PhD University of Bucharest, Romania **The role of social media influencers in raising credibility of healthcare information on the Romanian market**	18.00 online
The end of the conference	18.20

Poster session
Andrzej Jarynowski, C.Sc Free University of Berlin, Germany Alexander Semenov, PhD University of Florida, USA Mikołaj Kamiński, MD Individual Medical Practice, Oborniki, Poland Vitaly Belik, Prof Free University of Berlin, Germany **Analysis of perception of infectious diseases on the internet in Poland**
Ahmad Wesal Zaman, PhD Roskilde University, Denmark **Global attention to Antimicrobial Resistance (AMR) and Climate Change (CC) in the era of Social Media**
Mariola Seń, PhD, Agnieszka Lintowska, PhD, Iwona Klisowska, MA Wroclaw Medical University, Poland **Modern technologies and innovation in medicine**

Roksana Papierkowska, BA, Katarzyna Cieciora, BA, Iwona Zborowska, MA
Wroclaw Medical University, Poland
Is the Internet the right source for conquering knowledge on diseases?

Iwona Klisowska, MA, Anna Dąbek, MA, Mariola Seń, PhD,
Iwona Zborowska, MA, Barbara Grabowska, PhD
Wroclaw Medical University, Poland
**Mobile applications used in the assessment and control of the nutritional status
and malnutrition among seniors**

Barbara Grabowska PhD, Iwona Klisowska, MA Anna Dąbek, MA, Iwona Zborowska, MA
Wroclaw Medical University, Poland
What is smart watch?

Agnieszka Lintowska, PhD, Mariola Seń, PhD Iwona Klisowska, MA
Wroclaw Medical University, Poland
Psycho-social Peacebuilding Approach - now the first step is ONLINE

Katarzyna Leszkiewicz, Jolanta Grzebieluch, PhD
Wroclaw Medical University, Poland
Doctors and their image in social media

Olga Zawierucha, Jolanta Grzebieluch, PhD
Wroclaw Medical University, Poland
The image of Polish gynecologists

Monika Wójta-Kempa, PhD
Wroclaw Medical University, Poland
Irena Wolska-Zogata, Prof
University of Wroclaw, Poland
Andrzej Jarynowski, C.Sc
Interdisciplinary Research Institute, Głogow, Poland
Memes as culture repositories – social emotions during "Stay at home" phase in Poland

Dariusz Rutkowski, PhD
University of Lower Silesia, Poland
Anna Malska-Śmiałowska, PhD
Wroclaw University of Health and Sport Sciences
Magdalena Kazimierska-Zając, PhD
Wroclaw Medical University, Poland
The use of music in Physical Education during a pandemic

Martyna Mencel
Scientific circle research in medicine, Wroclaw Medical University, Poland
Andrzej Jarynowski, C.Sc
Aidmed, Poland
Monika Wójta-Kempa, PhD
Wroclaw Medical University, Poland
Telemedicine during pandemic. Experience from remote care of Long-COVID patients

Magdalena Kazimierska-Zając, PhD
Luba Ślósarz, PhD
Wroclaw Medical University, Poland
E-therapy during the pandemic in Poland and worldwide – a temporary trend or a new reality?

Dorota Kiedik, MA
Wroclaw Medical University,
Online consultation in oncological care during the Covid-19 pandemic

ABSTRACTS

Błaziak Mikołaj (Wrocław Medical University, Poland)
Predictive models based on machine learning algorithms among patients with heart failure

Aim. Heart failure remains a major public health problem worldwide. This disease is associated with a high risk of death, readmissions and other adverse outcomes. The utility of machine learning-based predictive models is still unclear. The aim of the study is to develop a framework for clinical application and validity of predictive models based on machine learning algorithms in the heart failure population.

Methods. Major databases were searched to recognise studies where heart failure patients datasets were used to create and evaluate predictive models based on machine learning algorithms. The systematic literature study was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Results. After screening headlines, abstracts and full-text papers, only a limited number of studies met the inclusion criteria. These studies present mainly models predicting general mortality in different time points, mortality in intensive care units, or risk of rehospitalisation. All of these models have been tried in external databases such as registries or clinical trials, or in prospective cohorts.

Conclusions. Machine learning-based approaches seem to be able to develop and validate models which outperform traditional, well-established risk calculators. However, our research indicates a great necessity for external validation and more precise calibration of current artificial intelligence algorithms in order to be introduced into daily clinical practice.

Keywords: machine learning, artificial intelligence, heart failure, prediction

Buda Andrzej, Kuźmicz Katarzyna & Cypryjańska-Perucka Kornelia (Interdisciplinary Research Institute, Poland)
Taking care of Planet Earth and customers in a local way

Aim. The contemporary world is strongly dependent on information overexposed by Internet media and full of overexposed temporary hoaxes like Millenium Bug, etc. Therefore we decided to use the forgotten traditional scientific point of view to analyse two popular topics like so-called "global" warming and governmental restrictions on Sunday trading (that affects petrol stations indirectly as well).

Methods. The Detrended Fluctuations Analysis (DFA) has been applied to detect new clients on Sundays and to exploit and track their behaviour and customs from time series on other trading days in petrol stations. The classic thermodynamics and fundamental definition of temperature provided by statistical physics have been used to check the idea of 'mean' temperature in the 'global' warming theory. The phenomena of percolation and the Archimedes Principle that protect the stability of the sea level have also been discussed.

Results. According to our results, free-market as an equilibrium theory works well because significant groups of additional customers on Sundays have been detected. Moreover, these new customers may stay for other trading days. It depends on human resources in petrol stations. On the other hand, the definition of 'mean' or 'global' temperature provided by the 'global' warming theory is

not consistent with possible states of a mechanical system of particles in thermodynamic equilibrium (thermal and chemical) with a reservoir because quantities like temperature may be defined locally only. Therefore the warming (or cooling) may be a local phenomenon. It has been confirmed by experimental data too.

Conclusion. The success of involving new customers depends on human resources in local petrol stations. The warming (or cooling) on Planet Earth is a local phenomenon too. Therefore it is hard to keep the free market and thermal processes performed on the Planet Earth under human control. However, it is possible and predictable to take care of our Planet Earth and the free market in a local way.

Keywords: detrended fluctuation analysis, global warming, free market, time series analysis

Chudán David (Prague University of Economics and Business, Czech Republic)
PUEB´s contribution to the HeartBit project

Aim. The aim of the presentation is to summarise the work of the team of Prague University of Economics and Business on the HeartBit project.

Methods. Since this is not a presentation of any specific research, but the activities carried out within the project, no scientific methods were used.

Results. The team of PUEB conducted several lectures in accordance with the project´s work packages, namely KDD and data mining methodologies, the Role of domain knowledge in the KDD process and Knowledge interpretation and presentation. Two more lectures will take place later this year (Rule-Based and Case-Based reasoning and Automatisation of data mining process). In addition to the lectures, a discovery workshop was held, and at the beginning of March 2022, we hosted a group of medical doctors and PhD student from Wroclaw Medical University, whom we helped with data analysis.

Conclusion. Despite some partial shifts and the need to move lectures to the online environment (thanks to covid), the project is relatively on track.

Keywords: data mining, medical data, lectures, discovery workshop, teaching, HeartBit project

Di Sia Paolo (University of Padova, Italy & Primordial Dynamic Space Research, Italy)
Current Perception of Epidemic between Traditional and Social Media: An Italian Case Study

Aim. More than two years after the beginning of the global epidemic period, most governments have adopted potentially questionable strategies progressively reducing the people's perceived freedom and mandatory vaccination program (with a new developed genetic pharmaceuticals). The purpose of this work concerns how news relating to the epidemic reaches citizens from traditional media (main TV channels and main national newspapers) and from social media, particularly Telegram.

Methods. The paper considers how the situation is perceived in Italy in the first months of 2022 by analysing the news appearing on mainstream TV channels and how they are described by national

newspapers, as opposed to what can be deduced from some social media platforms that are still substantially free from censorship.

Results. The analysis underlines that there is a clear discrepancy between traditional and social media; the official narration of the traditional media does not give rise to the possibility of discussion on the controversial issues of this epidemic. Only Telegram appears to be the most censorship-free channel among the studied traditional/social media in this paper.

Conclusions. In social media there is a narration that the attention placed on the official narrative of Covid-19, on the use of the methodology in force in Italy for fighting the epidemic (i.e. on the strong non-sanitary limitation of individual freedom) is an effect of a possible underlying plan about what is globally happening. This lead (according to social media) to the conclusion that in Italy there is an attempt to give an ambiguous, equivocal and inconsistent version of the facts, contradicted by some selected experimental data and scientific papers appearing more and more numerous in qualified international journals.

Keywords: Covid-19 (C-19), perception of pandemic, traditional and social media, Italy, freedom, health, mRNA

Jura Maksym, Urban Szymon, Błaziak Mikołaj, Iwanek Gracjan, Biegus Jan, Siennicka Agnieszka (Wroclaw Medical University, Poland), Pondel Maciej (Wroclaw University of Economics and Business, Poland), Berka Petr (Prague University of Economics and Business, Czech Republic), & Zymliński Robert (Wroclaw Medical University, Poland)
Machine learning techniques in identifying distinct phenotypes of patients with acute heart failure. Preliminary results

Aim. This study aimed to analyse the natural phenotypic heterogeneity of the acute heart failure (HF) population and evaluate possibilities offered by clustering (unsupervised machine learning technique) in medical data assessment.

Methods. We evaluated data of 381 acute heart failure patients. Eighty-eight clinical and biochemical features assessed at the patient's admission were initially included in the analysis after the low preprocessing quality and correlated (r=0.6%) variables were eliminated. Eventually, 63 clinical and biochemical features were included. K-medoids algorithm was implemented to create clusters, and optimisation based on the Davies-Bouldin index was performed. Clustering was performed blinded to outcome. The 1-year and 2-years mortality differences were evaluated using Kaplan-Meier curves.

Results. Algorithm distinguished 6 clusters: cluster 0 (n= 86), cluster 1 (n= 50), cluster 2 (n=70), cluster 3 (n=71), cluster 4 (n=50), cluster 5 (n=54). Clusters differed significantly in 58 variables i.a: pulmonary congestion (0.048), swelling of lower limbs (p=0.006), ascites (p=0.003), creatinine concentration (p= 0.003), estimated glomerular filtration rate (p= 0.0002), carbon dioxide partial pressure (p= 0.004). Death within 1-year occurred in 25.6% (2-years mortality: 27.9%) of cluster 0, 22% (28%) of cluster 1, 17.1% (25.7%) of cluster 2, 21.1% (30.9%) of cluster 3, 40% (52%) of cluster 4 and 45.3% (50.9%) of cluster 5. Clusters differed in terms of the 1-year mortality (p = 0.0021) and 2-years mortality (p=0.0022).

Conclusions. Clustering techniques can be an effective tool in identifying and a better understanding of vital differences between clinically important subpopulations of heart failure patients with distinct clinical characteristics and outcomes.

Keywords: machine learning, AI, medicine, heart failure

Kazimierska–Zając Magdalena (Wroclaw Medical University, Poland), Rutkowski Dariusz (University of Lower Silesia, Poland), & Malska-Śmiałowska Anna (Wroclaw University of Health and Sport Science, Poland)

The use of music in physical education in remote learning during a pandemic

Introduction. Physical activity is an essential factor for human health. It is especially important for children and young people because it ensures proper physical and mental development. Physical education lessons are the most active time during the school period. Music is very important in physical education, as it helps to maintain the rhythm of the exercises, can have a stimulating effect, and can increase concentration and motivation. The Covid 19 pandemic forced most teachers to change their jobs. Due to the epidemiological situation, the possibility of undertaking organised physical activity has been reduced, and the time spent doing tasks in a sitting position has increased. Team physical activity has been replaced by an individual-home physical activity, and a significant part of practical activities has been replaced by content related to physical culture knowledge.

Objective. The main objective of this study was to evaluate the use of music in remote learning physical education during the Covid 19 pandemic.

Material and Methods. The study involved 131 persons (79 females and 52 males) working in elementary school, teaching grades 4-8. A self-administered questionnaire was used, which included questions about the form of physical education lessons during the pandemic, the teacher's subjective assessment of the students' involvement in the classes, and the use of music during the classes.

Results. Most of the teachers as a way to implement the PE curriculum indicated the transfer of knowledge through presentations or videos (46.5%), and different tasks to be performed by students were recommended by 41.2% of the teachers. 36.3% of the educators chose to practice physical exercises in front of the camera, while none of the above forms was declared by 16% of the teachers. Before the pandemic, 93% of the teachers declared that they conducted classes with the use of music. Most of the respondents used music during PE lessons (66%), and 14.5% of the teachers also used music during extracurricular activities. As many as 23.6% used elements of music therapy. Moderate interest in music activities was observed by 57.2% of the teachers, while high interest was observed by 29.7% of the respondents. During the pandemic and distance learning, students' interest decreased compared to before the pandemic and was overwhelmingly moderate (70.1%), with high interest indicated by only 9.9% of respondents. For about 78% of the respondents, the study program at the AWF was the only preparation for teaching with music. As many as 60% of teachers declared willingness to participate in trainings on the use of music in physical education classes and 32% on music therapy.

Conclusions.

- It can be noticed that the level of students' engagement decreased in connection with remote education. This may be due to the predominance of theoretical classes over physical exercises.
- As children's physical activity is increasingly declining, and often gym class is the only form of activity for students, every effort should be made to re-establish a commitment to engaging in physical activity upon return to contact education.
- Elements of music therapy can help students return to social contact and offset the psychological consequences of isolation and remote learning. It is, therefore, necessary to enable teachers to deepen their knowledge of pandemic mitigation, including music therapy.
- Attention should be given to music-related content in the physical education teacher education program.

Keywords: physical education, covid 19, remote learning, physical activity, music, music therapy

Kazimierska-Zajac Magdalena & Ślósarz Luba (Wroclaw Medical University, Poland)
E-therapy during a pandemic in Poland and worldwide - a temporary trend or a new reality?

Introduction. The COVID-19 pandemic and associated restrictions to limit the spread of the virus have forced significant changes in human functioning. During the pandemic, due to high demand and the need to maintain social distance, online therapy had become commonplace both in Poland and worldwide, despite the fact that before the pandemic, many therapists had concerns about the use of Internet therapy. The question is whether e-therapy is a temporary trend caused by the epidemiological situation in the world or whether it will become a permanent trend and replace the traditional form until it becomes the norm?

Material and methods. Literature analysis (2018-2022) and e-therapy information pages.

Results. E-therapy is effective in treating many mental disorders. Among others, in alleviating symptoms of anxiety and depression during the COVID-19 crisis. E-therapy is also effective in couples therapy. However, professionals cite the following as the greatest difficulties of this type of therapy: establishing a strong therapeutic bond with both partners, dealing with escalating conflict, and interrupting therapy. Among researchers, there is no shortage of questions regarding the very process of conducting online therapy or the time needed to conduct sessions in the online space, and some also suggest the need to create standards for online therapy. The findings provide preliminary qualitative evidence that online therapy can be a useful addition to traditional forms of face-to-face therapy. The answer to the question of whether online therapy will permanently remain in psychological practice remains open. The widespread provision of this type of therapy will probably open the field for further discussion.

Keywords: pandemic, mental health, e-therapy, online therapy

Klisowska Iwona, Dąbek Anna, Seń Mariola, Zborowska Iwona, & Grabowska Barbara (Wroclaw Medical University, Poland)
Mobile apps used to assess and monitor nutritional status and malnutrition among seniors

Introduction. The threat of progressive malnutrition and its consequences among seniors is becoming an increasingly frequent phenomenon. Conducting a systematic assessment of nutritional status becomes an indispensable element of activities. Modern applications may be helpful in monitoring the nutritional status and the undertaken corrective actions.

Aim. The aim of this paper is to present possibilities of remote assessment and control of nutritional status. In this paper, an attempt has been made to present available applications enabling early risk identification.

Results. In recent years there has been a development of e-health solutions. Applications and programs are created to reduce health inequalities and improve health through the use of telemedicine and telecare solutions. The European Parliament and the European Commission, within the framework of the Recovery Plan for Europe, declare strengthening individual care through digital services development of innovative healthcare systems, including telemedicine. Currently, there are systems available that can be used in the prevention and management of malnutrition. These systems include sensors, video telecare, Istel Care System, and videoconferencing, which allows for meal reminders,

patient education or measurements. There are also applications available that allow for the calculation of body weight, planning a diet, checking the calorific value of products, glycemic index, calculating the nutritional value of a meal or analysing body composition (Fresh Diet.pl, KalkulatorKalorii.net, VitaScale application Child Growth Monitor - CGM). For example, online dietary calculators such as BMI calculator, WHR, AMR, BMR, TER (e-manus.pl, KCALkulator).

Conclusions. Application of a variety of treatment methods, and forms of support, including control applications and reminder systems, is a purposeful and accurate action in the care of geriatric patients.

Keywords: malnutrition, eating disorders, apps, senior

Kunc Dominika, Komoszyńska Joanna, Perz Bartosz, Kazienko Przemysław, & Saganowski Stanisław (Wroclaw University of Science and Technology, Poland)
Validation of emotion detection system in everyday life

Aim. The research aims to validate a system for emotion detection in everyday life using physiological signals from wearables. As collecting emotion-related real-life data remains challenging, this research confirms whether using the Emognition system and personalised machine learning (ML) models can improve this process.

Methods. The three-month-long study involved five participants (two females) and was performed in everyday life. The potential of per-group personalisation was investigated by training and testing ML models on four weeks of collected data. Afterwards, the best-performing personalised ML model was embedded in the Emognition system, which the study's participants used.

Results. The results on data collected in real-life indicate that ML models trained on a relatively small amount of data from the study's participants can outperform models trained on a larger number of different people's samples. Furthermore, using the personalised model in the Emognition system during the study showed that personalisation improves the emotion-related data collection process.

Conclusions. Utilising a machine learning model as a trigger for emotion-related data collection is a promising idea. Using the personalised ML models in the Emognition system helped increase the number of collected emotion-related samples. The more training data is collected, the better the models can perform, and therefore the better the Emognition system can work.

Keywords: emotion detection, field studies, personalisation, wearables, physiological signals, real-life validation, machine learning, Emognition system

Lintowska Agnieszka, Seń Mariola, & Klisowska Iwona (Wroclaw Medical University, Poland)
Psychosocial Peacebuilding Approach of International Association for Human Values (IAHV) - now, you can take the first step online

Aim. The aim of the study is to provide an overview of the IAHV's online workshop, called Healing Resilience Empowerment Workshop (HRE), which is the first step of trauma relief intervention for refugees.

Methods. We searched the International Association for Human Values materials and sources and the repository held by the European Union's activities outside of Europe about IAHV's Resilience and Peace Building Initiatives in Lebanon and Jordan.

Results. The analysis shows that nowadays, using online technologies, the HRE workshop (Healing-Resilience-Empowerment Workshop) offers people affected by war or another crisis even in Afghanistan, Ukraine, or South Africa. HRE is the first step of IAHV's psychosocial approach for trauma relief and a low threshold, low cost, highly effective way that addresses the physical up to deeply existential layers transcending the strictly cognitive effects

Conclusions. The study considers the pioneering approach of integrated psychosocial peacebuilding of IAHV and the same time, offered via the Internet a basic IAHV intervention program that can reach a large number of individuals while still effecting strong personal benefits.

Keywords: online workshop, trauma reliefs intervention, conflict, violence, refugees

Majkowski Jakub (University of Wroclaw, Poland)
Studying at the Faculty of Social Sciences in the opinions of students and graduates. Online interviews during the pandemic

Aim. The aim of the research is to analyse social science studies in the opinion of both current students and graduates. Aspects such as career prospects, acquired hard and soft skills, the level of education and reasons for choosing this field of study were taken into account.

Methods. The subject of the study were four respondents: two students and two graduates of social sciences studies. The method was qualitative research in the form of online interviews. Coding was used to transform the data to analyse the results more precisely and compare them.

Results. The results show that most respondents positively assessed the field of Sociology due to the high level of education. There was also a difference in the evaluation of studies between current students and graduates.

Conclusions. The conducted research provided valuable information on the perception of social sciences studies by students and graduates. The information obtained about the needs and expectations of respondents can be useful in improving the educational program by universities.

Keywords: education, social studies, soft skills, hard skills, level of education, qualitative research, online interview, coding

Mazur Iwona (Wroclaw Medical University, Poland)
The role and importance of the Internet in public health

Objectives. One of the main objectives of the paper is to introduce and describe the basic functions of the Internet that can be used in public health.
The use of Internet tools has proven effective in performing many public health tasks. The paper also provides an overview of the major online health care support tools. The paper addresses the most popular services offered on the Internet in public health.

Methods. The author reviewed the existing literature and selected the most interesting examples of the use of the Internet in the field of public health

Results. The Internet has become a popular resource for learning about health and researching one's health status. Despite the benefits of using the Internet in public health, there are also risks that could stand in the way of proper use. Misinformation and disinformation in public health are very dangerous because the effects of misinformation and disinformation in public health can be particularly severe. Misinformation and disinformation in health care have particularly serious consequences for people's quality of life and even their risk of death.

Keywords: Internet, internet services, public health, misinformation, disinformation.

Mehmeti Hyrije (University of Prishtina "Hasan Prishtina", Kosovo)
Challenges and opportunities of learning journalism online during COVID-19

Aim. Due to the COVID-19 outbreak, universities were forced to move all lectures totally online. This transition has been very challenging for professors and students as well. The research aims to highlight the challenges and opportunities of learning journalism online during COVID-19 in the public university of Pristina (the capital city of the Republic of Kosovo).

Methods. Data collection of two online surveys, one for the professors and teaching assistants of the Department of Journalism and one for the current students of the second year and third year who have experienced the abovementioned transition. Also, analysis of the literature on the subject.

Results and conclusions. Rapidly adapting to online learning has been very challenging for both professors and students of the Department of Journalism at the public university. They've faced problems accessing course content and attending lectures due to technical infrastructure. In general, journalism professors and students are not very satisfied with online learning.

Keywords: distance learning, COVID-19, university, journalism

Moraru Mădălina (University of Bucharest, Romania)
The role of social media influencers in raising the credibility of healthcare information in the Romanian market

Social media influencers have gained more credibility during the pandemic for significant reasons such as the worldwide health crisis, time spent in the digital world and the appearance of stronger needs related to the rhythm of being informed. Firstly, the crisis has triggered fears, and people have asked a lot of questions about the dangerous and unknown enemy. During the lockdown, everybody paid attention to any kind of information regardless of its credibility. The concept of *fake news* strongly associated with fears motivated people to look for trust and stability when discussing their own health. However, the digital world became the easiest and, sometimes, the only way to communicate with someone, party, and celebrate Easter or Christmas for a while. Some of the pandemic survivors entirely reconsider their life by changing their lifestyles because of feeling threatened by the SARS-COV2: they

are coming back to cooking, eating healthy vegetables, ordering food from farmers, spending more time in front of the computers. Hence, the role of social media influencers has been progressively increasing since worldwide sensitive people have been trying to convey their opinions, be listened to, and follow interesting topics.

Among many other fields such as parenting, fashion, travelling, party, and pets, there are a few areas strongly connected with healthcare, such as fitness, nutrition, and food. The healthcare field stands for professionalism, requesting a higher level of credibility mixed with charismatic communication. How is it possible to approach health in the digital world and raise people's trust?

According to Mediafactbook 2021, in Romania, Instagram is the second social platform after Facebook, followed by Pinterest and TikTok. The use of Facebook by most of the population (91%) and Instagram by 61% highlights the generalisation of what we call now Meta, while the latter has become more specialised not only by addressing a certain age but to a consumer profile as well. Analysing the first 5 Romanian social media influencers recognised for their experience in healthcare (Dr. Mihail Pautov-specialized in general surgery, Dr. Gabriela Bud, dermatologist, Dr. Vasi Rădulescu specialised in internal medicine and cardiology, Dr. Elena-Ana Ramașcanu, dermatologist, and Dr. Elena Martin specialised in plastic surgery), we reach to a strong conclusion: most of them deliver their messages through integrated communication tools. This fact points out that they simultaneously use different social media platforms such as YouTube, Facebook, Blogs and some specialised professional websites. This research aims to identify the sources of credibility of the influencer Dr. Mihai Pautov, based on investigating his Instagram posts from March 16, 2020, to March 1, 2021.

The research design relies on the multimodal discourse, quite appropriate to analyse the communication developed on two levels: visual and linguistic. In this context, Berger's statement regarding the evolution of this concept (multimodal discourse) enriches the range of theories that debates discourse analysis: "When discourse analysis started analysing complex texts such as Facebook, they had to deal with words, images, photographs and videos. The term they use for this kind of analysis is <multimodal> discourse analysis—dealing with different modes of communication". Consequently, Instagram will provide relevant materials to reveal successful strategies for conveying communication regarding healthcare which represent a source of credibility and authenticity.

Keywords: healthcare, communication, influencers, community, credibility

Papierkowska Roksana, Cieciora Katarzyna, & Zborowska Iwona (Wroclaw Medical University)
Is the Internet the right source for conquering knowledge on diseases?

Aim. The main aim of the project is to find out the opinions of young people aged 18-30 on finding their disease symptoms on the Internet and about their emotions.

Methods. The study involved 100 people aged 18-30 who voluntarily completed a proprietary electronic questionnaire examining the attitude of young people to searching for disease symptoms on the Internet.

Results and Conclusion. Many respondents found a diagnosis on the Internet-based on their symptoms at least once in their life. Most of this information was searched for on the first pages appearing in a web browser after entering a given ailment. Most respondents indicate anxiety about their health as the main reason for searching for disease symptoms on the Internet. A lot of respondents did not consult with a doctor. A large group of respondents say that the information retrieved caused them

to fear and/or panic. The Covid-19 pandemic influenced the frequency of searching for health ailments on the Internet. The obtained results show the attitude of young people to searching for the meaning of disease symptoms on the Internet.

Cognitive value. The cognitive value is the selection of a specific research group, which from an early age has the possibility of easy and universal access to the Internet, which has become the main source of obtaining information in almost all areas of science and life.

Keywords: Internet, symptoms, health, source, respondents

Seń Mariola, Lintowska Agnieszka, Klisowska Iwona (Wrocław Medical University, Poland)
Modern technologies and innovation in medicine

Admission. As AI specialists say today, artificial intelligence and machine learning used in medicine increase the chances of providing patients with effective treatment. This gives AI a huge advantage over humans, although this is where questions and doubts of a legal and ethical nature begin to emerge.

Objective. Searching for answers to the question about the limits of the increasing use of biotechnology and AI in medicine.

Material and methods. The method used in the work was the analysis of the literature.

Results. Innovation in medicine is related, inter alia, to the use of information and communication technology, thanks to which the patient's treatment process and his recovery can be faster and more efficient. The use of technology in medicine may relate to computer-aided procedures, intraoperative navigation during teleoperation, and telemedicine (remote medicine) widely used today in the pandemic, e.g. in the form of Remote Medical Care. Thanks to this solution, it is possible to constantly monitor the health of patients and perform preventive and control examinations outside the hospital environment or primary health care facilities. Such a possibility is provided by the use of portable medical devices that record certain vital parameters.

Summary. Online visits accounted for more than 8 out of 10 contacts with primary care clinics during the pandemic. As a result, as many as 87 per cent of Poles positively evaluate the facilities offered by telemedicine. However, the foundation of technology development in medicine, apart from the implementation of properly constructed digital innovations, is trust. Concerns about safety may prove to be a significant barrier to the development of telemedicine.

Keywords: patient, biotechnology, telemedicine, safety

Siennicka Agnieszka (Wroclaw Medical University, Poland)
AI in medicine and health psychology: Identifying variability of structures of beliefs about health locus of control in cardiac patients

Aim. We aimed to apply artificial intelligence (AI) algorithms for identifying patterns of structure of beliefs related to health control in patients with heart disease in order to analyse the variability of those beliefs, as it may affect the patients' attitude towards the disease and its' management.

Methods. 758 patients completed the Multidimensional Health Locus of Control (MHLC) Scale, dedicated to the evaluation of personal beliefs on the control of individual health status on three subscales: (1) 'internal localisation of health control' (I) referring to beliefs that health status depends on individual decisions and behaviours; (2) 'external control (by the others)' referring to beliefs that health depends on the others (e.g., doctors) and (3) 'external control (by chance)' referring to believes that health status results from chance, fate, or luck. Results were analysed using clustering algorithms.

Results. We found nine variable clusters with 84±33 patients (min 31, max 129). Regarding the structures of beliefs about health control, cluster 1 is similar to 3 (the belief in other people is at the highest level with the lowest level of internal beliefs), clusters 4, 6 and 7 are similar to 9 (where the beliefs in other people are at the highest level with the lowest level of beliefs in chance), and 5 is similar to 8 (with the highest internal beliefs, and the weakest beliefs in chance). Cluster 2 is different from the remaining 8, as the dominance of internal beliefs is accompanied by an equal level of both types of external beliefs. It is important to underline that one cluster has an exceptionally low level of internal control (cluster 3) and two clusters with an exceptionally low level of beliefs in chance (5 and 8).

Conclusions. Unlike the classic statistical analyses, our approach enables the interpretation of three parallel parameters characterising the patient's beliefs without focusing on only one of them. Such an approach may help prepare qazi-personalised recommendations for a larger sample of patients.

Keywords: heart failure, patient education, artificial intelligence, health locus of control, MHLC scale, disease management, health psychology

Siennicka Agnieszka, Biegus Jan, Gajewski Piotr, Sokolski Mateusz, Zymliński Robert, Urban Szymon, Ponikowska Beata (Wroclaw Medical University, Poland), Jedynak Kamila (Private Diet Counselling [http://manufakturadiety.pl/], Poland), & Młynarska Katarzyna (Military Hospital in Wroclaw, Poland)
A pilot study on standardised in-hospital education about heart failure

Aim. We aimed to demonstrate a novel method of standardised in-hospital education addressed to heart failure (HF) patients admitted due to serious worsening of their disease, which may result from incorrect behaviour.

Methods. This pilot study was conducted among 20 patients (19 men, age 63±16 years). Education lasted five days and was based on individual sessions conducted using colourful boards demonstrating selected, highly practical elements of the knowledge about HF management, prepared by experts in HF management (medical doctors, a psychologist and a dietician). The level of knowledge about HF was measured before and after education, based on a questionnaire prepared by the authors of the boards.

Results. NYHA class and body mass decreased significantly during the hospital stay (both p<0.05). Mini Mental State Exam confirmed that no one demonstrated cognitive impairment. The score reflecting the level of knowledge about HF improved significantly after five days of in-hospital treatment accompanied by education (p=0.0001).

Conclusions. We showed that the proposed model of education addressed to HF patients, conducted during a hospital stay, using colourful boards demonstrating selected, highly practical elements of the knowledge about disease management (prepared by experts in HF management), resulted in a significant increase in HF-related knowledge.

Keywords: heart failure, patient education, HF self-care, disease management, cognitive functions

Siennicka Agnieszka & Kaczmar Katarzyna (Wroclaw Medical University, Poland)

Description of the project HeartBIT_4.0 Application of innovative Medical Data Science technologies for heart diseases

Aim. The aim of the HeartBIT_4.0 project is to prepare lectures, workshops and trainings by The Excellence Partners invited to the consortium through which the staff from the Wroclaw Medical University (WUM) will be trained in the field of Data Science and application of Data Science techniques to medicine. The experts in the consortium are The Technical University of Dresden, Wroclaw University of Economics and Business, Leipzig University and Prague University of Economics and Business.

Concept. Establishing the consortium under Horizon 2020 twinning programme and thus formal cooperation with the leading scientific departments from the developed European Union countries that are experts in Biomedical Data Science will significantly increase the scientific potential of the whole University. The consortium leader (The Department of Heart Diseases) has had no experience in using modern state-of-the-art methods of analysis and interpretation of large medical data sets.

Results. Throughout five work packages, theoretical and practical classes have been organised so far. Many specialists from various fields of medicine and WUM students took part. The HeartBIT_4.0 project has become a co-organiser of a conference AI in health (2021), and Wroclaw Medical University is a partner of "AI in Healthcare Coalition" so far. Project teams are also working on publications using AI and preparing existing registers for AI analysis.

Practical application. Thanks to the project HeartBIT_4.0, two project employees (doctor interns) have started joint doctorates in the field of cardiology. The cooperation with auxiliary promotors in the field of machine learning and other AI methods will be used to develop the results of the study, in addition to classical statistical analysis.

Keywords: AI, artificial intelligence, medicine, machine learning, big data, data science

Szabó Ildiko (Károli Gáspár University, Hungary)

Online Hungarian, Slovakian and Slovenian Language for Specific Purposes teaching resources in QuILL Project

Aim. The aim of the Quality In Language Learning (QuILL) project is to provide language lecturers with the skills to identify, assess, use, and create digital and ICT based language teaching sources research. In the first research phase, selected, reviewed, tested, and validated e-learning based language teaching sources addressed to higher education students for the learning of 15 different European languages have been identified to supply higher education language lecturers with open educational resources (OER).

Methods. The identification of the sources has been made by the experts of the partnership following a bottom-up approach and the participation of a relevant number of potential beneficiaries, focusing in particular on Language for Specific Purpose (LSP). Each resource is presented both in English and the target language through a review, a case study and a guideline on how to use it.

Results. The Hungarian partner was to identify Hungarian, Slovakian and Slovenian OERs used for Language as a Specific Purpose described according to quality indicators: a comprehensive approach, added value, motivation enhancement, innovation, transferability, skills assessment and

validation, adaptability. The dominant domain area of these 60 OERs is teacher education. Out of the five CEFR skills, four are represented, except for mediation. All the CEFR proficiency levels of the learner are represented. Taking the type of material into consideration, the learning materials include audio, test, activity/task, video, picture/graphics, but no laboratory, simulation or animation.

Conclusions. Even though there is a high need for digital teaching sources, we face the problem of the scarce existence of teaching sources within the field of languages for specific/technical purposes in certain languages and/or domain areas.

Keywords: digital language teaching sources, language for specific purposes, higher education, open educational sources, innovative pedagogy

Urban Szymon, Błaziak Mikołaj, Jura Maksym, Zymliński Robert, & Siennicka Agnieszka (Wroclaw Medical University, Poland)
Artificial Intelligence and new possibilities in cardiovascular research

Aim. We aimed to demonstrate the new possibilities generated by artificial intelligence (AI) techniques in cardiovascular research.

Methods. We performed a review of the existing literature and chose the most interesting examples of using AI techniques in cardiovascular research.

Results. We have distinguished six essential fields where AI is being used in cardiology: 1. Image analysis, 2. Clustering techniques 3. Prediction models 4. ECG analysis 5. Decision-support system 6. Genomics Examples regarding each subset were provided.

Conclusions. AI can analyse the data which were unavailable to the clinicians. Therefore, it represents enormous potential. New data analysis techniques can be helpful in reducing the quantity of performed diagnostic procedures, optimising in-patient and out-patient care, identifying high-risk groups and understanding the pathophysiology of cardiovascular diseases.

Keywords: cardiovascular research, AI, Artificial Intelligence, data analysis, Big Data

Valenti Simona (University of Bari Aldo Moro, Italy)
Phenomenological analysis of mass-mediated communicative distortions and the effects of "virtual surveillance" in communication. Changes in the educational context destructured by the transmission of knowledge at a distance

Aim. The proposed work intends to photograph the media condition of contemporary subjects. The work is structured in three macro-areas of reference: philosophical, sociological and linguistic and is based on the phenomenological methodology of observational and descriptive investigation of real data and the consequent verification of the possible communication distortions detected.

Methods. My methodological approach develops on the level of phenomenological philosophy of observational and descriptive importance of the phenomenon (assertive data, chronotopic factors, factors relating to communication, factors of empathic contagion, resistance factors, factors relating to the determination of the method, perceptual factors) and on that of the participatory observation of the

researcher who enters as a subject in the investigated and observed context, of ethnomethodological inspiration.

Results. The first results allowed me to analyse the evolution of educational processes and the development of the teacher's ability to reposition himself in the here and now of the educational-professional context in order to build relational experiences of meaning with students in a phase of capillary digitalisation of the educational world as the pandemic one.

Conclusions. This type of work allowed me to analyse the evolution of the approach to their profession by some teachers, who reported a common feeling of disorientation and bewilderment (in a cocktail of emotions also of frustration) in adapting to the new modes of "distance teaching".

Keywords: algorithm, virtual reality, information bubbles, disinformation, formative action, digitisation