9th IEEE International Conference on Cognitive Infocommunications

CogInfoCom 2018

CONFERENCE PROGRAM

August 22–24, 2018

Budapest, Hungary

Welcome

It is our pleasure to welcome all of you to the Metropolitan Ervin Szabó Library on behalf of the organizers of the **9th IEEE International Conference on Cognitive Infocommunications – CogInfoCom 2018**.

Cognitive Infocommunications (CogInfoCom) is a multidisciplinary research field that has emerged as a synergy between infocommunications and the cognitive sciences. A key observation behind CogInfoCom is that humans and ICT are becoming entangled at various levels through a convergence process between these disciplines, as a result of which new forms of cognitive capability are appearing. Importantly, these capabilities are neither purely natural (human), nor purely artificial; therefore, it is suggested that they should be treated in a way that unifies both engineering and human-oriented perspectives. As a result, CogInfoCom aims not only to provide analyses of emergent communicative phenomena, but also focuses on the development of new approaches and methodologies towards the synthesis of human-ICT capabilities based on engineering principles.

The aim of this conference is to help achieve these goals by bringing together researchers and practitioners from relevant areas of science and industry. We would like to thank the track and session organizers, as well as the many contributors for making this conference possible.

We would especially like to acknowledge the devoted support of the members of the CogInfoCom Technical Program Committee, and the work and effort of all members of the organization team, without whom this conference would not have been possible. We hope that all participants of CogInfoCom 2018 will find the conference to be an intellectually stimulating and enjoyable event.

Chairs	Honorary chairs
Péter Baranyi	Vilmos Csányi
Anna Esposito	Valéria Csépe
Péter Földesi	Helen Meng
Tamás Mihálydeák	Yeung Yam
	József Bokor

Organizers

University of Debrecen
Hungary

Szechenyi Istvan University
Hungary

Budapest University of Technology and Economics
Hungary

Budapest Univesity of Technology and Economics
Department of Telecommunications and Media Informatics
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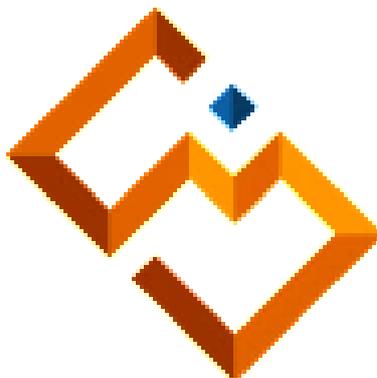**IEEE Computational Intelligence Chapter, Hungary**

IEEE IES and RAS Chapters, Hungary

In scientific co-operation with

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BRAIN PRODUCTS
Solutions for neurophysiological research

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General Information

Date and Place

CogInfoCom 2018 will take place between **22-24 August, 2018** at the **Metropolitan Ervin Szabó Library in Budapest, Hungary** (Szabó Ervin tér 1, Budapest, Hungary Postcode 1088).

Official Language

The official language of the conference is English. All presentations, including theoretical talks and demos, will be held in the official language.

Proceedings

All accepted theoretical contributions will be available on the pendrive distributed to conference participants. Additionally, contributions will be uploaded to the IEEE Xplore database.

General regulations

We kindly ask all participants to observe the regulations of the host institution. All participants are kindly asked to refrain from smoking outside of the designated smoking areas.

Social events

Opening speech
Aug 22 Wednesday, 9:00-9:20   Metropolitan Ervin Szabó Library
                                     Szabó Ervin tér 1, 1088

Welcome reception
Aug 22 Wednesday, 19:00-21:00   Mercure Budapest Korona
                                     Kecskeméti u. 14, 1053

Banquet
Aug 23 Thursday, 20:00-0:00   Millennium 1 Boat, Budapest,
                                     Vigadó pontoon 2, 1052

Closing event
Aug 24 Friday, 13:00   Metropolitan Ervin Szabó Library

Web: http://www.coginfocom.hu/conference/CogInfoCom18/

Tracks & Session Organizers

CogInfoCom based education

    Organizers: Ildikó Horváth

                        (Széchenyi István University VR Learning Center, Győr, Hungary)

CogInfoCom supported spatial mental modelling

    Organizer: Miroslav Macík (Czech Tehcnical University in Prague)

Linguistic and Behavioural Interaction Analysis

    Organizers: Anna Esposito (UNINA2, Italy)

                        Antonietta M. Esposito (INGV, Italy)

                        Maria Koutsombogera (Trinity College Dublin, Ireland)

                        Gennaro Cordasco (Università Vanvitelli/IIASS, Italy),

                        Mauro Maldonato (Università di Napoli Federico II, Italy)

                        Carl Vogel (Trinity College Dublin, Ireland)

Cognitive and affective interactions in human behavior

    Organizers: Nelson Mauro Maldonato (Univ. di Napoli Federico II, Italy)

                        Raffaele Sperandeo (SiPGI)

                        Silvia Dell'Orco (SiPGI)

UX and Gamification within CogInfoCom

    Organizer: Károly Hercegfi (BME, Hungary)

Gamification, ICT-based solutions and open content development in the teaching and learning process

    Organizer: György Molnár (BME, Hungary)

CogInfoCom based Learnability

    Organizer: Kővári Attila (University of Dunaujvaros)

August 22.

Wednesday

8:00-9:00	**REGISTRATION**	
9:00-9:20	**OPENING**	**Room A**
9:20-10:00	**PLENARY LECTURE: Thorsten Zander (Brain Products), Roland Csuhaj (Brain Products)**	

Plenary Session Chair: Carl Vogel   **Room A**

**„Towards Neuroadaptive Technology:
From Passive BCI to Cognitive Probing"**

10:00-11:20	**PANEL SESSION**

Room A	Session Chair: Thorsten Zander
Sebastian Seidel and Uwe M. Borghoff	Extracting State Machines from Feedforward Neural Networks
Tibor Guzsvinecz, Csaba Kovacs, Dominik Reich, Cecilia Sik Lanyi and Veronika Szucs	Developing a virtual reality application for the improvement of depth perception
David Sik, Kristóf Csorba and Péter Ekler	Toward Cognitive Data Analysis with Big Data Environment
Atsushi Ito, Mayu Kumagai and Hiroyuki Hatano	How to Convert Skills of Masters to Explicit Knowledge Through The Use of ICT

Room B	Session Chair: Atsushi Ito
András Benczúr and Bálint Molnár	On the Notion of Information – Info-sphere, the World of Formations
Patrícia Bőczén-Rumbach	Industry-Oriented Enhancement of Information Management Systems at AUDI Hungaria using MaxWhere's 3D Digital Environments

Veronika Szücs and Mahmoud Wassouf	Modified MANET protocol to extend the emergency network
Zoltan Gal, Mohamed Amine Korteby and Ashraf Dabbas	Estimation of the Wireless Sensor Network Performance using Fractal Behavior of the Generated Cognitive Harmonic Waves

11:20-11:40   **COFFEE BREAK**

11:40-13:00   **PANEL SESSION**

Room A	Session Chair: Carl Vogel
Track **Session I.**	**Linguistic and Behavioural Interaction Analysis Session** Organizer: Anna Esposito, Antonietta M. Esposito, Maria Koutsombogera, Gennaro Cordasco, Mauro Maldonato, Carl Vogel
Milan Gnjatovic, Jovica Tasevski, Branislav Borovac and Nemanja Macek	An Entropy-Based Approach to Automatic Detection of Critical Changes in Human-Machine Interaction
Anna Esposito, Antonietta M. Esposito, Gennaro Cordasco, Mauro Maldonato, Carl Vogel and Nikolaos Bourbakis	Emotional faces of children and adults: What changes in their perception
Stanislav Ondas, Jozef Juhar, Eva Kiktova and Julius Zimmermann	Anticipation in speech-based human-machine interfaces
Maria Koutsombogera, Rachel Costello and Carl Vogel	Quantifying Dominance in the MULTISIMO Corpus

Room B	Session Chair: György Molnár
Session	**Gamification, ICT-based solutions and open content development in the teaching and learning process** Organizer: György Molnár

György Molnár, Katalin Nagy, Zoltán Szűts, János Horváth-Czinger and Bence Szenkovits	Gamification and microcontent orientated methodological solutions based on bring-your-own device logic in higher education
György Molnár, Anikó Kálmán and Zoltán Szűts	Issues of Lifelong Learning - Behavioral ends of teaching and learning through ICT
György Molnár and Dávid Sik	Supporting Learning Process Effectiveness with Online Web 2.0 Systems on the basis of BME Teacher Training
David Sik and Janos Horvath Cz.	Open micro-Content Development with Web 2.0 and Smartphone Environment

13:00-14:00   **LUNCH BREAK**

14:00-15.20   **PANEL SESSION**

Room A	**Session Chair: Alfonso Davide Di Sarno**
Track **Session I.**	**Cognitive and affective interactions in human behavior** Organizers: Nelson Mauro Maldonato, Raffaele Sperandeo and Silvia Dell'Orco
Raffaele Sperandeo, Enrico Moretto, Daniela Iennaco and Nelson Mauro Maldonato	Using complex networks to model, simulate and understand the dynamics of psychotherapeutic processes An experimental study proposal
Enrico Moretto, Alfonso Davide Di Sarno, Vania Costa, Silvia Dell'Orco, Raffaele Sperandeo, Mariavittoria Lerro, Nelson Mauro Maldonato, Marzia Duval and Teresa Longobardi	Neuroaesthetic and narrative levels of experience A hypothesis of integrative research

Alfonso Davide Di Sarno, Silvia Dell'Orco, Raffaele Sperandeo, Gennaro Iorio, Nelson Mauro Maldonato, Maria Luigia Fusco, Valeria Cioffi, Enrico Moretto, Teresa Longobardi and Gaetano Buonocore	Conscious experience using the Virtual Reality A proposal of study about connection between memory and conscience
Lucia Luciana Mosca, Alfonso Davide Di Sarno, Raffaele Sperandeo, Valeria Cioffi, Nelson Mauro Maldonato, Marzia Duval, Silvia Dell'orco, Giuseppina di Ronza and Enrico Moretto	I am a brain, Watson. The rest of me is a mere appendix" The memory, a characteristic of the human being

Room B	Session Chair: Miroslav Macik
Track	CogInfoCom supported spatial mental modeling Organizer: Miroslav Macik
Barbora Endrstova, Miroslav Macik and Lukáš Treml	Reprobooktor: A concept of audiobook player for visually impaired older adults
Tomas Kolarik, Ivo Maly and Zdenek Mikovec	Suppressing external visual distractors from driver's field of view
Miroslav Macik, Vojtech Gintner, Dominika Palivcova and Ivo Maly	Tactile symbols for visually impaired older adults
István Péntek, Ábel Garai and Attila Adamkó	Reflective bio-sensory signal-processing - implelemting personal assisted e-Health

15:40-17:20   **PANEL SESSION**

Room A	Session Chair: Katarzyna Chmielewska
Csaba Nemes and Sandor Jordan	Analysing object detectors from the perspectiveof co-occurring object categories
Veronika Szücs, György Károlyi, András Tatár and Attila Magyar	Voice Controlled Humanoid Robot based Movement Rehabilitation Framework
Szabolcs Szilagyi, Imre Bordan, Lajos Harangi and Benjamin Kiss	MPT-GRE: A Novel Multipath Communication Technology for the Cloud
King Keung Wu, Helen Meng and Yeung Yam	Topic Discovery via Convex Polytopic Model: A Case Study with Small Corpora

Room B	Session Chair: Mika Luimula
Attila Hideg, Laszlo Blazovics and Bertalan Forstner	Multi-Robot Simulation Framework
Veronika Szücs, Beáta Kovács and Bálint Tasnádi	Music for seeing – visualization of sounds
Veronika Szücs, György Károlyi, András Tatár and Attila Magyar	Voice Controlled Humanoid Robot based Movement Rehabilitation Framework

19:00-   **WELCOME RECEPTION**

August 23.

Thursday

9:00-10:00	**PLENARY LECTURE: NOKIA BELL LABS**	**Room A**

Plenary Session Chair: Péter Baranyi

**"Augmenting Humans through CogInfoCom:
a Bell Labs view"**

10:00-10:20	**COFFEE BREAK**
10:20-11:40	**PANEL SESSION**

Room A	Session Chair: Enrico Moretto
Track **Session II.**	**Cognitive and affective interactions in human behavior** Organizers: Nelson Mauro Maldonato, Raffaele Sperandeo and Silvia Dell'Orco
Vania Costa, Martina Messina, Mario Bottone, Raffaele Sperandeo, Anna Esposito, Nelson Mauro Maldonato, Valeria Cioffi, Giuseppina di Ronza, Daniela Iennaco, Pasquale Dolce and Enrico Moretto	A deep learning algorithm to prevent burnout risk in Family Caregivers of patients undergoing dialysis treatment
Iennaco Daniela, Martina Messina, Enrico Moretto, Silvia Dell'orco, Vania Costa, Raffaele Sperandeo, Valeria Cioffi, Anna Esposito, Nelson Mauro Maldonato, Pasquale Dolce and Gaetano Buonocore	Decision-making Styles and Personality Traits A pilot study on the predictive capacity of the TCI regarding the quality of the decision

Martina Messina, Alfonso Davide Di Sarno, Yari Mirko Alfano, Maria Guastaferro, Nugnes Nadia, Daniela Iennaco, Nelson Mauro Maldonato, Raffaele Sperandeo and Nicole Nascivera	Aggression or Aggressiveness? A research hypothesis on aggression, videogames and executive functions in preschool age
Nicole Nascivera, Yari Mirko Alfano, Tilde Annunziato, Martina Messina, Vittoria Silviana Iorio, Valeria Cioffi, Raffaele Sperandeo, Margherita Rosato, Teresa Longobardi and Nelson Mauro Maldonato	Virtual Empathy The added value of Virtual Reality in Psychotherapy

Room B	Session Chair: Ádám Csapó
Yu-Lung Chang, Oscal Tzyh-Chiang Chen, Jung-Pin Li and Pei-I Kuo	Low-complexity Image-based Safety-Driving Assistant System for an Embedded Platform
Utkarsh Mittal, Tom Gedeon and Sabrina Caldwell	Managing Knowledge Provenance using Blockchain
Adam Csapo	The Spiral Discovery Network as an Evolutionary Model for Gradient-Free Non-Convex Optimization
Marko Björn, Werner Ravyse, Diego Sanz Villafruela, Mika Luimula and Sanne Leiv	Higher Education Learner Experience with Fuzzy Feedback in a Digital Learning Environment

11:40-13:00   **PANEL SESSION**

Room A	Session Chair: Gennaro Cordasco
Track **Session II.**	**Linguistic and Behavioural Interaction Analysis Session** Organizers: Anna Esposito, Antonietta M. Esposito, Maria Koutsombogera, Gennaro Cordasco, Mauro Maldonato, Carl Vogel
Máté Ákos Tündik and György Szaszák	Joint Word- and Character-level Embedding CNN-RNN Models for Punctuation Restoration
Valér Kaszás, Máté Ákos Tündik and György Szaszák	A semantic space approach for automatic summarization of documents
Gábor Kiss, Artúr Bendegúz Takács, Dávid Sztahó and Klara Vicsi	Detection Possibilities of Depression and Parkinson's disease Based on the Ratio of Transient Parts of the Speech
András Beke	Forensic speaker profiling in a Hungarian speech corpus

Room B	Session Chair: Attila Gilányi
István Károly Boda and Erzsébet Tóth	From Callimachus to the Wikipedia: an ancient method for the representation of knowledge in the WWW era
Veronika Szűcs, Vince Egyed, Csongor Hegedüs, Richárd Földesi and Cecília Sik Lányi	Cognitive decision making development support via Android application
Erdős Ferenc and Richárd Németh	Inter-cognitive Communication Model Using Additive Manufacturing Technology
Lorinc Garai and Andras Horvath	Modelling of human color perception on screen at color shifts

13:00-14:00   **LUNCH BREAK**

14:00-15:20   **PANEL SESSION**

Room A	Session Chair: Károly Hercegfi
Session	**UX and Gamification within CogInfoCom** Organizer: Károly Hercegfi
Dalma Geszten, Balázs Péter Hámornik and Karoly Hercegfi	Exploring awareness related usability problems of collaborative software with a team usability testing approach
Áron Tóth and Emma Lógó	The Effect of Gamification in Sport Applications
Tóth Áron and Bálint Szabó	A Pilot Research on Sport application's Usability and Feedback Mechanics
Péter Gadanecz	The nature of positive emotions via online language learning

Room B	Session Chair: Stanislav Ondas
Zsolt Győző Török and Ágoston Török	LOOKING AT THE MAP OR NAVIGATING IN A VIRTUAL CITY
Eszter Bokanyi, Attila Sóti and Gábor Vattay	Urban scaling of football followership on Twitter
Attila Gilanyi, Anna Racz, Marianna Balint and Katarzyna Chmielewska	Virtual Reconstruction of Historic Monuments
Krisztina Várlaki, Péter Baranyi	A hybrid decision making focused on legal processes

15:20-15:40   **COFFEE BREAK**

15:40-16:40   **PANEL SESSION**

Room A	Session Chair: D. Iennaco
Track **Session III.**	**Cognitive and affective interactions in human behavior** Organizers: Nelson Mauro Maldonato, Raffaele Sperandeo and Silvia Dell'Orco
Teresa Longobardi, Raffaele Sperandeo, Francesca Albano, Yuri Tedesco, Enrico Moretto, Silvia Dell'Orco, Alfonso Davide Di Sarno and Nelson Mauro Maldonato	Co-regulation of the voice between patient and therapist in psychotherapy: machine learning for enhancing the synchronization of the experience of anger emotion
Vincenzo Bochicchio, Nelson Mauro Maldonato, Paolo Valerio, Roberto Vitelli, Silvia Dell'orco and Cristiano Scandurra	A Review on the Effects of Digital Play on Children's Cognitive and Socio-Emotional Development
Vincenzo Bochicchio, Cristiano Scandurra, Roberto Vitelli, Paolo Valerio, Silvia Dell'orco and Nelson Mauro Maldonato	Epistemology of Olfaction: Emotion, Cognition, and Decision Making

Room B	Session Chair: Maria Koutsombogera
Track **Session III.**	**Linguistic and Behavioural Interaction Analysis Session** Organizers: Anna Esposito Antonietta M. Esposito, Maria Koutsombogera, Gennaro Cordasco, Mauro Maldonato,Carl Vogel
Costanza Navarretta	Automatic Gender and Identity Recognition in Annotated Multimodal Face-to-face Conversations

Mika Luimula, Paula Ailio, Chrisna Ravyse, Niina Katajapoo, Raija Korpelainen, Ari Heinonen and Timo Jamsa	Gaming for health across various areas of life
Carl Vogel, Evelyn Hayes, Deon Calawen and Anna Esposito	Windfall Scale, Wealth Consciousness and Social Proximity as Influences on Ultimatum Game Decisions
Matthias Wolff, Markus Huber, Günther Wirsching, Ronald Roemer, Peter Beim Graben and Ingo Schmitt	Towards a Quantum Mechanical Model of the Inner Stage of Cognitive Agents

20:00-0:00 **BANQUET**

August 24.

Friday

9:00-9:30   **PLENARY LECTURE: Károly Hercegfi**   Room A
Plenary Session Chair: Attila Gilányi

"Connected disciplines of Cognitive Infocommunications, Human-Computer Interaction, and User Experience: Real synergies, real differences, and old wine in new bottles"

9:30-9:50   **COFFEE BREAK**

9:50-11:10   **PANEL SESSION**

Room A	Session Chair: Ildikó Horváth
Track	**CogInfoCom based education** Organizer: Ildikó Horváth
Session I.	**VR-Learning** Organizer: Ildikó Horváth
Borbála Berki	Better Memory Performance for Images in MaxWhere 3D VR Space than in Website
Borbála Berki	Desktop VR and the Use of Supplementary Visual Information
Ildikó Horváth	Evolution of teaching roles and tasks in VR / AR-based education
Adam Csapo, Ildikó Horváth, Péter Galambos and Peter Baranyi	VR as a Medium of Communication: from Memory Palaces to Comprehensive Memory Management

Room B	Session Chair: Attila Kővári
Track	**CogInfoCom based education** Organizer: Ildikó Horváth
Session	**CogInfoCom based learnability.** Organizer: Attila Kővári
Attila Kovari	CogInfoCom Supported Education: A review of CogInfoCom based conference papers

Attila Kovari	Using JASP in statistical evaluation based on an eye-tracking analysis
Elod Gogh and Attila Kovari	Metacognition and Lifelong Learning: A survey of secondary school students
Tibor Ujbányi	Examination of eye-hand coordination using computer mouse and hand tracking cursor control

11:10-12:30   **PANEL SESSION**

Room A	Session Chair: Ildikó Horváth
Track	**CogInfoCom based education** Organizer: Ildikó Horváth
Session II.	**VR-Learning** Organizer: Ildikó Horváth
Štefan Korečko, Marián Hudák, Branislav Sobota, Martin Marko, Barbora Cimrová, Igor Farkaš and Roman Rosipal	Assessment and training of visuospatial cognitive functions in virtual reality: proposal and perspective
Anita Dolgosné Kovács and Zoltán Kvasznicza	Use of 3D VR environment for educational administration efficiency purposes
Csaba Vér	3D VR spaces support R&D project management

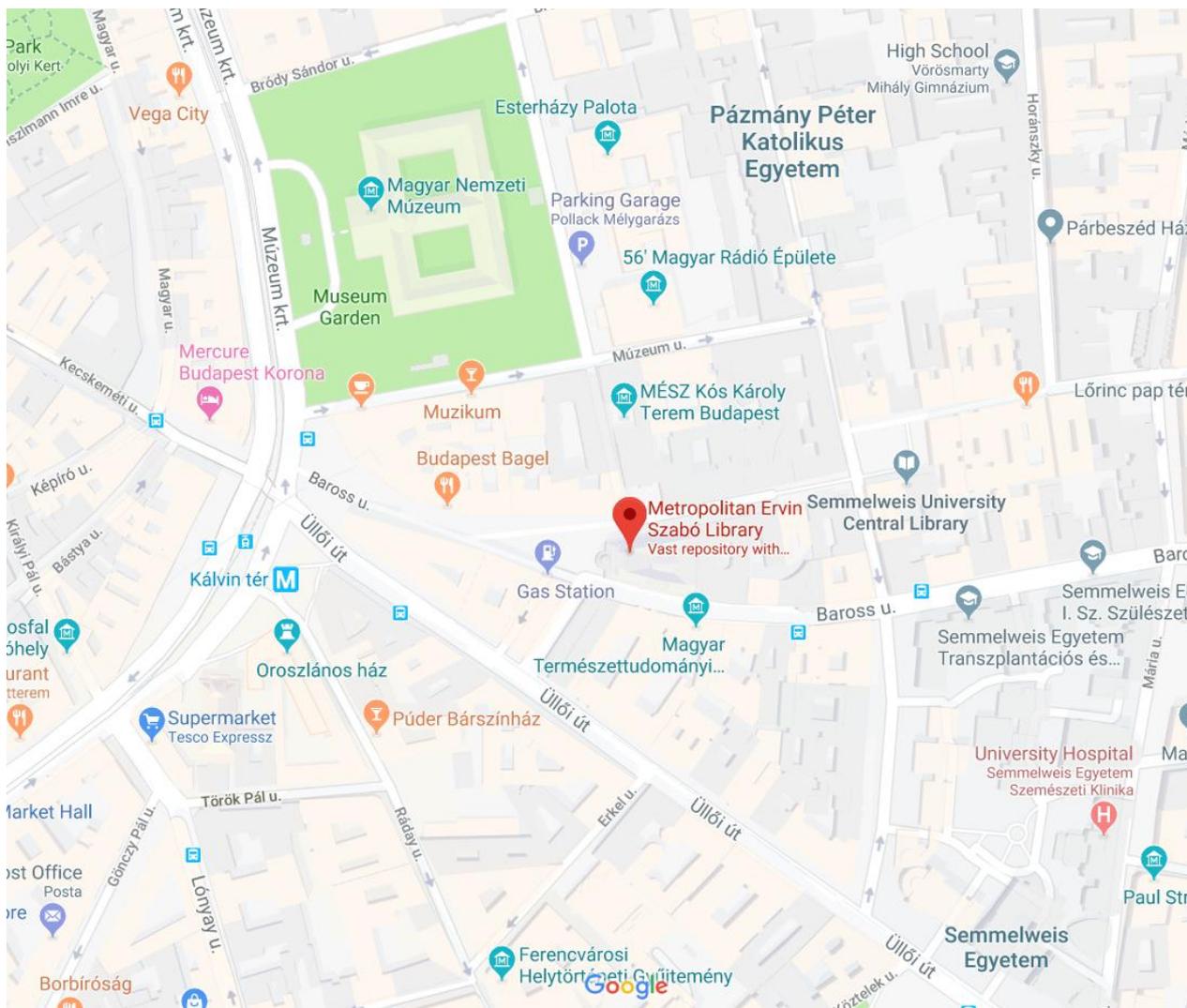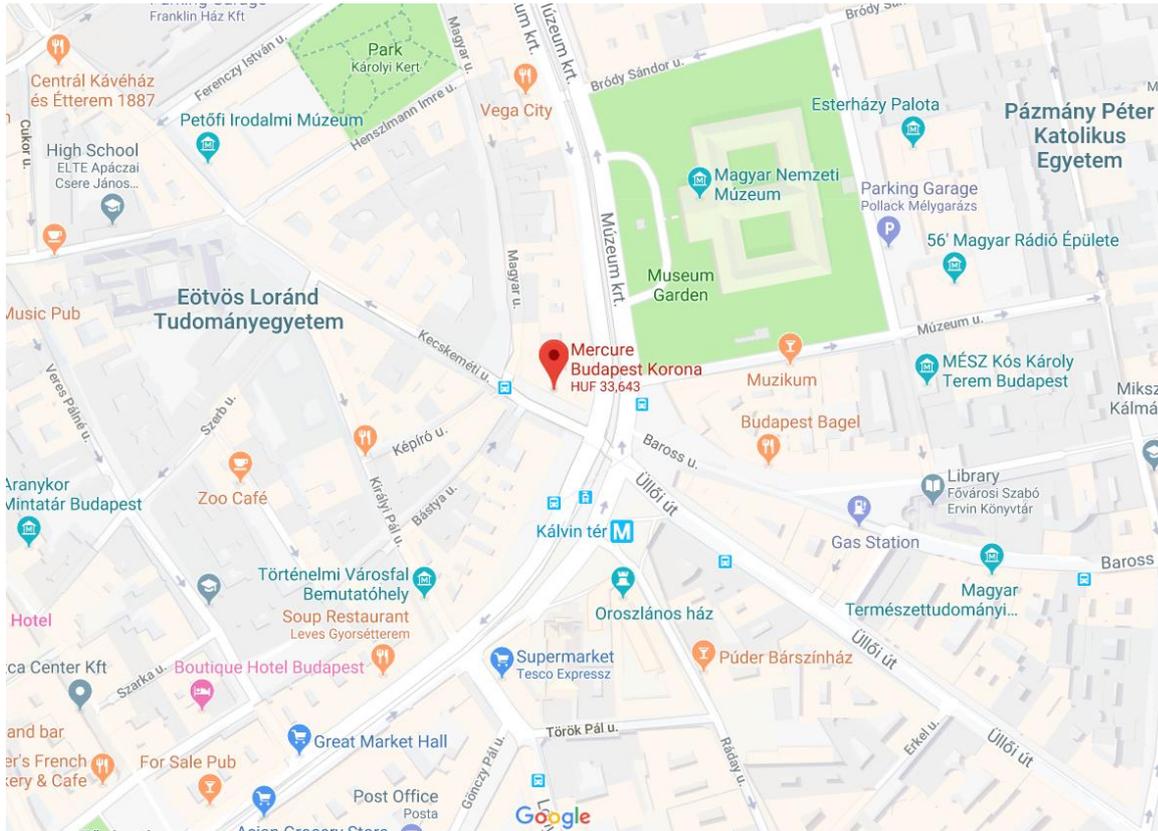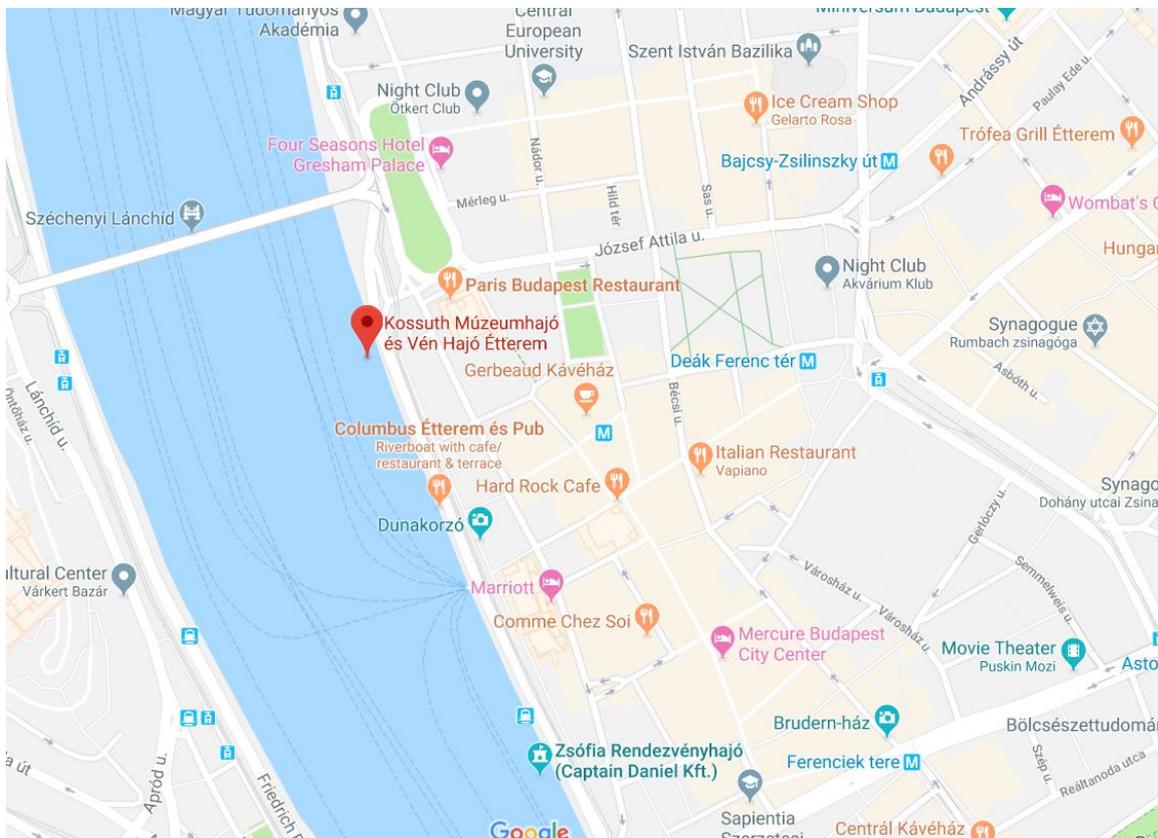| Room B	Session Chair: Ádám Csapó
Zsolt Tibor Horváth	Another e-learning method in upper primary school: 3D spaces
Adél Vehrer and Attila Pongrácz	Generation management tendencies in virtual education
Attila Gilanyi, Anna Racz, Marianna Balint and Katarzyna Chmielewska	An Example of Virtual Reconstructions of Monuments
Elod Gogh and Attila Kovari	Principal Component Analysis of a Metacognitions Questionnaire using JASP

12:30   **CLOSING**   **Room A**

Metropolitan Ervin Szabó Library

Mercure Budapest Korona

Millennium I. Boat

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