

PROGRAM

IEEE Intelligent Systems 2022

with the collocated

BOS/SOR 2022 Conference

**IWIFSGN-2022
Twentieth International Workshop
on Intuitionistic Fuzzy Sets
and Generalized Nets**

October 12-14, 2022, Warsaw, Poland

Wednesday, October 12, 2022

9:45 – 12:15

Room A

9:45 – 10:00	Opening session
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General talks

- 10:00 – 10:45 Witold Pedrycz (Canada, Poland): *Society oriented framework for machine learning*
- 10:45 – 11:30 Leszek Rutkowski (Poland): *Stream data mining: from sliding windows to deep learning*
- 11:30 – 12:15 Patricia Melin (Mexico): *Design of type-3 fuzzy systems and ensembles of neural networks for time series prediction*

Room B

General talk

- 11:30 – 12:15 Vladik Kreinovich (USA): *Invariance explains empirical success of many intelligent techniques*

12:15 – 12:30	Coffee break
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12:30 – 13:30

Room A

IEEE IS Technical session

- 12:30 – 12:50 Julio Urenda, Olga Kosheleva and Vladik Kreinovich: *Why $1/(1+d)$ is an effective distance-based similarity measure: two explanations*
- 12:50 – 13:10 Vladik Kreinovich: *How to describe variety of a probability distribution: a possible answer to Yager's question*
- 13:10 – 13:30 Laxman Bokati and Vladik Kreinovich: *Why exponential Almon lag works well in econometrics: an invariance-based explanation*

Room B

IEEE IS Technical session

- 12:30 – 12:50 Vanya Georgieva, Plamena Yovcheva, Evdokia N Sotirova and Yana Mersinkova: *Generalized net model of waste from wastewater plants for domestic wastewater treatment*
- 12:50 – 13:10 Velin S Andonov, Stoyan Poryazov and Emiliya Saranova: *Generalized net model of a parallel composition of services with intuitionistic fuzzy estimations of uncertainty*
- 13:10 – 13:30 Simeon Ribagin, Iasen Hristozov and Krassimir Atanassov: *Generalized net model of the DOBOT Magician robot functionalities*

Room C

IEEE IS Technical session

- 12:30 – 12:50 Zbigniew Nahorski, Marek Makowski, Bingqing Ding and Hongtao Ren: *Handling parameter uncertainty in long-term technology-mix planning models*
- 12:50 – 13:10 Miłosz Fraszczyk, Katarzyna Kaczmarek-Majer, Olgierd Hryniewicz, Krzysztof Skotak and Anna Degórska: *Expert-in-the-loop stepwise regression and its application in air pollution modeling*
- 13:10 – 13:30 Małgorzata Charytanowicz, Anna Olwert, Weronika Radziszewska, Jolanta Jarnicka, Krzysztof Gajowniczek, Tomasz Ząbkowski, Jacek Brożyna, Grzegorz Mentel and Grzegorz Matejko: *Machine learning for energy load prediction and its interpretation*

Room D

IEEE IS Technical session

- 12:30 – 12:50 Songwei Liu, Jun Chen and Michal Weiszer: *Multi-objective multigraph A* search with learning heuristics based on node metrics and graph embedding*
- 12:50 – 13:10 Stoyan Cheresharov, Hristo Hristov, Vladimir Valkanov and Angel Ignatov: *IPTV monitoring via GPM3 for A1 and Vivacom*
- 13:10 – 13:30 José Ramón Trillo, Francisco Javier Cabrerizo, Juan Antonio Morente-Molinera, Enrique Herrera-Viedma, Sławomir Zadrozny, Janusz Kacprzyk: *Large-Scale Group Decision-Making Method based on Trust Clustering among Experts*

13:30 – 14:30 Lunch break

14:30 – 16:15

Room A

IEEE IS Invited talks

- 14:30 – 15:15 Anna Ostaszewska-Lizewska: *Metrological aspects in intelligent eye-tracking systems*
- 15:15 – 16:00 Igor Korobiichuk, Viktorij Mel'nick, Nonna Gnateiko and Galyna Boiko: *The additional error emergence of inertial sensors in the operational conditions of hypersonic flight*

Room B

IEEE IS Technical session

Invited talk

- 14:30 – 15:15 Vyacheslav Ivaschuk: *The supplemental definition of dynamic behavior of partially observable object for phasily limited control task*
- 15:15 – 15:35 Yaroslav Smityuh, Vasii Kyshenko, Alexander Romashchuk and Anton Gorpinchenko: *Intelligent synergistic control of the technological complex for the sugar factory*
- 15:35 – 15:55 Vasii Kyshenko, Yaroslav Smityuh, Anatoliy Ladanyuk and Dmitry Krishchenko: *Intellectual analysis in the tasks of forecasting trends in the development of the technological complex of the distillery*

Room C

IEEE IS Technical session

Invited talk

- 14:30 – 15:15 Jorge Hernandez Hormazabal (Chile/UK): *The use of modelling and simulation technologies to support agri-food supply chains decision-making processes under uncertainty*
- 15:15 – 15:35 Penka Yochkova, Veneta Tabakova-Komsalova, Stoyan Cheresharov, Lyubka Doukovska and Stanimir Stoyanov: *DEVS modeling of an irrigation system*
- 15:35 – 15:55 Ivan Popchev and Daniela A. Orozova: *A model of data processing in cyber-physical social space agriculture*
- 15:55 – 16:15 Stanimir Stoyanov, Veneta Tabakova-Komsalova, Lyubka Doukovska, Ivan Stoyanov and Atanas Dukovski: *An event-based platform supporting smart agriculture applications*

Room D

IEEE IS Technical session

Invited talk

14:30 – 15:15 Aleksander Byrski (Poland): *Socio-cognitive metaheuristic computing*

Invited talk

15:15 – 16:00 Libor Pekar (Czechia), Roman Senkerik (Czechia) and Zuzana Kominkova Oplatkova (Czechia): *Challenging optimization of time-delay systems by means of metaheuristic algorithms: case studies, experiences and possible approaches*

16:00 – 16:20 Karol Opara: *Recent advances in global optimization of time-delayed systems*

16:15 – 16:45 Coffee break

16:45 – 17:45

Room A

IEEE IS Technical session

16:45 – 17:05 Igor Korobiichuk, Viktor Bovsunovskyi, Serhii Dupelich, Viacheslav Korinenko, Oleksandr Samoniuk: *The method of selecting the operation modes of the multifunctional HF radio*

17:05 – 17:25 Natalia Wasilewska, Michał Nowicki, Roman Szewczyk and Paweł Nowak: *Automatic characterization of MEMS electronic filters*

17:25 - 17:45 Svitlana Merdukh, Sergii Plashykhin, Denys Skladannyy, Igor Korobiichuk, Vladyslav Shybetskyi, Sergii Kostyk: *Nuclear power plant's turbine condensate desalination process quality regression*

Room B

IEEE IS Technical session

16:45 – 17:05 Yaroslav Smitiukh, Yuliia Samoilenko, Yuliia Kostyuk, Olena Kryvoruchko and Kateryna Stepashkina: *Development of a prototype of an intelligent system for predicting the quality of dairy manufacture*

17:05 – 17:25 Todorka Glushkova and Asya G Doycheva: *An approach to modeling of smart agricultural services and scenarios*

17:25 – 17:45 Nataliia Lutska, Nataliia Zaiets, Lidiia Vlasenko and Stefan Junge: *Neural network model of sugar factory resource efficiency*

Room C

IEEE IS Technical session

- 16:45 – 17:05 Mateusz Nabywaniec, Hubert Guzowski, Aleksandra Urbanczyk, Maciej Smolka, Marek Kisiel-Dorohinicki, Aleksander Byrski, Libor Pekar, Radek Matusu, Frantisek Gazdos, Roman Senkerik and Zuzana Kominkova Oplatkova: *Socio-cognitive optimization of time-delay control problems using agent-based metaheuristics*
- 17:05 – 17:25 Piotr Kipinski, Hubert Guzowski, Aleksandra Urbanczyk, Maciej Smolka, Marek Kisiel-Dorohinicki, Aleksander Byrski, Libor Pekar, Radek Matusu, Frantisek Gazdos, Roman Senkerik and Zuzana Kominkova Oplatkova: *Socio-cognitive optimization of time-delay control problems using evolutionary metaheuristics*
- 17:25 – 17:45 Hubert Guzowski, Libor Pekar, Maciej Smolka, Aleksander Byrski, Radek Matusun, Frantisek Gazdos, Roman Senkerik and Zuzana Kominkova Oplatkova: *Effective parametric optimization of heating-cooling process with optimum near the domain border*
- 17:45 – 18:05 Martin Strmiska, Libor Pekar and José Mario Araújo: *Guide for stabilization and heuristic optimization of second-order systems controlled by P/I-delayed controllers*

Room D

IEEE IS Technical session

- 16:45 – 17:05 Iman Abouhassan, Nikola Kasabov, George Popov and Roumen Trifonov: *Why use evolving neuro-fuzzy and spiking neural networks for incremental and explainable learning of financial time series? A case study on predictive modelling of trade imports and outlier*
- 17:05 – 17:25 Susmita Dey, Aziza Tahsin Nawshin, Anika Hossain and Rashedur M. Rahman: *Machine learning combined with PHQ-9 for analyzing depression in Bangladeshi metropolitan areas*

18:00 – 19:00

Room A

General event

- 18:00 – 19:00 Shahnaz N. Shahbazova (Azerbaijan): *Lotfi A. Zadeh's life and his scientific legacy. Our scientific activities 5 years after his death*

Thursday, October 13

9:30 – 11:00

Room A

General talks

- 9:30 – 10:15 Nikola Kasabov (New Zealand): *Brain inspired spiking neural networks for explainable and life-long learning: methods*
- 10:15 – 11:00 Marek Reformat (Canada): *Participatory learning for managing imprecise knowledge graphs*

11:00 – 11:30 Coffee Break

11:30 – 13:00

Room A

General talks

- 11:30 – 12:15 Guy De Tré (Belgium): *Handling text in information management: challenges, solutions and perspectives*
- 12:15 – 13:00 Panagiotis Chountas (UK): *How advances in big data technologies and machine learning influence the Fintech industry*

13:00 – 14:00 Lunch break

14:00 – 16:15

Room A

IEEE IS Technical Session

Invited talk

- 14:00 – 14:45 Gia Sirbiladze (Georgia): *New directions and perspectives of emergency logistic planning fuzzy modeling for disaster-stricken zones in the response phase*
- 14:45 – 15:05 Gia Sirbiladze, Janusz Kacprzyk, Jose A Lozano, Bezhan Ghvaberidze, Bidzina Midodashvili and Bidzina Matsaberidze: *Fuzzy approach for the temporary logistics hubs' selection planning in disaster region*

- 15:05 – 15:25 Gia Sirbiladze, Janusz Kacprzyk, Jose A Lozano, Bezhan Ghvaberidze, Bidzina Midodashvili and Bidzina Matsaberidze: *Fuzzy model of humanitarian relief logistics for the shelters' location in the disaster region and evacuation of population*
- 15:25 – 15:45 Gia Sirbiladze, Janusz Kacprzyk, Jose A Lozano, Bezhan Ghvaberidze, Bidzina Midodashvili and Bidzina Matsaberidze: *Fuzzy approach to planning of service centers location and goods transportation routes in the disaster region*
- 15:45 – 16:05 Christophe Guyeux: *Study and predictions of emergency rescue in the Doubs department, France*

Room B

BOS/SOR session: Decisions and infrastructure

- 14:00 – 14:45 Tadeusz Trzaskalik: *AHP application to multi-stage bipolar problem*
- 14:45 – 15:30 Maria Elena Bruni: *A Benders decomposition approach for the electric vehicle routing problem with nonlinear charging function*
- 15:30 – 16:15 Jarosław Stańczak: *Using the hub & spoke structure to improve the organization of public transport in Warsaw*

Room C

IEEE IS Technical Session

- 14:00 -14:20 Katarzyna Kaczmarek-Majer, Gabriella Casalino, Giovanna Castellano, Daniel Leite and Olgierd Hryniewicz: *Fuzzy linguistic summaries for explaining online semi-supervised models*
- 14:20 – 14:40
- 14:40 – 15:00 Mona S Alghamdi: *A multi-modal biometric approach based on score-level fusion and fine-tuning deep learning features*
- 15:00 – 15:20 Cem Sazara and Xin Gao: *Predicting animal shelter pet adoption times and feature importance analysis using catboost*

Room D

IEEE IS Technical Session

- 14:00 – 14:20 Hristo Blidov and Lyubka Doukovska: *Generalized Net model of the second phase of the general claim process – first court instance*
- 14:20 – 14:40 Hristo Blidov and Lyubka Doukovska: *Generalized Net model of the general claim process – proceeding before an appeal court*
- 14:40 – 15:00 Vassil Sgurev, Lyubka Doukovska and Stanislav Drangajov: *Complex multivalued logic with two sequentially connected logic structure*
- 15:00 – 15:20 Irina A. Radeva, Ivan Popchev and Lyubka Doukovska: *A prototype of blockchain/distributed file system platform*

16:00 – 16:30 Coffee Break

16:30 – 19:00

Room A

IEEE IS Invited talk

16:30 – 17:15 Rafał Angryk (USA): *Machine learning from highly imbalanced data in heliophysics*

Special event

17:30 – 19:00 Special Session on the 40th Anniversary of Rough Sets

Andrzej Skowron (Poland), Dominik Ślęzak (Poland): *Rough sets turn 40: What next?*

Room B

IEEE IS Invited talk

16:30 – 17:15 Krassimir Atanassov (Bulgaria): *On four intuitionistic fuzzy feeble topological structures*

Friday, October 14

8:45 – 10:30

Room A

8:45 – 9:00 IWIFSGN Opening Session and Information on POLFUZZ

IWIFSGN Invited talks

- 9:00 – 9:45 Krassimir Atanassov (Bulgaria): *On intuitionistic fuzzy extended modal topological structures*
- 9:45 – 10:30 Oscar Castillo (Mexico): *Type-2 and Type-3 fuzzy systems for intelligent control*

10:30 – 11:00 Coffee break

11:00 – 11:45

Room A

General talk

- 11:00 – 11:45 Plamen Angelov (UK): *Interpretable-by-design prototype-based Deep Learning*

11:50 – 13:10

Room A

IWIFSGN Technical session

- 11:50 – 12:10 Simeon Ribagin, Iasen Hristozov and Krassimir Atanassov: *Generalized net model of a collective work of a DOBOT Magician robot system with centralized control*
- 12:10 – 12:30 Simeon Ribagin and Gergana Angelova-Popova: *Generalized net model of rehabilitation algorithm for patients with shoulder impingement syndrome.*
- 12:30 – 12:50 Velin Andonov, Stoyan Poryazov and Emiliya Saranova: *Generalized net models of traffic quality evaluation of a service stage*
- 12:50 – 13:10 Velin Andonov, Stoyan Poryazov and Emiliya Saranova: *Generalized net model of overall network efficiency evaluation*

Room B

IWIFSGN Technical session

Session on Intelligent Methods for Modelling and Optimization organized by Jacek Czerniak – Part I

11:50 – 12:10	Hubert Zarzycki: <i>Improved CSO algorithm in practical applications</i>
12:10 – 12:30	Dariusz Mikołajewski and Emilia Mikołajewska: <i>Selected artificial intelligence technologies in the practice of the clinician and researcher in physiotherapy</i>
12:30 – 12:50	Łukasz Apiecionek, Dawid Ewald, Jacek Czerniak and Jan Baumgart: <i>Fuzzy mechanism for data transmission adaptation</i>
12:50 – 13:10	Dawid Ewald, Jacek Czerniak, Jan Baumgart and Hubert Zarzycki: <i>Review of dedicated for OFN fuzzification functional</i>

Room C

IWIFSGN Technical session

POLFUZZ Special Session on „Uncertainty and imprecision in decision making” Part I

11:50 – 12:10	Paweł Drygaś and Anna Król: <i>Right ordinal sums of fuzzy implications</i>
12:10 – 12:30	Mateusz Pieszczyk and Michał Baczyński: <i>Generalization of Sincov's equation with uninorms and fuzzy implications</i>
12:30 – 12:50	Zofia Matusiewicz: <i>Some similarities and differences between balanced and intuitionistic systems of equations</i>
12:50 – 13:10	Jan G. Bazan, Stanisława Bazan-Socha, Urszula Bentkowska, Wojciech Gałka and Marcin Mrukowicz: <i>Aggregation functions in researching connections between biomarkers and DNA microarrays</i>

Room D

BOS/SOR Session: Decision making in finance and energy

11:50 – 12:10	Przemysław Juszczuk and Lech Kruś: <i>Fuzzy trading system on the Forex market for deriving the portfolio of instruments</i>
12:10 – 12:30	Stepan A. Rogonov, Ilia S. Soldatenko, Alexander V. Yazenin: <i>Construction of a quasi-efficient frontier of a set of optimal portfolios under conditions of hybrid uncertainty with allowed short sales</i>
12:30 – 12:50	Jerzy Tchórzewski and Radosław Marłęga: <i>Hourly identification and simulation of the TGE S.A. day-ahead market system</i>
12:50 – 13:10	Dariusz Ruciński: <i>Neural modeling of prices on the Day-Ahead Market at PPE S.A. supported by an Evolutionary Algorithm and inspired by quantum computing</i>

Room E

IEEE IS Technical session

- 11:50 – 12:10 Nurassyl Kerimbayev, Vladimir Jotsov, Zhanat Umirzakova, Madina Madina Bolyskhanova and Galina Tkach: *The use of chat-bot capabilities as a type of modeling in intelligent learning*
- 12:10 – 12:30 Ivaylo Z Blagoev, Gergana Vassileva and Vladimir Monov: *A classification of online training courses according to the methods of presentation and educational content*
- 12:30 – 12:50 Hristo Hristov, Todorka Glushkova, Stoyan Cheresarov and Maya Stoeva: *A Model for Designing Accessible Color and Contrast for Users with Visual Deficiency and Color Blindness*

13:10 – 13:30 Coffee break

13:30 – 14:50

Room A

IWIFSGN Technical session

- 13:30 – 13:50 Hristo Blidov and Lyubka Doukovska: *Generalized Net model of the general claim process – cassation proceedings before the supreme court of cassations*
- 13:50 – 14:10 Hristo Blidov and Lyubka Doukovska: *Generalized Net model of the general claim process – annulment proceedings before the supreme court of cassation*
- 14:10 – 14:30 Diana Petkova and Krassimir Atanassov: *A generalized net model of acute respiratory distress syndrome*
- 14:30 – 14:50 Martin Lubich, Elenko Popov, Radostina Georgieva, Dmitrii Dmitrenko, Borislav Bojkov, Chavdar Slavov, Ludmila Todorova, Vassia Atanassova, Peter Vassilev and Krassimir Atanassov: *A generalized net model of some nephrological diseases*

Room B

IWIFSGN Technical session

Session on Intelligent Methods for Modelling and Optimization organized by Jacek Czerniak – Part II

- 13:30 – 13:50 Jacek Czerniak, Jan Baumgart, Hubert Zarzycki and Łukasz Apiecioneck: *Using modified Canberra distance as OFN numbers comparison operator*
- 13:50 – 14:10 Jan Baumgart, Hubert Zarzycki, Łukasz Apiecioneck and Dawid Ewald: *Analysis of types of particles movement in swarm algorithms using ESI optimization algorithm*
- 14:10 – 14:30 Hubert Zarzycki, Łukasz Apiecioneck, Dawid Ewald and Jacek Czerniak: *Optimizing the operation of a wireless sensor network using a swarm intelligence algorithm*

Room C

IWIFSGN Technical session

POLFUZZ Special Session on „Uncertainty and imprecision in decision making” Part II

13:30 – 13:50 Józef Drewniak: *Comparison of fuzzy logic connectives*

13:50 – 14:10 Michał K. Urbański, Kinga Wójcicka and Paweł Wójcicki: *Some properties of fuzzy metric on fuzzy sets induced by fuzzy arithmetic*

Room D

IWIFSGN Technical session

13:30 – 13:50 Sotir Sotirov and Simeon Ribagin: *Hybrid sensor system for robot control with nonlinear autoregressive network with exogenous inputs*

13:50 – 14:10 Isel Grau and Agnieszka Jastrzębska: *Time series classification using fuzzy models*

14:10 – 14:30 Filip Wichrowski, Katarzyna Kaczmarek-Majer and Victor Elvira: *Hidden Markov Models for predicting mental health*

14:30 – 14:50 Krzysztof Pancerz and Jaromir Sarzyński: *Rough Set flow graphs for information systems over ontological graphs*

Room E

IEEE IS Technical session

13:30 – 13:50 Ziyang Zhang, Plamen Angelov, Eduardo Soares, Nicolas Longepe and Pierre Philippe Mathieu: *An interpretable deep semantic segmentation method for earth observation*

13:50 – 14:10 Fahimul Hoque Shubho, Abdullah Al Rafi, Mohammad Tanvir Mahmud Habib, Emon Sarker, Parinda Rahman, Tahrima Ihsan and Rashedur M. Rahman: *Use of social media in flood assessment in Bangladesh*

14:10 – 14:30 Toncho Boyukov, Velin Andonov and Krassimir Atanassov: *Generalized net model of the connections between different types of transport in Bulgaria*

14:30 – 15:30 Lunch break

15:30 – 17:10**Room A****IWIFSGN Technical session**

15:30 – 15:50	Evdokia Sotirova, Valentin Stoyanov, Sotir Sotirov, Zlatina Mirincheva, Hristo Bozov and Todor Kostadinov: <i>Application of the InterCriteria Analysis approach to a burnout syndrome data</i>
15:50 – 16:10	Katarína Cunderlíková: <i>Convergence of functions of several intuitionistic fuzzy observables</i>
16:10 – 16:30	Veselina Bureva, Petar Petrov, Velin Andonov and Krassimir Atanassov: <i>Intuitionistic fuzzy evaluation of user requests</i>
16:30 – 16:50	Slaviiana Danailova-Veleva, Lyubka Doukovska and Atanas Dukovski: <i>InterCriteria Analysis of the supervisory statistic data for selected 8 EU countries during the period 2020-2021</i>
16:50 – 17:10	Leszek Klukowski: <i>Estimation of the strict preference relation on the basis of pairwise comparisons for moderate and large size sets</i>

Room B**IEEE IS Technical session**

15:30 - 15:50	Laxman Bokati and Vladik Kreinovich: <i>Why smaller-size objects affect the flow much more than larger ones: a geometric explanations with applications ranging from volcanoes and tornadoes to blood, fish, and building preservation</i>
15:50 – 16:10	Sean Aguilar and Vladik Kreinovich: <i>Why best-worst method works well</i>
16:10 – 16:30	Francisco Zapata, Eric Smith, Olga Kosheleva and Vladik Kreinovich: <i>Seemingly counter-intuitive features of good-to-great companies actually make perfect sense: possible algorithmics-based explanations</i>

Room C**IWIFSGN Technical session*****POLFUZZ Special Session on „Uncertainty and imprecision in decision making” Part III***

15:30 – 15:50	Anna Wilbik, Barbara Pękala, Krzysztof Dyczkowski and Jarosław Szkoła: <i>A comparison of client weighting schemes in federated learning</i>
15:50 – 16:10	Kamil Kmita, Katarzyna Kaczmarek-Majer and Olgierd Hryniewicz: <i>On the importance of the scaling factor α in the Semi-Supervised Fuzzy C-Means. An example of bipolar disorder monitoring</i>
16:10 – 16:30	Ewa Rak and Jaromir Sarzyński: <i>Evaluation metrics for a hybrid classification system based on the distributivity equation and the UNSW-NB15 cyberattack dataset</i>
16:30 – 16:50	Urszula Bentkowska and Marcin Mrukowicz: <i>Parameterized interval-valued aggregation functions in classification of data with large number of missing values</i>
16:50 – 17:10	Magdalena Samordak and Przemysław Grzegorzewski: <i>Graded version of the stochastic dispersive order</i>

Room D

BOS/SOR Session: Decision making models

- 15:30 – 16:05 Honorata Sosnowska: *Transformation into anti-manipulation method. Changes in properties*
- 16:05 – 16:40 Jaakko Hakula: *The Saari Triangle and intuitionistic fuzzy sets: some mutual geometry*
- 16:40 – 17:15 Jan W. Owsinski: *On the use of ideal structures in opinion analysis*

17:10 – 17:30 Coffee break

17:30 – 18:30

Room A

IWIFSGN Technical session

- 17:30 – 17:50 Zeynep Ozturk Yurt, Rik Eshuis, Irene Vanderfeesten and Anna Wilbik: *Management of knowledge intensive processes with intuitionistic fuzzy sets*
- 17:50 – 18:10 Katarzyna Miś: *A comparison of the compositional rule of inference and the Bandler-Kohout subproduct: multiple rules*
- 18:10 – 18:30 Simeon Ribagin and Spas Stavrev: *Intercriteria analysis of the influence of the different sports activities on the physical and emotional status of university students*

Room B

IEEE IS Technical session

- 17:30 – 17:50 Georgy Urumov and Panagiotis Chountas: *Essay on Volatility Clusters and Time Series Prediction financial*
- 17:50 – 18:10 Slaviiana Danailova-Veleva, Lyubka Doukovska and Atanas Dukovski: *InterCriteria Analysis of the financial data for selected 8 EU countries*
- 18:10 – 18:30 Slaviiana Danailova-Veleva, Lyubka Doukovska and Peter Vassilev: *InterCriteria Analysis of the global competitiveness report for the financial system EU countries.*

Room C

IWIFSGN Technical session

POLFUZZ Special Session on „Uncertainty and imprecision in decision making” Part IV

- 17:30 – 17:50 Barbara Pękala, Piotr Grochowalski, Dawid Kosior, Dorota Gil, Wojciech Koziol and Krzysztof Dyczkowski: *An idea of Python library for IVFS inference*
- 17:50 – 18:10 Przemysław Grzegorzewski and Maciej Romaniuk: *New bootstrap goodness-of-fit tests for epistemic fuzzy data*
- 18:10 – 18:30 Anna Cena, Hanna Sadłowska, Andrzej Kocharński and Przemysław Grzegorzewski: *On a manufacturing classification for the extruded profiles*

19:30 – Banquet (Bazyliśzek Restaurant, Old Town Market Square, Warsaw)