Report from the 31st Scientific Conference of the Classification and Data Analysis Section of the Polish Statistical Association

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The 31st Scientific Conference of the Classification and Data Analysis Section (SKAD) of the Polish Statistical Association took place on 7–8 September 2022, in Warsaw, Poland. The conference was organised by the Classification and Data Analysis Section of the Polish Statistical Association and the Department of Econometrics and Statistics of the Warsaw University of Life Sciences. Basic information about the conference is available at: https://skad2022.conference.ieif.sggw.pl/.

Monika Zielińska-Sitkiewicz, PhD, was the chairman of the Organising Committee, consisting of Mariola Chrzanowska, PhD, Paweł Kobus, PhD, DSc, Joanna Landmesser-Rusek, PhD, DSc, Łukasz Pietrych, PhD, Ewa Wasilewska, PhD, Tomasz Woźniakowski, PhD, Dorota Żebrowska-Suchodolska, PhD, and Stanisław Jaworski, PhD.

The following topics were addressed during the conference:

- the theoretical aspects of taxonomy, discriminant analysis, linear ordering methods, multivariate statistical analysis, methods of analysing continuous variables, methods of discrete variables analysis, symbolic data analysis, graphical methods;
- the application of the financial data analysis, marketing data analysis, spatial data analysis, and other areas of data analysis application, i.e. in medicine, psychology, archaeology, etc., computer application of statistical methods.

The main objective of the SKAD conference was to present the current research and to create a platform for exchanging ideas related to the theoretical and applied

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aspects of classification and data analysis. This annually held forum provides an opportunity to present and promote state-of-the-art research and to indicate the possible directions for its development.

The conference featured 65 participants – faculty members and doctoral students of the following universities and institutions: WSB University at Dąbrowa Górnicza, Pomeranian University in Słupsk, Carnegie Mellon University, Rzeszów University of Technology, Warsaw University of Life Sciences, SGH Warsaw School of Economics, University of Economics in Katowice, Cracow University of Economics, Poznań University of Economics and Business, Wroclaw University of Economics and Business, University of Gdańsk, Adam Mickiewicz University in Poznań, Lodz University, Poznań University of Life Sciences, University of Szczecin, University of Wrocław, and the Statistical Office in Poznań.

During the conference, 30 presentations introducing research results on the theory and application of classification and data analysis were delivered in three plenary sessions and six parallel sessions. Six poster presentations were given during the poster session. The sessions were chaired by Józef Pociecha, Grażyna Dehnel, Marek Walesiak, Krzysztof Najman, Andrzej Dudek, Krzysztof Jajuga, Tomasz Klimanek, Jacek Batóg, Bolesław Borkowski.

Below is a list of all the papers presented during the conference:

- Grażyna Dehnel, Marek Walesiak, *Assessment of changes in the aging process of the population in the EU countries in 2001–2020 with the application of a dynamic relative taxonomy*;
- Andrzej Dudek, *Use of a synthetic control method (SCM) to estimate benefits and costs of Poland as a member of European Union*;
- Rebecca Nugent, *Optimizing and Clustering Data Science Workflows*;
- Grażyna Trzpiot, *Extended Gini regression coefficient as robust estimator of systematic risk in post Covid time*;
- Tomasz Klimanek, Sylwia Filas-Przybył, *Geospatial dilemmas of improving the survey on commuting to work*;
- Krzysztof Dmytrów, Beata Bieszk-Stolorz, *Application of the dynamic time warping method to compare the dynamics of the degree of fulfilment of the sustainable development goal SDG8 in the EU countries*;
- Iwona Markowicz, Paweł Baran, *Convergence in the mirror data of intra EU trade*;
- Rafał Topolnicki, Niklas Hellmer, Paweł Dłotko, *TopoTests. Use of topology methods to construct multivariate goodness of fit tests*;
- Stanisław Jaworski, *Comparison of the maximum likelihood estimator to the unbiased estimator of a fraction of sensitive questions in the model of nonrandomized cross-questions*;

- Barbara Kijewska, Katarzyna Raca, *Analysis of the violence against politicians on Twitter*;
- Agata Majkowska, Krzysztof Najman, Kamila Migdał-Najman, Katarzyna Raca, *Identification of age groups based on the formatting of text messages of Twitter users*;
- Agata Dobranowska, Paweł Lula, Magdalena Talaga, *Analysis of the social impact of research activities carried out in the area of selected social disciplines in Poland and in the UK*;
- Jerzy Korzeniewski, *Unsupervised sentiment analysis of texts in Polish language*;
- Jacek Batóg, Barbara Batóg, *Long term local development: impact of economic crises*;
- Barbara Batóg, Katarzyna Wawrzyniak, *Investigation of the stability of the classification of West Pomeranian counties with regard to the economic situation in years 2007–2021*;
- Aneta Ptak-Chmielewska, Agnieszka Chłoń-Domińczak, *Analysis of social and economic conditions of microenterprises using taxonomy methods*;
- Aleksandra Łuczak, Sławomir Kalinowski, *Hard and fuzzy linear ordering methods in the evaluation of subjective household poverty*;
- Małgorzata Just, Krzysztof Echaust, *Application of tail index of return distributions to the evaluation of gold of safe haven of stock investments*;
- Dominik Krężołek, *Does the pandemic of COVID-19 influence the precious metals market? Analysis of extreme risk*;
- Joanna Landmesser-Rusek, *Network analysis of the foreign exchange market using minimum spanning trees constructed from the DTW distance measure*;
- Adam Juszczak, *Use of scrap data to determine the changes of cloth and shoe prices*;
- Barbara Pawełek, Józef Pociecha, *Analysis of the impact of the method of missing data estimation on the effectiveness of company bankruptcy prediction*;
- Dorota Rozmus, *Stability measures in the choice of the number of clusters in the aggregate approach using spectral measures and similarity propagation*;
- Marcin Szymkowiak, Wojciech Roszka, *Analysis of publishing efficiency of Polish scientists based on the integrated sources of information*;
- Adam Korczyński, *Bayesian predictive probability design – theory and practical example in a prospective study*;
- Piotr Sulewski, *New members of the family of Johnson distributions: properties and applications*;
- Marcin Salamaga, *Analysis of the impact of export specialization and investment attractiveness on the processes of innovation diffusion in the processing industry in Poland*;

- Wioletta Grzenda, *Estimating the probability of taking up employment for people aged 50 years or older in Poland – the assessment of predictive accuracy over time for censored data*;
- Jacek Szołtysek, Grażyna Trzpiot, *Subjective risks assessment in safety of elderly persons in cities*;
- Jacek Brożyna, Marek Sobolewski, *Factors influencing regional differences in excess mortality in Poland in 2020.*
  In the poster session six posters were presented:
- Adam Sagan, Marcin Pełka, Justyna Brzezińska, Mirosława Sztemberg- -Lewandowska, *Segmentation of university networks in Europe*;
- Danuta Strahl, Małgorzata Markowska, *Dynamic classification of EU countries with regard to employment rate – evaluation of classifications in sectors and with regard to gender*;
- Marcin Szymkowiak, Tomasz Józefowski, Kamil Wilak, Grażyna Dehnel, *A taxonomic analysis of the labour market variation in functional urban areas of provincial capital cities*;
- Monika Zielińska-Sitkiewicz, Mariola Chrzanowska, *Analysis of the electrical energy consumption in Poland using prediction models and artificial neural networks*;
- Dorota Żebrowska-Suchodolska, *Elimination of open-ended equity funds characteristics*;
- Rafał Topolnicki, Paweł Dłotko, Simon Rudkin, *Local regression based on mappers. BallMapper Regression method.*

The members of SKAD held an annual meeting on the first day of the conference. The meeting was chaired by Krzysztof Jajuga, PhD, DSc, ProfTit, and its agenda included the following items:

- report on the SKAD activities;
- information on the planned domestic and international conferences;
- organisation of SKAD conferences in 2023 and 2024;
- elections to the SKAD Council for the term of 2023–2024;
- other issues.

A report on the activities undertaken by SKAD was presented by the Secretary of the SKAD Council, Barbara Pawełek, PhD, DSc, Assoc. Prof. at the Cracow University of Economics. According to the report, SKAD has currently 234 members, and any by-laws and membership applications are available on the SKAD website.

Subsequently, Prof. Pawełek introduced information related to a book containing papers presented during the previous SKAD conference (which was held in Poznań on 8–10 September 2021). Prof. Pawełek also mentioned that the report concerning that SKAD conference could be found in issue 3/2021 of the *Przegląd Statystyczny. Statistical Review* journal.

Prof. Barbara Pawełek announced that Marcin Pełka, PhD (Wroclaw University of Economics and Business), nominated by the Council of SKAD, was elected to the Council of the International Federation of Classification Societies (IFCS) (https://ifcs.boku.ac.at). He will serve as an Additional Member of the IFCS Council until 1 February 2026.

Prof. Barbara Pawełek also stated that Prof. Krzysztof Jajuga was a member of the Scientific Programme Committee during the IFCS 2022 Conference (Porto, Portugal, 19–23 July 2022), while Professors Krzysztof Jajuga, Andrzej Sokołowski, and Andrzej Dudek chaired the sessions. In addition, Polish participants presented nine papers and four posters during this conference.

The following conferences are planned in years 2022–2024: the 40th International Conference on Multivariate Statistical Analysis (7–9 November 2022, Łódź, Poland), the 16th Aleksander Zeliaś International Conference on the Modelling and Forecasting of Socio-Economic Phenomena (8–11 May 2023, Zakopane, Poland), ECDA 2022 (14–16 September 2022, Naples, Italy), CLADAG 2023 (11–13 September 2023, Salerno, Italy), ECDA 2023 (Antwerp, Belgium), ECDA 2024 (Gdańsk, Poland), IFCS 2024 (15–19 July 2024, San Jose, Costa Rica).

Subsequently, the issue of the organisation of the next SKAD conferences was discussed. Prof. Grażyna Trzpiot of the University of Economics in Katowice declared that the University would host the conference in 2023.

The next part of the meeting was devoted to the election of the members of the SKAD Council for the 2023–2024 term. Prof. Danuta Strahl chaired this part of the meeting. Dr. Mariola Chrzanowska and Dr. Marcin Pełka were assigned to the ballot counting committee. Prof. Krzysztof Jajuga declared the following persons as the candidates: Krzysztof Najman, Barbara Pawełek, Paweł Lula, Joanna Landmesser--Rusek, Grażyna Dehnel, Andrzej Dudek, and Marek Walesiak. Prof. Józef Pociecha declared Krzysztof Jajuga as a candidate. Then a secret voting was conducted, eighteen persons participated. The candidates received 18 and 17 votes 'for', which meant that all candidates were elected. The meeting was then closed.

The newly elected SKAD Council held its first meeting. The following board was elected:

Andrzej Dudek – Chairman of the Council, Paweł Lula – Vice-Chairman of the Council, Barbara Pawełek – Secretary of the Council, Grażyna Dehnel, Krzysztof Jajuga, Joanna Landmesser-Rusek, Krzysztof Najman, Marek Walesiak – Members of the Council.

During the ceremonial dinner, Prof. Krzysztof Jajuga informed the members about the composition of the SKAD Council for the 2023–2024 term and about the possibility to publish the presented papers. He invited the members to the next SKAD conference to be held in Katowice.