DOI: 10.20472/IAC.2019.049.004

DOROTA BIELIŃSKA-WĄŻ
Medical University of Gdańsk, Poland

JOANNA CIESZYŃSKA
Municipal Hospital St Vincent a Paulo Gdynia, Poland

AGNIESZKA BIELIŃSKA
Medical University of Gdańsk, Poland

MIKOŁAJ MAJKOWICZ
Pomeranian University in Słupsk, Poland

PIOTR WĄŻ
Medical University of Gdańsk, Poland

INTERDISCIPLINARY CLASSIFICATION STUDIES

Abstract:

Classification of different kinds of objects is an important source of information in different areas of science. We show examples of classification diagrams of objects related to bioinformatics, medicine, and social science. In particular, we present a bioinformatics method designed by us and called 2D-Dynamic Representation of DNA/RNA Sequences [1,2]. In this non-standard approach the sequences are represented as point-masses in a 2D space. This mathematical method facilitates the creation of the classification diagrams in which different kinds of sequences are separated. Analogous diagrams we have obtained in social science - different groups of people are separated according to some, properly selected, criteria. In this case, a classifier is a kind of an answers to some questions. We have shown that this method can be a good tool for studies of the retirement threshold [3,4]. In the present work we also show some unpublished results related to the quality of life of the patients with voice disorders in inflammatory, neoplastic and neurological diseases of the larynx.

[1] D. Panas, P. Wąż, D. Bielińska-Wąż, A. Nandy, S.C. Basak, 2D-Dynamic Representation of DNA/RNA Sequences as a Characterization Tool of the Zika Virus Genome, MATCH Commun. Math. Comput. Chem. 77 (2017) 321-332.

[2] D. Panas, P. Wąż, D. Bielińska-Wąż, A. Nandy, S.C. Basak, An Application of the 2D-Dynamic Representation of DNA/RNA Sequences to the Prediction of Influenza A Virus Subtypes, MATCH Commun. Math. Comput. Chem. 80 (2018) 295-310.

[3]. A. Bielińska, M. Majkowicz, D. Bielińska-Wąż, P. Wąż, Influence of the Education Level on Health of Elderly People, eTELEMED 2018, The Tenth International Conference on eHealth, Telemedicine, and Social Medicine, Rome, Italy, 2018, XPS IARIA Press, eTELEMED 2018 Proceedings, eds. Y. Murata et al., pp. 6-11.

[4]. A. Bielińska, M. Majkowicz, D. Bielińska-Wąż, P. Wąż, Classification Studies in Various Areas of Science, in „Numerical Methods and Applications”, eds. G. Nikolov et al., Lecture Notes in Computer

Science vol. 11189, pp. 326–333, Springer, 2019.

Keywords:

bioinformatics, quality of life, mathematical methods

JEL Classification: I10, C00, A30