Important information regarding ongoing contest, posted accordingly to art. 3, alin 5 of H.G. 457/2011

FACULTY OF SCIENCES

Department of Computer Science

Description of the position:
Professor, pos. 2,
Disciplines: **Intelligent Control and Classification Systems, Genetic Algorithms (DO)**
Field: INFORMATICS

Attributions/activities related to the position, including teaching and activity types that are related to teaching and research, respectively:

I. Teaching:

Lecturing	**116 hours**;
Laboratories	**136 hours**;
Evaluation	**60 hours**;

Total **312 hours** Week average **11.14 conventional hours**

II. Research **300 hours** (development of conference papers, writing papers and books)

Competition subjects, including talks, lecturing or others, or themes from which members of the commission may choose the subjects for the effective tests:

I. Intelligent Control and Classification Systems

1. Signal Processing and Feature Extraction
2. Classification Algorithms: k-NN, SVM, Neural Networks, Decision Trees, etc.
3. Feature and Parameter Selection Optimization Methods
4. Regression and Prediction Techniques
5. Intelligent Control Systems based on Neural Networks
6. Applications in Data Analysis and Information Technology

II. Genetic algorithms (DO)

1. Introduction to genetic algorithms: solution representation, fitness function, genetic operators, selection mechanisms, algorithm parameters
2. Hyperparameter optimization
3. Modeling combinatorial problems with genetic algorithms
4. Genetic algorithms with adaptive mutation and recombination operators
5. Genetic algorithms with machine learning techniques

Selected bibliography:

1) Charu C. Aggarwal, Neural Networks and Deep Learning: A Textbook. Springer International Publishing, 2018.
2) John D. Kelleher, Brian Tierney, & Aoife D'Arcy Tierney, Data Science: An Introduction. CRC Press, 2018.
3) John P. Liu & Isaac C. Yang, Machine Learning: A Probabilistic Perspective. CRC Press, 2020.
4) Christopher M. Bishop, Pattern Recognition and Machine Learning (Vol. 4). New York: Springer, 2006.
5) Richard O. Duda, Peter E. Hart, & David G. Stork, Pattern Classification (2nd ed.). New York: Wiley, 2012.
6) Gagan Preet Singh, Simmi Ahuja, and Sandeep Singh Dhakar - Genetic Algorithms: Theory and Applications, Springer, 2021.
7) Sachin Kumar, Nitin Gupta, and Jitendra Kumar Sharma - Genetic Algorithms: Concepts and Applications, Wiley, 2020.
8) Paulo Cortez, Javier Pereira, and Pedro Oliveira - Modern Optimization with R, Springer, 2021.
9) John P. Cohoon and David B. Copeland - A Practical Guide to Genetic Algorithms for Optimization, CRC Press, 2021.
10) Darrell Whitley - Genetic Algorithms: A Tutorial, Morgan Kaufmann, 2022.

DECAN,
Conf.univ.dr. Cristian TIGAE

DIRECTOR DEPARTAMENT,
Lect. univ. dr. Gabriel STOIAN