

100 Romanian Theoretical Computer Scientists

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26. DZIȚAC, Ioan

Born on February 14, 1953, in Poieni de sub Munte, Maramureș, Romania.

Education: “Babeș-Bolyai” University of Cluj-Napoca (1972–1977), Bachelor/eq. Master in Mathematics (1977).

PhD in informatics at “Babeș-Bolyai” University of Cluj-Napoca, 2002. Thesis title: *Parallel and Distributed Methods for Some Operator Equations Resolution*. Scientific advisor: Grigor Moldovan.

Positions: Mathematics teacher in Oradea, Bihor County (1977–1991); Lecturer at University of Oradea (1991–2003); Associate professor at University of Oradea (2003–2005); Associate professor at “Agora” University of Oradea (2005–2009); Adjunct professor at University of Chinese Academy of Sciences, Beijing (2013–2016); Full professor at “Aurel Vlaicu” University of Arad (2009–2018).

Research areas: Parallel and distributed computing, information systems, computational intelligence, artificial intelligence, soft computing, e-learning, applications of fuzzy logic in technology and economy.

Main results:

In my PhD thesis there are mathematical and computer science contributions related to parallel and distributed computing: an original synthesis of taxonomy of parallel architectures); computing methods of parallel fixed points in \mathbf{R}^n (parallelization of classical algorithms, new proofs of some fixed point theorems, the introduction of randomized filtered asynchronous iterations method – RFAIM); systems of algebraic equations (parallelization of classical algorithms for solving nonlinear algebraic equations and comparative studies with RFAIM); ordinary algebraic equations (the most efficient parallel methods for solving the polynomial equations of higher grade).

In the fuzzy theory and applications area are established some properties of fuzzy quasi-pseudo-metric spaces. An important result is that any partial ordering can be defined by a fuzzy quasi-metric, which can be applied both in theoretical computer science and in information theory, where it is usual to work with sequences of objects of increasing information. Also are obtained decomposition theorems of a fuzzy quasi-pseudo metric into a right continuous and ascending family of quasi-pseudometrics.

I have also introduced (in a joint paper with S. Nadaban) the concept of atomic decomposition of fuzzy normed linear spaces, which play a key role in the development of fuzzy wavelet theory. We obtained decomposition theorems for fuzzy norms into a family of semi-norms, within more general settings. The results hold both for Bag-Samanta fuzzy norms and for Katsaras fuzzy norms. As a consequence, locally convex topologies induced by these types of fuzzy norms are obtained.

Together with B. Stanojevic and S. Dzițac, I have proposed a new approach to solving the full fuzzy linear fractional programming problem, which leads to good decisions in certain problems where the goals may be modelled by linear fractional functions under linear constraints, and when only vague data are available.

Administrative positions: Director of Math & Informatics Department at University of Oradea (2004–2005). Head of IT Chair at “Agora” University (2005–2008). Director of

R&D Center at “Aurel Vlaicu” University of Arad (2009–2017). Rector of “Agora” University (2012–2020).

Editorial boards:

International Journal of Computers Communications & Control (IJCCC; Oradea, Romania; founder and editor-in-chief), *Financial Innovation* (Springer), *Journal of System and Management Sciences* (Beijing Jiatong University, China), *Broad Research in Artificial Intelligence and Neuroscience* (Romania), *Mathematics, Informatics, Physics Series – Bulletin of PG University of Ploiesti*, *Theory and Applications in Mathematics and Computer Science* (Arad, Romania; associate editor), *Scientific and Technical Bulletin, Series: Electrotechnics, Electronics, Automatic Control and Computer Science* (Arad, Romania), *Journal of Systemics, Cybernetics and Informatics* (The International Institute of Informatics and Systemics, USA), *Business, Management and Education* (Vilnius Gediminas Technical University, Lithuania), *Baltic Journal of Modern Computing*.

Membership to professional organizations:

The International Academy of Information Technology and Quantitative Management – in Board (since 2014).

IEEE Senior Member (since 2011).

IEEE Computational Intelligence Society Member (since 2011).

ROMAI: Romanian Society of Applied and industrial Mathematics (Member since 1995; vice-president: 1996–2011).

SRAIT – Romanian Society of Automation and Applied Informatics – Arad branch (secretary: 2010–2014)

RNG–ISCB: Romanian National Group of International Society for Clinical Biostatistics (since 2007).

SSMAR – Scientific Society of Management from Romania (since 2010).

Advisory Board Member at Graduate School of Management of Technology, Hoseo University, Asan, South Korea (since 2016).

Honors, prizes, scientific distinctions:

Diploma of Excellence for Research, Senate of “Aurel Vlaicu” University of Arad, 2015 and 2016.

Certificate of Excellence for software – the Senate of “Aurel Vlaicu” University of Arad, 2010.

Diploma “Teacher of the Year 2008” – Senate of University “Agora”, Oradea.

Diploma of Excellence – Economic Faculty Association in Romania (AFER).

Popularity Award for his work entitled “A Distributed Database for Generating Benchmark Test Informatics” presented at the *NVIC*, 2006, Bucharest, 2006.

Prize ROMAI – Romanian Society of Applied and Industrial Mathematics 2003.

The title “Professor highlighted” granted by Ministry of Education, 1988.

Books:

1. *Parallel Computing*, Ed. Univ. Oradea, 2001 (397 pages, in Romanian).

2. *Parallel and Distributed Methods for Algebraic Systems Resolution*, CCC Publications, 2006 (150 pages).

3. *Artificial Intelligence*, Ed. Univ. “Aurel Vlaicu”, Arad, 2008 (182 pages, in Romanian).

4. (with L.A. Zadeh, D. Tufiş, F.G. Filip) *From Natural Language to Soft Computing: New Paradigms in Artificial Intelligence*, The Publ. House of the Romanian Academy, Bucharest, 2008 (268 pages).

Representative articles:

1. (with F.G. Filip, M.J. Manolescu) Fuzzy Logic Is Not Fuzzy: World-Renowned Computer Scientist Lotfi A. Zadeh, *International Journal of Computers Communications & Control*, 12, 6 (2017), 748–789.
2. (with S. Nadaban) Some Properties and Applications of FuzzyQuasi–Pseudo-Metric Spaces, *Informatica*, 27, 1 (2016), 141–15.
3. (with B. Stanojevic, S. Dziţac) On the Ratio of Fuzzy Numbers Exact Membership Function Computation and Applications to Decision Making, *Technological and Economic Development of Economy*, 21, 5 (2015), 815–832.
4. The Fuzzification of Classical Structures: A General View, *International Journal of Computers Communications & Control*, 10, 6 (2015), 775–793.
5. (with S. Nadaban) Atomic Decompositions of Fuzzy Normed Linear Spaces for Wavelet Applications, *Informatica*, 25, 4 (2014), 643–662.
6. (with T. Vesselenyi, R.C. Tarca) Identification of ERD Using Fuzzy Inference Systems for Brain-Computer Interface, *International Journal of Computers Communications & Control, Special Issue on Fuzzy Sets and Systems*, 6, 3 (2011), 403–417.
7. (with D.C. Secui, S. Dziţac, G.V. Bendea) An ACO Algorithm for Optimal Capacitor Banks Placement in Power Distribution Networks, *Studies in Informatics and Control*, 18, 4 (2009), 305–314.
8. (with B.E. Bărbat) Artificial Intelligence + Distributed Systems = Agents, *International Journal of Computers Communications & Control*, 4, 1 (2009), 17–26.
9. (with I. Moasil) Advanced AI Techniques for Web Mining, *Proc. of MAMECTIS '08*, 2008, 343–346.
10. (with T. Vesselenyi, S. Dziţac, M.-J. Manolescu) Fuzzy and Neural Controllers for a Pneumatic Actuator, *International Journal of Computers Communications & Control*, 2, 4 (2007), 375–387.

Further information:

- Invited talks at many universities from Europe, China, India, South Korea.
- Initiator of Computer science courses and master programs (parallel computing, didactics of information, distributed systems, etc.) at universities from Oradea and Arad.
- Founder of the *International Conference on Computers Communications and Control* at University “Agora” of Oradea (2006).
- Founder of the *International Journal of Computers Communications & Control* at University “Agora” of Oradea(2006).

Personal web page: <http://dzitac.ro/en/ioan>