

PROFESSOR DUMITRU DUMITRESCU AT HIS SIXTIES

BAZIL PÂRV

Profesor Dumitru Dumitrescu was born on August 22, 1949, in Sinești, Vâlcea county. In 1972 he graduated the Theoretical Physics programme at Physics Faculty, Babes-Bolyai University, and in 1979 he graduated Mathematics programme at Mathematics-Mechanics Faculty.

Since 1972 he stepped through all didactic positions in our Faculty: Assistant Professor between 1972-1990, Lecturer between 1990-1992, Associate Professor between 1992-1995 and Full Professor since 1995. He obtained his PhD in 1990, under the supervision of Prof. Dr. D.D. Stancu, with the thesis *Iterative Methods for Solving Fuzzy Classification Problems and Fuzzy Relational Equations*. Since 2001 he has been a PhD supervisor himself. Between 1998-2000 he was Researcher and Associate Professor at the Department of Information Technology, University of Pisa, Italy.

As a professor at our Faculty, Dumitru is known for his high level of scientific knowledge, having didactic activities (lectures, seminars, laboratories) in 16 disciplines. He introduced the first courses of Artificial Intelligence in our Computer Science curricula and managed the Artificial Intelligence master programme, now called Intelligent Systems and taught in English. During his Visiting Researcher and Associate Professor position at Pisa University, he taught there a course on Artificial Intelligence.

The main research interests of Professor Dumitrescu are: *Artificial Intelligence* (general aspects), *Neural Computing* (neural networks, connectionist models), *Evolutionary Computing* (population models, multimodal problems), *Data Analysis*, *Pattern Classification and Recognition*, *Intelligent Control*, *Non-standard Logics* and their application to Artificial Intelligence, *Information Theory and Ergodic Systems*, *Mathematical Theory of Fuzzy Systems*, and *Game Theory*.

A synthesis of his scientific results shows the following:

- 14 books and university manuals, including 4 books and book chapters published in international editions;
- 45 papers in ISI journals;
- 74 papers in ISI proceedings;

- 208 papers in other journals and conference proceedings;
- 30 participations in international conferences;
- 52 participations in national conferences;
- 40 participations in program or scientific committees of international conferences.

The main research contributions of Professor Dumitrescu are:

- an ergodic theory of fuzzy systems;
- a fuzzy information theory;
- a new computational paradigm, *far-from-equilibrium computing*, inspired from far-from-equilibrium self-organization of complex systems;
- a new paradigm in evolutive computing: *genetic chromodynamics*, GC; GC for data mining (data classification, analysis, and interpretation), macroevolution models, industrial applications of GC;
- form classification and recognition and data analysis using evolutive methods;
- fuzzy classification and data mining: mathematical foundation; one-level, multi-level and hierarchical fuzzy classification, applications to data analysis and data mining, supervised classifiers and their applications;
- fuzzy logic and mathematical aspects of fuzzy sets related to Artificial Intelligence problems;
- training of neural networks using ambiguous or incomplete data.

As a confirmation of his huge research activity, his papers and ideas are frequently cited in the scientific literature, papers and PhD theses. The new paradigms introduced in the national and international AI research are of a great importance. At national level, he published in Romanian the first books on Neural Networks, Evolutionary Computing, and Fuzzy Models in Data Analysis. His books published in international editions are used by students and researchers, being considered as reference works in the Artificial Intelligence.

Professor Dumitrescu is the Director of the Center for Studies on Complexity and the Head of CIRG - Computational Intelligence Research Group. He won many research grants as principal investigator, and participated in organizing committees of international conferences home and abroad. Also, he is member of many scientific and professional organizations and reviewer of many scientific journals of high quality.

As a recognition of his excellent research activity, Romanian Academy offered Professor Dumitrescu in 2006 the Grigore Moisil Prize. Also, he was rewarded by our university in several years for books published in international editions and for scientific excellence.

We wish Professor Dumitrescu a happy and healthy long life, full of achievements, for the benefit of his students, collaborators, friends and family.

SCIENTIFIC ACTIVITY

Books.

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- (2) D. Dumitrescu, B. Lazzerini, L. Jain, A. Dumitrescu, *Evolutionary Computation*, CRC Press, Boca Raton, New York, 2000, 416 p.
- (3) B. Iantovics, C. Chira, D. Dumitrescu, *Principiile agenților inteligenți (Intelligent Agents Principles)*, Casa Cărții de Știință, Cluj-Napoca, 2007, ISBN: 978-973-133-035-8.
- (4) D. Dumitrescu, *Principiile inteligenței artificiale (Artificial Intelligence Principles)*, Editura Albastră, Cluj-Napoca, 1999, 380 p.
- (5) D. Dumitrescu, *Principiile matematice ale teoriei clasificării (Mathematical Foundations of the Classification Theory)*, Editura Academiei, București, 1999, 470 p.
- (6) D. Dumitrescu, H. Costin, *Rețele neuronale (Neural Networks)*, Teora, București, 1996, 460 p.
- (7) D. Dumitrescu, *Inteligență artificială (Artificial Intelligence)*, Babeș-Bolyai University Press, Cluj-Napoca, 1995, 253 p.
- (8) D. Dumitrescu, *Teoria clasificării (Classification Theory)*, Babeș-Bolyai University Press, Cluj-Napoca, 1991, 192 p.
- (9) D. Dumitrescu, *Modele conexiuniste în inteligența artificială (Conexionist Models in Artificial Intelligence)*, Babeș-Bolyai University Press, Cluj-Napoca, 1995, 335 p.

Book chapters and booklets.

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- (2) D. Dumitrescu, C. Groșan, M. Oltean, *Evolving Continuous Pareto Regions*, Contributed chapter in *Evolutionary Computation Based Multi-Criteria Optimization: Theoretical Advances and Applications*, A. Abraham, L. Jain and R. Goldberg (Eds.), Springer-Verlag, London, 2005.
- (3) D. Dumitrescu, *Fuzzy Hierarchical Classification Methods in Analytical Chemistry*, Contributed chapter in *Fuzzy Logic in Chemistry*, D.H. Rouvray (Ed), Academic Press, New York, 1997, pp. 321-356.
- (4) C. Chira, C.-M. Pintea, D. Dumitrescu, *A Multi-Agent Stigmergic Model for Complex Optimization Problems*, Contributed chapter in *From Natural Language to Soft Computing, New Paradigms in Artificial Intelligence*, L.A.

- Zadeh, D. Tufiş, F.G. Filip, I. Dziţac (Eds.), Publishing House of Romanian Academy, 2008, pp. 51-62.
- (5) D. Dumitrescu, *Genetic algorithms*, Contributed chapter in *Nature Inspired Computational Models*, T. Petrila, D. Trif, D. Dumitrescu, I. Mihoc (Eds.), Digital Data Publ., Cluj-Napoca, 2003, pp. 200-338.
 - (6) D. Dumitrescu, *Fuzzy Sets*, Technical University of Cluj-Napoca, I.P.C.-N. Press, 1993.
 - (7) D. Dumitrescu, *Fuzzy Trainable Classifiers. Fuzzy Learning Machines*, Technical University of Cluj-Napoca, I.P.C.N. Press, 1993.

Journal and Conference Papers.

- (1) D. Dumitrescu, R.I. Lung, T.D. Mihoc, *Evolutionary Equilibria Detection in Non-cooperative Games*, Applications of Evolutionary Computing, EvoWorkshops 2009, Tubingen, Germany, April 15-17, 2009.
- (2) D. Dumitrescu, R.I. Lung, T.D. Mihoc, *Evolutionary Equilibria Detection in Non-cooperative Games*, in Applications of Evolutionary Computing, LNCS 5484, Springer, 2009, pp. 253-262, ISBN 978-3-642-01128-3.
- (3) D. Dumitrescu, R.I. Lung, T.D. Mihoc, *Generative Relations for Evolutionary Equilibria Detection*, Proc. of the 11th Annual conference on Genetic and evolutionary computation GECCO '09, New York, NY, USA, 8-12 July 2009, pp. 1507-1512. ACM. ISBN 978-1-60558-325-9.
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- (5) D. Dumitrescu, R.I. Lung, T.D. Mihoc, *Approximating and Combining Equilibria in Non cooperative Games*, Proc. of the 11th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing Timişoara SYNASC 2009, Romania, 2009.
- (6) R.I. Lung, D. Dumitrescu, *Evolutionary swarm cooperative optimization in dynamic environments*, Journal of Natural Computing, 10.1007/s11047-009-9129-9, 2009.
- (7) R.I. Lung, D. Dumitrescu, *Evolutionary Multimodal Optimization for Nash Equilibria Detection*, 3rd International Workshop on Nature Inspired Cooperative Strategies for Optimization, NICSO, Springer Studies in Computational Intelligence, 2009.
- (8) D. Iclănzan, D. Dumitrescu, B. Hirsbrunner, *Correlation guided model building*, Proc. of the 11th Annual conference on Genetic and evolutionary computation GECCO '09, New York, NY, USA, 8-12 July 2009, pp. 421-428. ACM. ISBN 978-1-60558-325-9.
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- (10) C. Chira, C.-M. Pintea, D. Dumitrescu, *Sensitive Stigmergic Agent Systems - A Hybrid Approach to Combinatorial Optimization*, In Innovations in Hybrid Intelligent Systems, Advances in Soft Computing, Springer, Vol. 44, 2008, pp. 33-39.
- (11) P.C. Pop, C.-M. Pintea, D. Dumitrescu, *An Ant Colony algorithm for solving the dynamic generalized Vehicle Routing Problem*, An. St. Univ. Ovidius Constanta, 2009 (ISSN: 1224-1784).
- (12) C. Chira, A. Gog, D. Dumitrescu, *Asynchronous Collaborative Search using Adaptive Coevolving Subpopulations*, ECOMASS Workshop, Genetic and Evolutionary Computation Conference GECCO'09, July 8-12, 2009, Montreal, Canada, F. Rothlauf (Ed), GECCO Companion, pp. 2575-2582, ACM.
- (13) C. Chira, C.-M. Pintea, G. C. Crişan, D. Dumitrescu, *Solving the Linear Ordering Problem using Ant Models*, Genetic and Evolutionary Computation Conference, July 8-12, 2009, Montreal, Canada, F. Rothlauf (Ed), pp. 1803-1804, ACM.
- (14) D. Iclănzan, B. Hirsbrunner, M. Courant, D. Dumitrescu, *Cooperation in the context of sustainable search*, In IEEE Congress on Evolutionary Computation (IEEE CEC 2009), Trondheim, Norway, 18-21 May 2009, pp. 1904-1911.
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- (20) R. Stoean, M. Preuss, C. Stoean, E. El-Darzi, D. Dumitrescu, *An Evolutionary Resemblant to Support Vector Machines for Classification and Regression*, Journal of the Operational Research Society, Vol. 60, Issue 8 (August 2009), Special Issue: Data Mining and Operational Research: Techniques and Applications, K-M Osei-Bryson, V.J. Rayward-Smith (Guest Eds.), 2009, pp. 1116-1122, ISSN 0160-5682.
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 - (26) D. Iclănzan, D. Dumitrescu, *How can artificial neural networks help making the intractable search spaces tractable*. In 2008 IEEE World Congress on Computational Intelligence (WCCI 2008), Hong-Kong, 01-06 June 2008, pp. 4016-4023. ISBN 978-1-4244-1823-7.
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- (33) L. Szilgyi, D. Iclănzan, S.M. Szilagy, D. Dumitrescu, *Gecim: A novel generalized approach to c-means clustering*. In Jos Ruiz-Shulcloper, Walter G. Kropatsch (eds), CIARP, LNCS 5197, Springer, 2008, pp. 235-242.
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- (43) B. Reiz, L. Csato, D. Dumitrescu, *Prufer Number Encoding for Genetic Bayesian Network Structure Learning Algorithm*. Proc. of SYNASC 2008, IEEE Computer Publ., pp. 239-242.
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DEPARTMENT OF COMPUTER SCIENCE, FACULTY OF MATHEMATICS AND COMPUTER SCIENCE, BABEȘ-BOLYAI UNIVERSITY, 1 M. KOGĂLNICEANU, 400084 CLUJ-NAPOCA, ROMANIA

E-mail address: bparv@cs.ubbcluj.ro