



ROMÂNIA  
UNIVERSITATEA BABEȘ-BOLYAI CLUJ-NAPOCA

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RECTORATUL

## Universitatea Babeș-Bolyai Competiția Excelenței 2010

### Dosar individual

**Notă: Toate datele se referă la perioada 2005-2009**

<b>Nume, prenume, grad did.</b>	<b>HORIA F. POP, PROFESOR UNIVERSITAR</b>
<b>Facultatea, Catedra</b>	FACULTATEA DE MATEMATICĂ ȘI INFORMATICĂ CATEDRA DE LIMBAJE ȘI METODE DE PROGRAMARE
<b>Domeniul științific</b>	INFORMATICĂ
<b>Adresa paginii web personale</b>	<a href="http://hfpop.ro">http://hfpop.ro</a>
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### Criteriaul I – Output

#### 1. Articole științifice publicate în reviste indexate ISI (cu menționare factorului de impact în cazul celor cotate)

- [1] Sârbu, C., and Pop, H. F. Principal Component Analysis versus Fuzzy Principal Component Analysis. A case study: The quality of Danube water (1985-1996). *Talanta* 65 (2005), 1215-1220. *IF*=3.206
- [2] Sarbu, C., Pop, H. F., Elekes, R. S., and Covaci, G. Intelligent disease identification based on discriminant analysis. *Revista de Chimie* 59, 11 (2008), 1237-1241. *IF*=0.389
- [3] Pop, H. F., Einax, J. W., and Sârbu, C. Classical and fuzzy principal component analysis of some environmental samples concerning the pollution with heavy metals. *Chemometrics and Intelligent Laboratory Systems* 97, 1 (2009), 25-32. *IF*=1.940
- [4] Pop, H. F. A tutorial on object-orientedness in functional programming. In *Second Central European Functional Programming Summer School (CEFP 2007), Revised Selected Lectures. Lecture Notes in Computer Science, LNCS 5161/2008 (Babes-Bolyai University, Cluj-Napoca, Romania, June 23-30 2007)*, pp. 228-249. ISBN 978-3-540-88058-5.
- [5] Serban, C., Vescan, A., and Pop, H. F. A new component selection algorithm based on metrics and fuzzy clustering analysis. In *Proceedings of the 4th International Conference on Hybrid Artificial Intelligence Systems. Lecture Notes in Artificial Intelligence, LNCS 5572/2009 (Salamanca, Spain, June 10-12 2009)*, pp. 621-628. ISBN: 978-3-642-02318-7.

#### 2. Articole științifice publicate în ISI proceedings

- [1] Frentiu, M., and Pop, H. F. Tracking mistakes in software measurement using fuzzy data analysis. In *The 4-th International Conference RoEduNet Romania (Sovata, Târgu-Mures, Romania, May 20-22 2005)*, pp. 150-157. Organized by the Romanian Education Network RoEduNet and the "Petru Maior" University, Târgu-Mures. ISBN 973-7794-26-5.
- [2] Fei, X., Lu, S., Pop, H. F., and Liang, L. R. GFBA: A genetic fuzzy biclustering algorithm for discovering value-coherent biclusters. In *2007 International Symposium on Bioinformatics Research and Applications (ISBRA'2007). Lecture Notes in Bioinformatics, LNCS 4463/2007 (Georgia State University, Atlanta, May 6-9 2007)*, pp. 1-12. ISBN: 978-3-540-72030-0.

- [3] Pop, H. F., and Frentiu, M. Applications of principal components methods. In Complexity in Artificial and Natural Systems, Proceedings (2008), Editura Universitatii Petru Maior, Târgu-Mures, pp. 267-270. ISBN 978-973-7794-76-5.
- [4] Vescan, A., Grosan, C., and Pop, H. F. Evolutionary algorithms for the component selection problem. In The 2nd International Workshop Evolutionary Techniques in Data Processing (2008), vol. 1529-4188, IEEE Computer Society Press, pp. 509-513. ISBN 978-0-7695-3299-8.

### **3. Articole științifice indexate în BDI (din lista CNCISIS)**

#### **Articole în reviste**

- [1] Tatar, D., Pop, H. F., Frentiu, M., and Dumitrescu, D. The first international conference on knowledge engineering principles and techniques (KEPT 2007). Studia Universitatis Babes-Bolyai, Series Informatica 52, 1 (2007), 3-10. (MathSciNet, ZMath).
- [2] Tâmbulea, L., and Pop, H. F. Management of web pages using XML documents. Studia Universitatis Babes-Bolyai, Series Informatica Special Issue (2007), 236-243. International Conference "Knowledge Engineering Principles and Techniques" (KEPT 2007), June 6-8 2007, Babes-Bolyai University, Cluj-Napoca, Romania. (MathSciNet, ZMath).
- [3] Pop, H. F., and Frentiu, M. On software attributes relationship using a new fuzzy c-bipartitioning method. Studia Universitatis Babes-Bolyai, Series Informatica Special Issue (2007), 219-226. International Conference "Knowledge Engineering Principles and Techniques" (KEPT 2007), June 6-8 2007, Babes-Bolyai University, Cluj-Napoca, Romania. (MathSciNet, ZMath).
- [4] Pop, F., and Pop, H. F. Residential energy efficient lighting. Acta Electrotechnica Napocensis Special Issue (2008), 397-403. The 2nd International Conference on Modern Power Systems MPS 2008, November 12-14, 2008. Academy of Technical Sciences of Romania, Technical University of Cluj-Napoca, Romania. ISSN 1224-2497 (Referativnyi Zhurnal, DOAJ).
- [5] Serban, C., and Pop, H. F. Software quality assessment using a fuzzy clustering approach. Studia Universitatis Babes-Bolyai, Series Informatica 53, 2 (2008), 27-38. (MathSciNet, ZMath).
- [6] Vescan, A., and Pop, H. F. Constraint optimization-based component selection problem. Studia Universitatis Babes-Bolyai, Series Informatica 53, 2 (2008), 3-14. (MathSciNet, ZMath).
- [7] Pop, H. F., and Frentiu, M. Fuzzy clustering in software engineering. Analele Universitatii de Vest, Timisoara, Seria Matematica-Informatica 46, 2 (2008), 123-131. (MathSciNet, ZMath).
- [8] Pop, H. F., and Frentiu, M. Fuzzy data analysis for software metrics assessment of student projects. In Topics in Mathematics, Computer Science and Philosophy. A Festschrift for Wolfgang W. Breckner on his 65th Anniversary (Cluj-Napoca, 2008), Stefan Cobzas, Ed., Presa Universitara Clujeana, pp. 23-32. (MathSciNet, ZMath).
- [9] Frentiu, M., and Pop, H. F. Overview of fuzzy methods for effort estimation by analogy. Studia Universitatis Babes-Bolyai, Series Informatica 1 (2009), 68-74. (MathSciNet, ZMath).

#### **Articole în volume ale conferințelor internaționale**

- [1] Dumitrescu, D., Sas, L., Serban, G., Câmpan, A., Darabant, A. S., Pop, H. F., and Tâmbulea, L. Cooperative learning for distributed data mining. In "Collaborative Support Systems in Business and Education", International workshop (Cluj-Napoca, Romania, October 28-29 2005), pp. 432-440.
- [2] Tâmbulea, L., and Pop, H. F. Cooperative model for web sites authoring. In Annals of the "Tiberiu Popoviciu" Seminar. Supplement: International Workshop in Collaborative Systems (Babes-Bolyai University, Cluj-Napoca, Romania, 2006), pp. 329-336. ISSN 1584-4536.
- [3] Pop, H. F., and Pop, L. G. Education for engineering students: The case of logic. In SIELMEN 2007, The 6-th International Conference on Electromechanical and Power Systems, Annals of the University of Craiova, Series Electric Engineering, No. 31, 2007, Vol. I (Technical University of Moldova, Chisinau, Republic of Moldova, October 4-6 2007), pp. 259-264.
- [4] Boian, F., Boian, R., Vancea, A., and Pop, H. F. Distance learning and supporting tools at babes-bolyai university. In The IEEEII - Informatics Education in Europe Conference (Thessaloniki, Greece, November 29-30 2007), pp. 332-340. ISBN: 978-960-89629-3-4.
- [5] Pop, H. F., and Frentiu, M. Applications of principal components methods. In Complexity and Intelligence of the Artificial and Natural Complex Systems. Medical Applications of the Complex

Systems, Biomedical Computing. CANS 2008 (2008), IEEE Computer Society, Los Alamos, USA, pp. 103-109. ISBN 978-0-7695-3621-7.

- [6] Vescan, A., and Pop, H. F. The component selection problem as a constraint optimization problem. In Software Engineering Techniques in Progress. The 3rd IFIP TC2 Central and East European Conference on Software Engineering Techniques CEE-SET 2008 (Wroclaw, Poland, 2008), Wroclaw University of Technology, pp. 208-211.
- [7] Pop, M., Pop, H. F., and Pop, F. Appraisal of indoor lighting systems quality. In The 4th Conference BalkanLight 2008 (October 7-10 2008), Lighting Engineering Society of Slovenia, pp. 165-172. ISBN 978-961-248-127-8.
- [8] Pop, H. F., and Frentiu, M. Applications of principal components methods. In The International Conference "Complexity and Intelligence of the Artificial and Natural Complex Systems. Medical Applications of the Complex Systems. Biomedical Computing" (November 8-10 2008), "Petru Maior" University Târgu Mures, Romanian Academic Bucharest, pp. 232-235. ISSN 2065-0426.
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- [10] Pop, H. F., and Frentiu, M. Effort estimation by analogy based on soft computing methods. In KEPT 2009 International Conference Knowledge Engineering Principles and Techniques. Selected Papers (2009), Cluj University Press, Cluj-Napoca, Romania, pp. 239-246. (MathSciNet, ZMath).
- [11] Frentiu, M., and Pop, H. F. Effort estimation by analogy using a fuzzy clustering approach. Studia Universitatis Babeș-Bolyai, Series Informatica Special Issue (2009), 202-205. KEPT 2009 International Conference Knowledge Engineering Principles and Techniques, July 2-4 2009, Babeș-Bolyai University, Cluj-Napoca, Romania. (MathSciNet, ZMath).

#### **4. Alte articole științifice/capitole publicate în reviste/volume cu referenți (peer-reviewed)**

- [1] Pop, H. F., and Pop, L. G. Scientific education: the logic denominator. *Didactica Mathematica (Formerly Proceedings of the National Seminar "Didactica Matematicii")* 25, 2 (2007), 75-84.
- [2] Pop, F., Pop, H. F., Beu, D., and Ciugudean, C. Iluminat eficient energetic în locuințe. *Revista Română de Informatica și Automatică* 18, 3 (2008), 101-112. ISSN 1220-1758.
- [3] Pop, M., Pop, H. F., and Pop, F. Appraisal of indoor lighting systems quality. *Ingineria Iluminatului* 22 (2004), 37-48. Technical University of Cluj-Napoca, ISSN 1454-5837.

#### **5. Cărți științifice publicate în edituri internaționale**

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#### **6. Cărți științifice publicate în edituri naționale acreditate**

- [1] Frentiu, M., Pop, H. F., Serban, G. Programming Fundamentals. Cluj University Press, 2006. 232 pag.
- [2] Frentiu, M., Pop, H. F. Fundamentals of Programming. Cluj University Press, 2006. 220 pag. ISBN 973-610-453-2.
- [3] Serban, G., Pop, H. F. Elemente avansate de programare in Lisp și Prolog. Aplicații in Inteligența artificială. Editura Albastra, Cluj-Napoca, 2006. 270 pag. ISBN 973-650-172-8.

#### **7. Editor de volume publicate în edituri naționale și internaționale**

- [1] M. Frențiu, D. Tătar, H.F. Pop Eds., KEPT 2007, Conference Proceedings Volume, Presa Universitară Clujeană, 2007
- [2] M. Frențiu, H.F. Pop Eds., KEPT 2009, Selected Papers, Presa Universitară Clujeană, 2009

#### **8. Brevete internaționale**

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#### **9. Brevete naționale (soft științific)**

SADIC for wxWindows - System for Automatic Data Investigation and Classification. Software for characteristics reduction, fuzzy clustering, fuzzy regression, fuzzy training, fuzzy cross-classification and multivariate fuzzy analysis, available under Windows, Unix/Linux, MacOS.

## **10. Impact tehnologic al brevetelor: resurse financiare extrabugetare atrase în relație cu economia**

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## **11. Realizări artistice naționale și internaționale (Domeniul Arte)**

(Expoziții, spectacole, concerte, publicații, filme, înregistrări)

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## **Criteriul II – Prestigiu profesional**

### **1. Citări ale articolelor ISI listate la Criteriul I**

**Lista de mai jos include doar citările independente. Nu sunt incluse autocitările sau citările în articolele coautorilor.**

**Sârbu, C., and Pop, H. F. Principal Component Analysis versus Fuzzy Principal Component Analysis. A case study: The quality of Danube water (1985-1996). *Talanta* 65 (2005), 1215-1220.**

- [1] Abdel-Moghny, T., Gad, E. A., and Mostafa, Y. Effect of interfacially active fractions of some Egyptian crude oils on their emulsion stability. *J. Dispersion Science Technology* 27, 1 (2006), 133-141. Source: ISI Web of Knowledge.
- [2] Wang, S., Ma, H. Q., Sun, Y. J., Qiao, C. D., Shao, S. J., and Jiang, S. X. Fingerprint quality control of *Angelica sinensis* (Oliv.) Diels by high-performance liquid chromatography coupled with discriminant analysis. *Talanta* 72, 2 (2007), 434-436. Source: ISI Web of Knowledge.
- [3] Voncina, E., Voncina, D. B., Mirkovic, N., and Novic, M. Chemometric characterisation of the quality of ground waters from different wells in slovenia. *Acta Chimica Slovenica* 54, 1 (2007), 119-125. Source: ISI Web of Knowledge.
- [4] Shrestha, S., and Kazama, F. Assessment of surface water quality using multivariate statistical techniques: A case study of the Fuji river basin, japan. *Environmental Modelling & Software* 22, 4 (2007), 464-475. Source: ISI Web of Knowledge.
- [5] Ge, Z. Q., and Song, Z. H. Process monitoring based on independent component analysis-principal component analysis (ICA-PCA) and similarity factors. *Industrial & Engineering Chem. Research* 46, 7 (2007), 2054-2063. Source: ISI Web of Knowledge.
- [6] Astel, A. Chemometrics based on fuzzy logic principles in environmental studies. *Talanta* 72, 1 (2007), 1-12. Source: ISI Web of Knowledge.
- [7] Aoki, S., Toyozumi, K., and Tsuji, H. Visualizing method for data envelopment analysis. 2007 Ieee Int. Conference On Systems, Man Cybernetics, Vols 1-8 (2007), 1239-1244. Source: ISI Web of Knowledge.
- [8] Abadpour, A., Alfa, A. S., and Diamond, J. Fuzzy design of a Video-on-Demand network. 2007 Ieee Int. Symposium On Signal Processing Information Technology, Vols 1-3 (2007), 61-66. Source: ISI Web of Knowledge.
- [9] Yang, C., Lu, L. J., Lin, H. P., Guan, R. C., Shi, X. C., and Liang, Y. C. A Fuzzy-Statistics-Based Principal Component Analysis (FS-PCA) Method for Multispectral Image Enhancement and display. *Ieee Transactions On Geoscience Remote Sensing* 46, 11 (2008), 3937-3947. Source: ISI Web of Knowledge.
- [10] Shrestha, S., Kazama, F., and Nakamura, T. Use of principal component analysis, factor analysis and discriminant analysis to evaluate spatial and temporal variations in water quality of the Mekong river. *J. Hydroinformatics* 10, 1 (2008), 43-56. Source: ISI Web of Knowledge.
- [11] Abadpour, A., Alfa, A. S., and Diamond, J. Video-on-demand network design and maintenance using fuzzy optimization. *Ieee Transactions On Systems Man Cybernetics Part B-cybernetics* 38, 2 (2008), 404-420. Source: ISI Web of Knowledge.

- [12] Yanshuang, S., Bin, C., and Jinghua, S. Analysis on the Sustainable Utilization of Water Resources in China. ICBBE 2009. 3rd International Conference on Bioinformatics and Biomedical Engineering (2009), 1-4. Source: Google Scholar.
- [13] Varol, M., and Sen, B. Assessment of surface water quality using multivariate statistical techniques: a case study of Behrimaz Stream, turkey. *Environmental Monitoring Assessment* 159, 1-4 (2009), 543-553. Source: ISI Web of Knowledge.
- [14] Rezaie, K., Dehghanbaghi, M., and Ebrahimipour, V. Performance evaluation of manufacturing systems based on dependability management indicators-case study: Chemical industry. *Safety, Reliability Risk Analysis: Theory, Methods Applications, Vols 1-4* (2009), 2379-2387. Source: ISI Web of Knowledge.
- [15] Rezaie, K., Dehghanbaghi, M., and Ebrahimipour, V. Performance evaluation of manufacturing systems based on dependability management indicators-case study: chemical industry. *Int. J. Adv. Manufacturing Technology* 43, 5-6 (2009), 608-619. Source: ISI Web of Knowledge.
- [16] Ma, H., Liu, L., and Chen, T. Water security assessment in Haihe River Basin using principal component analysis based on Kendall  $\tau$ . *Environmental Monitoring and Assessment* (2009), 1-6. Source: Google Scholar.
- [17] Kazi, T. G., Arain, M. B., Jamali, M. K., Jalbani, N., Afridi, H. I., Sarfraz, R. A., Baig, J. A., and Shah, A. Q. Assessment of water quality of polluted lake using multivariate statistical techniques: A case study. *Ecotoxicology Environmental Safety* 72, 2 (2009), 301-309. Source: ISI Web of Knowledge.
- [18] Jiejun, Y., WangLin, H., and Chengjian, W. Assessment of surface and groundwater water quality at Regional scale. ICBBE 2009. 3rd International Conference on Bioinformatics and Biomedical Engineering (2009), 1-6. Source: Google Scholar.
- [19] Fataei, E., Monavari, S. M., Hasani, A. H., Karbasi, A. R., and Mirbagheri, S. A. Heavy Metal and Agricultural Toxics Monitoring in Garasou River in Iran for Water Quality assessment. *Asian J. Chem.* 22, 4 (2010), 2991-3000. Source: ISI Web of Knowledge.

**Pop, H. F., Einax, J. W., and Sârbu, C. Classical and fuzzy principal component analysis of some environmental samples concerning the pollution with heavy metals. *Chemometrics and Intelligent Laboratory Systems* 97, 1 (2009), 25-32.**

- [1] Frentiu, T., Ponta, M., Mihaltan, A., Cordos, E. A., Frentiu, M., Lazaroiu, G., Traista, L., and Indries, R. Qualitative assessment of heavy metals sources in pitcoal/biomass briquettes combustion using multivariate statistical analysis. *J. Optoelectronics Adv. Materials* 11, 5 (2009), 697-704. Source: ISI Web of Knowledge.

**Fei, X., Lu, S., Pop, H. F., and Liang, L. R. GFBA: A genetic fuzzy biclustering algorithm for discovering value-coherent biclusters. In *2007 International Symposium on Bioinformatics Research and Applications (ISBRA'2007). Lecture Notes in Bioinformatics, LNCS 4463/2007* (Georgia State University, Atlanta, May 6-9 2007), pp. 1-12. ISBN: 978-3-540-72030-0.**

- [1] Han, L., and Yan, H. Fuzzy biclustering for DNA microarray data analysis. In *IEEE International Conference on Fuzzy Systems, 2008. FUZZ-IEEE 2008. (IEEE World Congress on Computational Intelligence)* (2008), pp. 1132-1138. Source: Google Scholar.
- [2] Das, C., Maji, P., and Chattopadhyay, S. A Novel Biclustering Algorithm for Discovering Value-Coherent Overlapping delta-biclusters. *Adcom: 2008 16th Int. Conference On Adv. Computing Comm.* (2008), 148-156. Source: ISI Web of Knowledge.

## 2. Alte citări ale lucrărilor listate mai sus

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## 3. Citări în perioada 2005-2009 ale articolelor anterioare anului 2005

Lista de mai jos include doar citările independente. Nu sunt incluse autocitările sau citările în articolele coautorilor.

**Pop, H. F., Dumitrescu, D., Sarbu, C. A study of roman pottery (terra sigillata) using hierarchical fuzzy clustering. *Analytica Chimica Acta* 310, 2 (1995), 269-279**

[1] Simeonova, P., and Lovchinov, V. Classification of high-temperature superconducting YBCO thin films by fuzzy clustering. *J. Optoelectronics Adv. Materials* 7, 1 (2005), 419-422. Source: ISI Web of Knowledge.

**Pop, H. F., Sarbu, C., Horowitz, O., Dumitrescu, D. A fuzzy classification of the chemical elements. *J. Chem. Information Computer Sciences* 36, 3 (1996), 465-482**

[1] Turner, J. Application of Artificial Neural Networks in Pharmacokinetics. University of Sydney. <http://hdl.handle.net/2123/488> (2006). Source: Google Scholar.

[2] Voga, G. P., and Belchior, J. C. An approach for interpreting thermogravimetric profiles using artificial intelligence. *Thermochimica Acta* 452, 2 (2007), 140-148. Source: ISI Web of Knowledge.

**Pop, H. F., Sarbu, C. A new fuzzy regression algorithm. *Analytical Chem.* 68, 5 (1996), 771-778**

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[2] Ortiz, M. C., Sarabia, L. A., Garcia, I., Gimenez, D., and Melendez, E. Capability of detection and three-way data. *Analytica Chimica Acta* 559, 1 (2006), 124-136. Source: ISI Web of Knowledge.

[3] Astel, K., and Astel, A. BIOINDYKACJA + CHEMOMETRIA = ? [http://www.statsoft.com.pl/czytelnia/8\\_2007/Astel06.pdf](http://www.statsoft.com.pl/czytelnia/8_2007/Astel06.pdf) (2007). Source: Google Scholar.

[4] Anderson, A., Floyd, B., and Hrachowitz, M. RUSSELL CREEK ANNUAL REPORT 2006/07. Source: Google Scholar.

**Foth, K. A., Menzel, W., Pop, H. F., Schröder, I. An experiment in incremental parsing using weighted constraints. In *The 18-th International Conference on Computational Linguistics (COLING2000) (Saarbrücken, Germany, July, 31 - August, 4 2000)*, 1026-1030**

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[2] Daum, M. Architektur eines Constraint Frameworks. Univeristät Hamburg (2005). Source: Google Scholar.

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**Sarbu, C., Pop, H. F. Fuzzy clustering analysis of the first 10 MEIC chemicals. *Chemosphere* 40, 5 (2000), 513-520**

[1] Onkal-Engin, G., Demir, I., and Engin, S. N. e-nose response classification of sewage odors by neural networks and fuzzy clustering. *Adv. In Natural Computation, Pt 2, Proc. 3611* (2005), 648-651. Source: ISI Web of Knowledge.

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**Cundari, T. R., Deng, J., Pop, H. F., Sarbu, C. Structural analysis of transition metal beta-X substituent interactions. Toward the use of soft computing methods for catalyst modeling. *J. Chem. Information Computer Sciences* 40, 4 (2000), 1052-1061**

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**Sarbu, C., Pop, H. F. Fuzzy robust estimation of central location. *Talanta* 54, 1 (2001), 125-130**

- [1] Li, C. H., Li, Y. B., and Zhang, Z. J. Study on model construction of IV lateral motion pattern-space for its. 2005 Ieee International Conference On Vehicular Electronics And Safety Proceedings (2005), 217-221. Source: ISI Web of Knowledge.
- [2] Chen, B., Li, B., and Pan, Z. S. Robust Location Estimation with Possibilistic clustering. 2009 Isecs Int. Colloquium On Computing, Communication, Control, Management, Vol Iii (2009), 312-315. Source: ISI Web of Knowledge.

**Schroder, I., Pop, H.F., Menzel, W., Foth, K.A., Learning grammar weights using genetic algorithms, *Proceedings Recent Advances in Natural Language Processing, RANLP (2001), 235-239***

- [1] Øvrelid, L. Argument Differentiation. Soft constraints and data-driven models. rapport nr.: *Data linguistica* 20 (2008). Source: Google Scholar.
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**Cundari, T. R., Sarbu, C., Pop, H. F. Robust fuzzy principal component analysis (FPCA). A comparative study concerning interaction of carbon-hydrogen bonds with molybdenum-oxo bonds. *J. Chem. Information Computer Sciences* 42, 6 (2002), 1363-1369**

- [1] Landrum, G. A., Penzotti, J. E., and Putta, S. Machine-learning models for combinatorial catalyst discovery. *Measurement Science & Technology* 16, 1 (2005), 270-277. Source: ISI Web of Knowledge.
- [2] Peters, M. B., and Merz, K. M. Semiempirical comparative binding energy analysis (SE-COMBINE) of a series of trypsin inhibitors. *J. Chem. Theory Computation* 2, 2 (2006), 383-399. Source: ISI Web of Knowledge.
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#### **4. Distincții, premii și alte recunoașteri naționale și internaționale**

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#### **5. Studenți naționali atrași (activități de coordonare științifică și didactică)**

##### **Îndrumare lucrari de licență (număr lucrări susținute)**

25 lucrări de licență susținute în perioada 2005-2009

##### **Îndrumare lucrări de disertație (număr lucrări susținute)**

27 lucrări de disertație susținute în perioada 2005-2009

##### **Doctoranzi (lista nominală a doctoranzilor înmatriculați resp. lista nominală a tezelor susținute)**

Diana Man, înmatriculată octombrie 2007  
 Maria Toșa-Abrudan, înmatriculată octombrie 2007  
 Radu Găceanu, înmatriculat octombrie 2008  
 Jakab Hunor, înmatriculat octombrie 2008  
 Lefkovits Szidonia, înmatriculată octombrie 2008  
 Bocsi Botond, înmatriculat octombrie 2009

#### **6. Studenți internaționali atrași (activități de coordonare științifică și didactică)**

##### **Doctoranzi (lista nominală a doctoranzilor înmatriculați resp. lista nominală a tezelor susținute)**

Pali Gabor, drd. cotutela ELTE Budapesta, înmatriculat octombrie 2008

#### **7. Membru in comitetul de redacție la reviste ISI**

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#### **8. Membru in comitetul de redacție la reviste BDI**

Executive editor, *Studia Universitatis Babeș-Bolyai, Seria Informatică*  
 Member of the Editorial Board, Technical Editor and Reviewer of the "International Journal of Computer Science and Applications", published by Research Publications

#### **9. Participări la programe/granturi de cercetare finanțate din sursă internațională (se menționează și valoarea)**

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#### **10. Participări la programe/granturi finanțate din sursă națională (se menționează și valoarea)**

2007–2010

CRONIS – Decision system based on multi-agent techniques for the generation, optimization and management of the national registry of chronic non-transmissible diseases. Partners: Institute for Research, Design and Production of Automatization Equipment and Installations Bucharest, Cluj Branch, Ion Chiricuta Oncological Institute of Cluj, Iuliu Hatieganu University of Medicine and Pharmacy of Cluj and Babes-Bolyai University of Cluj. Grant PNCDI II Partnerships No. 11-003/2007. *Valoarea contractului = 340.000 lei*

2006–2009

Contributions in the domain of multiagent systems using methods of cognitive psychology, interface agents and aspect oriented programming paradigm. Partners: Chair of Clinical Psychology and Psychotherapy, Chair of Psychology and Chair of Programming Languages and Methods from BBU. Grant 307248/2006, financed by the Babes-Bolyai University. *Valoarea contractului = 74.250 lei*

2005-2007

Systems for collaborative decision aid in academic environments - case study BBU. Grant TP 2/2005, financed by the Babes-Bolyai University. Research grant coordinated by Prof. Stefan Nitchi.

2004-2007

Evolutionary computing: new paradigms, techniques and classes of evolutionary algorithms. Grant 23/322/2004, 23/322/2005, Contract between the Babes-Bolyai University, Cluj-Napoca and the Ministry of Education and Research. Research grant coordinated by Prof. D. Dumitrescu.

#### **11. Coordonări de programe/granturi finanțate din sursă internațională (se menționează și valoarea)**

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#### **12. Coordonări de programe/granturi finanțate din sursă națională (se menționează și valoarea)**

2007 - 2010

Project director of the PNII-IDEI research grant ID\_550/2007, "Robust methods and models of data analysis with applications to natural sciences", financed by Romanian National Council for University Scientific Research (CNCSIS). *Valoarea contractului = 971.000 lei. Valoarea finanțată efectiv = 819.933 lei*

2005 - 2008

Project director for the Faculty of Mathematics and Computer Science, Babes-Bolyai University Cluj-Napoca for the excellence research grant no. PC-D11-PT00-147 "New techniques in nuclear magnetic resonance on solids"; General contractor is the Research and Development Institute for Isotopic and Nuclear Technologies, Cluj-Napoca, Romania. *Cota parte din valoarea contractului = 48.268 lei*

#### **13. Profesor invitat la universitati de prestigiu, cu titlu oficial**

Wayne State University, ianuarie – mai 2006

#### **14. Membru în comisii profesionale relevante, cu titlu oficial**

Expert evaluator CNCSIS  
Expert evaluator ARACIS

## **15. Conferințe invitate internaționale**

July 9, 2008

Research Conference on "Theoretical Aspects of Fuzzy Sets in Data Analysis" at the Research Seminar, Department of Computer Science, University of Edinburgh, United Kingdom

February 21, 2006

Research Conference "Fuzzy Sets in Data Analysis: Between Theory and Applications" at the Graduate Seminar, Department of Computer Science, Wayne State University

## **16. Membru în comitete de organizare sau științifice ale unor conferințe internaționale**

July 2-4, 2009

Co-chair of the Organizing and Program Committees at the International Conference on Knowledge Engineering Principles and Techniques, KEPT'2009, organized by the Department of Computer Science, Babes-Bolyai University, Cluj-Napoca, Romania

August 28-30, 2008

Member in the Program Committee at 2008 IEEE International Conference on Intelligent Computer Communication and Processing, ICCP 2008, organized by the Department of Computer Science, Technical University of Cluj-Napoca, Romania

November 28-30, 2007

Member in the Program Committee of the International Conference on Advances in Computer Vision and Information Technology ACVIT-07, organized by the Department of Computer Science and Information Technology, Dr. Babasaheb Ambedkar Marathwada University Aurangabad (MS), India

September 6-8, 2007

Member in the Program Committee at IEEE 3rd International Conference on Intelligent Computer Communication and Processing, ICCP 2007, organized by the Department of Computer Science, Technical University of Cluj-Napoca, Romania

June 25-30, 2007

Member in the Organizing Committee at The Central European Functional Programming School, CEFP 2007, organized by the Department of Computer Science, Babes-Bolyai University, Cluj-Napoca, Romania

June 6-8, 2007

Member in the Organizing Committee and Program Committee at The First International Conference on Knowledge Engineering: Principles and Techniques KEPT 2007, organized by the Department of Computer Science, Babes-Bolyai University, Cluj-Napoca, Romania

September 1-2, 2006

Member in the Program Committee and chair of session A1 "Artificial Intelligence and Agents" at IEEE 2nd International Conference on Intelligent Computer Communication and Processing, ICCP 2006, organized by the Department of Computer Science, Technical University of Cluj-Napoca, Romania

July 25 - August 4, 2005

Member in the Organizing Committee of the EuroLAN 2005 Summer School on "The Multilingual Web: Resources, Technologies and Prospects", organised by The Romanian Academy, "Alexandru Ioan Cuza" University of Iasi and Babes-Bolyai University Cluj-Napoca

May 20-22, 2005

Chairman at The 4-th International Conference RoEduNet Romania, Sovata, Targu-Mures, Romania, organized by the Romanian Education Network RoEduNet and the "Petru Maior" University, Targu-Mures, Romania

### **III. Realizare remarcabilă**

De cele mai multe ori, într-un experiment, sistemul de interes este studiat și controlat în așa fel încât răspunsul înregistrat la un moment dat se datorează practic modificării unui singur parametru (variabilă). În ultimul timp, s-a realizat că multe dintre sistemele din natură au o structură intrinsecă multidimensională, necesitând astfel experimente și metode de analiză și interpretare a datelor mai complexe, în scopul obținerii informației utile maxime. Referitor la studiul sistemelor chimice și, mai ales, a celor care privesc mediul înconjurător trebuie să subliniem, însă, că multe dintre variabile se modifică simultan în timp și/sau spațiu și, de aceea, un control sistematic al tuturor este practic imposibil. În aceste condiții, devine deosebit de importantă stabilirea metodelor și a modalităților de depistare a proceselor și cauzelor care definesc și controlează aceste sisteme.

Datorită perfecționării instrumentației și a metodelor analitice, a fost posibil să se obțină și să se analizeze mult mai multe date, privind sistemele chimice și de mediu, cu o precizie și o rezoluție temporală mult mai mare decât s-a putut face anterior. Astfel încât, acum, în scopul caracterizării sistemelor, indiferent de natura acestora, este posibil să se colecteze baze mari de date, conținând un număr mare de rezultate pentru un mare număr de cazuri sau probe. Numărul mare de probe și, implicit, de date este necesar datorită, în primul rând, variabilității și complexității sistemelor naturale în special și, în al doilea rând, datorita diferențelor inerente ale acestora comparativ cu sistemele obișnuite studiate în laborator.

Calea optimă, privind înțelegerea acestor interacțiuni multiple și complexe, constă în măsurarea a cât mai multor parametri caracteristici. Rezultatele acestor măsurări se constituie, astfel, în mari seturi de date. Prelucrarea și interpretarea rațională a unor asemenea seturi de date se poate face numai prin folosirea unor metode computaționale eficiente și robuste. Dintre acestea, cele mai eficiente și, în același timp, cele mai des folosite s-au dovedit a fi Analiza componentelor principale, analiza clusterilor și, mai ales, metodele de clasificare și analiză robustă, bazate pe mulțimi fuzzy (regresie fuzzy, analiza componentelor principale fuzzy, alte metode de analiză multivariată bazate pe mulțimi fuzzy), la care am adus o contribuție semnificativă.

Metodele robuste de analiză a datelor oferă o abordare alternativă la metodele clasice. Motivația constă, printre altele, în nevoia de a produce metode de analiză a datelor care nu sunt afectate de precizia redusă a datelor sau de faptul că există elemente în setul de date care nu se conformează comportării generale a datelor, ca de exemplu valorile izolate sau valorile lipsă.

În analiza statistică clasică, metodele se bazează în mod consistent pe astfel de presupuneri care nu sunt satisfăcute în practică. Din păcate, în situațiile când setul de date conține puncte izolate, sau prezintă mai multe subseturi cu particularități diferite, metodele clasice practic eșuează. Metodele robuste de analiză a datelor oferă posibilitatea de a generaliza abordările clasice de așa natură încât rezultatele să nu fie afectate precizia datelor, de valorile izolate sau lipsă și nici de alte particularități ale datelor.

Impactul abordării robuste bazată pe teoria mulțimilor fuzzy este evident dacă se urmăresc doar listele citărilor, precizate în acest document.

Data: 16 martie 2010

Semnătura:

**Certific validitatea datelor prezentate**

Sef de catedră,