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## Gia Sirbiladze

## Experience

2005-present   Iv.Javakhishvili Tbilisi State University, Tbilisi, Georgia, Full Professor, Faculty of Exact and natural Sciences, Department of Computer Sciences. Chair if Applied Informatics

1994-2005   Tbilisi State University, Tbilisi, Georgia, Professor, Faculty of Applied Mathematics and Computer Sciences, Chair of Random Processes Theory.

1981-1994   Tbilisi State University Tbilisi, Georgia, Docent, Faculty of Applied Mathematics and Computer Science, Chair of Random Processes Theory.

## Education

2005   N.Muskhelishvili Institute of Computational Mathematics of Georgian Academy of Sciences, Tbilisi, Georgia, Doctor of Phys. Math. Sci (Probability Theory and Statistics).

1990   Institute of Applied Mathematics of Georgian Academy of Sciences, Tbilisi, Georgia, Ph. D. (Computational Mathematics).

1981   Tbilisi State University, Tbilisi, Georgia. Faculty of Applied Mathematics and Cybernetics. Diploma in Applied Mathematics and Cybernetics

## Research Interests

1. Systems science and engineering;
2. Computational intelligence;
3. Evolutionary programming (genetic algorithms, estimation of distribution algorithms, hybrid algorithms) in the modeling of complex systems;
4. Extreme fuzzy dynamic systems - control, filtration, identification and prediction;
5. Soft-computing methodologies in finances and management;
6. Fuzzy technologies in decision-making intelligent support systems;
7. Multi –person, multi-criteria (multi-attribute) fuzzy decision making technologies;
8. Fuzzy aggregation operators in expert knowledge engineering and decision making. Theory and application;
9. Fuzzy optimization and decision making:
   a) Fuzzy covering and partitioning problems;
   b) Fuzzy vehicle routing problems for extreme environment –intelligent support systems;

c) Fuzzy facility location problems for extreme environment –intelligent support systems;

d) Fuzzy multi-objective emergency location-transportation problems (for post-disaster regions) –intelligent support systems;

## Teaching Courses

Modeling and Simulation, Applied Statistics, Intelligent Systems, Intelligent Decision Support Systems, Genetic Algorithms, Neural Networks, Evolutionary Programming.

## Performed Selected Projects

2015-2017    The New Model of Vehicle Routes Planning in Extreme and Uncertain Environment (SRNF: AR/26/5-111/14).

2014-2015    Intelligent Support System for Optimal Route Planning for Transportation of Goods  (MTCU/23/4-102/13), (STCU-SRNSF #5891).

2013-2014    Decision Making Operators and Schemes in Fuzzy Uncertainty Environment (SRNF: DO/140/4-102/13).

2009-2010    Decision-Making Support Fuzzy-Technologies in Expert Valuations Streams (SRNF: ST 08 1-361).

## Selected Publications

1. G. Sirbiladze, N. Zaporozhets, About two Probability Representations of Fuzzy Measures on a Finite Set. The Journal of Fuzzy Mathematics. Los Angeles, The International Fuzzy Mathematics Institute, USA, Vol.10, No.3, 2003, 1-17 ;

2. G. Sirbiladze, A. Sikharulidze, Weighted Fuzzy Averages in Fuzzy Environment, Part I. Insufficient Expert Data and Fuzzy Averages. International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems. Vol.11, No.2, 2003, 139-158 ;

3. G. Sirbiladze, A. Sikharulidze, Weighted Fuzzy Averages in Fuzzy Environment, Part II. Generalized Weighted Fuzzy Expected Values in Fuzzy Environment. International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems. Vol. 11, No.2, 2003, 159-172 ;

4. G. Sirbiladze, Fuzzy Subset Construction through the Associated Probabilities. Bulletin of the Georgian Academy of Sciences, 163, N3, 2001, 436-440;

5. G. Sirbiladze, N. Zaporozhets, Choquet's Capacity of Order Two in the Murofushi-Sugeno's Probability Representation of a Fuzzy Measure. Bulletin of the Georgian Academy of sciences, 165, N2, 2002, 235-238 ;

6. G. Sirbiladze, B. Gvaberidze, Possibilty Analysis of the Fuzzy Covering Problem. Bulletin of the Georgian Academy of Science, 167,N1, 2003,47-50 ;

7. G. Sirbiladze, F.Criado, T.Gachechiladze, Theory of Conectivity and Apportionment of Representative Chains in the Problem of Decision-making Concerning Earthquake Possibility. International Journal of General Systems, 32, No.2, 2003, 103-121 ;

8. G. Sirbiladze, T.Gachechiladze, Restored Fuzzy Measures in Expert Decision-Making. Information  Sciences. An International Journal. 169 (1/2), 2005, 71-95;

9. G. Sirbiladze, Modeling of Extremal Fuzzy Dynamic Systems. Part I: Extended Extremal Fuzzy  Measures.  International Journal of General Systems. 34,2, 2005, 107-138;

10. G. Sirbiladze, Modeling of Extremal Fuzzy Dynamic Systems. Part II: Extended Extremal Fuzzy Measures on Composition Products of Measurable Spaces. International Journal of General Systems. 34,2, 2005, 139-167;

11. G. Sirbiladze, Modeling of Extremal Fuzzy Dynamic Systems. Part III: Modeling of Extremal and Controllable Extremal Fuzzy Processes. International Journal of General Systems. 34,2, 2005, 169-198;

12. G. Sirbiladze, About a Universal Representation-Interpretator of a Fuzzy Measure. Bulletin of the Georgian Academy of Sciences. 170, N3,2004, 454-457;

13.G.Sirbiladze, Modeling of Extremal Fuzzy Dynamic Systems. Part IV: Identification of Fuzzy-Integral Models of Extremal Fuzzy Processes. International Journal of General Systems. 35, 4, 2006, 435-459;

14. G.Sirbiladze, Modeling of Extremal Fuzzy Dynamic Systems. Part V: Optimization of Continuous Controllablale Extremal Fuzzy Processes and the Choice of Decisions. International Journal of General Systems. 35, 5, 2006, 529-554;

15. G.Sirbiladze, Modeling of Extremal Fuzzy Dynamic Systems. Part VI: Problems of States Estimation (Filtration) of Extremal Fuzzy Process. International Journal of General Systems. 36,1 2007, 19-58.

16.G.Sirbiladze, Transformation Theorems for Extended Lower and Upper Sugeno Integrals. Mat. Zametki, 2008, Volume 83, Issue 3, Pages 439–460 .

17. G.Sirbiladze, On Fuzzy Optimal Controls in the Weakly Structurable Continuous Dynamic Sysytems (WSCDS). New Mathematics and Natural Computation. 4,1 2008, 41-60.

18.G. Sirbiladze, B. Ghvaberidze, T. Latsabidze, B. Matsaberidze, Using Minimal Fuzzy Covering in Decision-making Systems. Information Sciences. An International Journal, 179, 2009, 2022-2027.

19. G. Sirbiladze, A. Sikharulidze, N. Sirbiladze, Fuzzy Programming Problem in the Weakly Structurable Dynamic System and Choice of Decisions. WSEAS Transactions on Systems and Control , Issue 11, vol. 3, 2008, 937-953.

20. G. Sirbiladze, Fuzzy Dynamis Programming Problem for Extremal Fuzzy Dynamic System, in „Studies in Fuzziness and Soft Computing", 2010, Vol. 254, "Fuzzy optimization", 231-270.

21. G. Sirbiladze: Fuzzy Identification Problem for Continuous Extremal Fuzzy Dynamic System, Fuzzy Optimization and Decision Making , 2010, vol. 9, N. 3, 233-274.

22. G. Sirbiladze, A. Sikharulidze, B. Ghvaberidze, and B. Matsaberidze, Fuzzy probabilistic aggregations in the discrete covering problem', International Journal of General Systems, 2011, 40: 2, 169 — 196.

23. G. Sirbiladze, I. Khutsishvili and B. Ghvaberidze, Multistage decision-making fuzzy methodology for optimal investments based on experts' evaluations, European Journal of Operational Research, Elsevier pub., 232, 2014, 169–177.

24. G. Sirbiladze, B. Ghvaberidze, B. Matsaberidze, Bicriteria Fuzzy Vehicle Routing Problem for Extreme Environment. Bulletin of the Georgian National Academy of Sciences, vol. 8, no. 2, 41-48, 2014.

25. G.Sirbiladze, K. Gelashvili, I. Khutsishvili and A. Sikharulidze, Temporalized Structure of Bodies of Evidence in the Multi-Criteria Decision-Making Model, International Journal of Information Technology & Decision Making, Vol. 14, No. 03, pp. 565-596, 2015.

26. G. Sirbiladze, New Fuzzy Aggregation Operators Based on the Finite Choquet Integral — Application in the MADM Problem, International Journal of Information Technology & Decision Making 15(3) (2016) 517-551.

**27.** G. Sirbiladze, O. Badagadze, Intuitionistic Fuzzy Probabilistic Aggregation Operators Based on the Choquet Integral: Application in Multicriteria Decision-Making, International Journal of Information Technology & Decision Making, 2017, Vol. 16, No. 01 : pp. 245-279.

28. G. Sirbiladze, B. Ghvaberidze, B. Matsaberidze and A.Sikharulidze, Multi-Objective Emergency Service Facility Location Problem Based on Fuzzy TOPSIS, Bulletin of the Georgian National Academy of Sciences, 11(1), 23-30, 2017.

29**.** Gia Sirbiladze, Extremal Fuzzy Dynamic Systems. Theory and Applications. IFSR International Series on Systems Science and Engineering, Springer, New York- Heidelberg-Dordrecht- London, 422 p.28, 2013.