

## NIKOLAOS G. BARDIS

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### EDUCATION

- Ph.D , 1999:** National Technical University of Ukraine “Kiev Polytechnic Institute”. Essay on a theme: “**Development of an approach and applications of Boolean Functions tools to analysis and synthesis of effective Cryptographic algorithms of Information Security Systems**”.
- M.Sc. 1995** Kiev Polytechnic Institute. Department of Computer and Intellectual Systems and Networks. Essay on a theme: “**System of Search Information based on use of Hash Addressing**”.

### PROFESSIONAL EXPERIENCE

- 2008–2010** Adj Researcher on Data Security and Cryptology at National Center of Scientific Research “Demokritos” - Institute of Informatics and Telecommunications– NetMedia LAB
- 2007–2010** Adj Lecture on Department of Mathematics and Engineering Sciences – University of Military Education – Hellenic Army Academy
- 2003 - 2010** Adj. Assistant Professor on Cryptology and Data Security Department of Automation, Halkis Institute of Technology
- 2004 – 2007** Associate Researcher on Department of Computer Sciences – Military Institutes of University Education – Hellenic Naval Academy
- 2001–2007** Associate Researcher on Department of Mathematics and Engineering Sciences – University of Military Education – Hellenic Army Academy
- 2001- 2004** Senior advisor on Information Security Systems – Ministry of the Interior, Public Administration & Decentralization.
- 2003** Senior Researcher in the E.U. project: “Analyzing – Designing and Calculating Methods for Orthogonal Boolean Functions Systems in Information Security Systems”
- 2002** Research Associate of Technical Chamber of Greece
- 2000- 2001** Research Associate of the General Directorate for Defense Industry Research & Technology Hellenic Ministry of National Defense (MoD).
- 2000-2001.** Teaching course of Information Theory on Departments of the Ministry of Development.
- 1995-1999.** Teaching the Post Graduate course on the Department of Computer Engineering of the National Technical University of Ukraine (Kiev Polytechnic Institute).
- 1994- 1999.** Researcher at the laboratory of the Department of Computer Engineering of the National Technical University of Ukraine (Kiev Polytechnic Institute).

### RESEARCH TOPICS

**1. Cryptography:** development and analysis of effective cryptographic transformation and cryptographic algorithms; generation of hash algorithms; design of generators of pseudo-random sequences for information security systems, arrangement of effective implementation for cryptographic algorithms and design of special-purpose crypto-processors; cryptographic algorithm certification.

**2. Information Technologies and Weapon Systems Applications:** Development and Applications of DataBase Management Systems, Neural Networks, Fuzzy Logic Systems, Genetic Algorithms, Knowledge - Base & Expert Systems.

**3. Fast Information Searching Systems:** Development of effective algorithms and structures for fast search of information on the ground of hash addressing; development of methods for design of perfect hash addressing of steady information structures or those that slowly vary; application of associative memory in information search systems; hashing application in pattern recognition systems.

## **Publications**

1. Bardis N., Drigas A., Doukas N., & Karadimas N., 'Optimised Information System Reliability Techniques for Knowledge Society Acceptance', Int. J. Knowledge and Learning, vol. 5, no. 3/4, pp. 207-221, 2009.

2. Nikolaos G. Bardis, Athanasios Drigas and Oleksandr P. Markovskiy, "PERFORMANCE INCREASE OF ERROR CONTROL OPERATION ON DATA TRANSMISSION", 3rd International Conference on New Technologies, Mobility and Security, IEEE, IEEE COMMUNICATIONS SOCIETY, Egypt - Cairo, 20-23 December 2009.

3. Costin Cepisca, Nikolaos Bardis, Nikolay Mihalkov, Conditioning circuits for parametric transducers, Proceedings of 5th International Conference on Metrology and Measurement Systems, METSIM 2009, Faculty of Electrical Engineering, Politechnica University of Bucharest, Romania, ISBN 978-606-8082-22-6, pp. 83-86, November 5-6, 2009.

4. Bardis N. G, Doukas, N., Markovskiy O.P, Transmission Error Correction Based on the Weighted Checksum, Proceedings of the APPLIED COMPUTING CONFERENCE 2009 (ACC '09), MATHEMATICAL METHODS AND APPLIED COMPUTING Volume II, Vouliagmeni, Athens, Greece, pp.758-763, September 28-30, 2009.

5. Iosif Androulidakis, Vasilios Christou, Nikolaos G. Bardis, Ioannis Stilios, "Surveying users' practices regarding mobile phones' security features", Electrical And Computer Engineering Series, Proceedings of the 3rd international conference on European computing conference table of contents, Tbilisi, Georgia, Pages: 25-30, Year of Publication: 2009, ISBN ~ ISSN:1790-5117 , 978-960-474-088-8, [Online], Available: <http://portal.acm.org/citation.cfm?id=1627964>

6. N. G. Bardis, A. P. Markovskiy, N. Doukas, N. V. Karadimas, " True random number generation based on environmental noise measurements for military applications", Mathematics And Computers In Science And Engineering archive Proceedings of the 8th WSEAS international conference on Signal processing, robotics and automation, Cambridge, UK, Pages 68-73, 2009, ISBN ~ ISSN:1790-5117 , 978-960-474-054-3, [Online], Available: <http://portal.acm.org/citation.cfm?id=1558930>

7. Costin CEPIȘCĂ, Sorin Dan GRIGORESCU, Stergios GANATSIOS, Nikolaos G. BARDIS, "PASSIVE AND ACTIVE COMPENSATIONS FOR CURRENT TRANSFORMERS", METROLOGIE 4/2008 (p. 5-10)

8. Nikolaos G. Bardis, Nikolaos Doukas, Konstantinos Ntaikos, " Design and Development of a Secure Military Communication based on AES Prototype Crypto Algorithm and Advanced Key Management Scheme", WSEAS TRANSACTIONS on INFORMATION SCIENCE & APPLICATIONS, Issue 10, Volume 5, October 2008, pages 1501-1510, ISSN: 1790-0832.

9. Nikolaos Bardis, Nikolaos Doukas, Konstantinos Ntaikos, "A new approach of secret key management lifecycle for military applications", WSEAS Transactions on Computer Research, Volume 3 , Issue 5 (November 2008), Pages 294-304, ISSN:1991-8755, [Online], Available: <http://portal.acm.org/citation.cfm?id=1481940>
10. Bardis Nikolaos, "Coding of checksum components for increasing the control reliability of data transmission for military applications", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 7, Volume 11, ISSN 1109-2742, November 2008, pp. 1122-1131, [Online]. Available: <http://portal.acm.org/citation.cfm?id=1481917>.
11. Doukas Nikolaos, Bardis Nikolaos, "Effectiveness data transmission error detection using check sum control for military application", A Series Of Reference Books And Textbooks archive Proceedings of the 10th WSEAS international conference on Mathematical methods, computational techniques and intelligent systems, Corfu, Greece, ISBN ~ ISSN:1790-2769 , 978-960-474-012-3, 2008, pp 498-502, [Online]. Available: <http://portal.acm.org/citation.cfm?id=1562421&dl=GUIDE&coll=GUIDE>
12. Costas Nastoulis, Apostolos Leros, Nikolaos Bardis, "Banknote Recognition Based on Probabilistic Neural Network Models", WSEAS TRANSACTIONS on SYSTEMS, Issue 10, Volume 5, ISSN 1109-2777, pp: 2363 – 2366 October 2006. [Full paper, English].
13. Nikolaos V. Karadimas, George Rigopoulos, Nikolaos Bardis, "Coupling Multiagent Simulation and GIS – an Application in Waste Management", WSEAS TRANSACTIONS on SYSTEMS, Issue 10, Volume 5, ISSN 1109-2777, pp: 2367 – 2371 October 2006. [Full paper, English].
14. Bardis N.G, Bardis E.G., Markovskyy A.P., C.Economou, "Hardware Implementation of Data Transmission Control based on Boolean Transformation", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 7, Volume 4, ISSN 1109-2742, pp: 363 – 371, July 2005. [Full paper, English].
15. Bardis N.G, Markovskyy A.P, "Utilization of Avalanche Transformation for Increasing of Echoplex and Checksum Data Transmission Control Reliability", ISITA 2004 - INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY AND ITS APPLICATIONS, IEEE / SITA, Parma, Italy, October 10-13, ISBN: 4-902087-08-1, 2004.[Full paper, English].
16. Bardis N.G , "Echoplex Error Control System using Avalanche Transformations", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 2, Volume 3, ISSN 1109-2742, pp: 741 - 745, April 2004.[Full paper, English].
17. Bardis N.G , "Combinatorial method for Boolean SAC functions designing", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 2, Volume 3, ISSN 1109-2742, pp: 746 - 752, April 2004.[Full paper, English].
18. Bardis N.G , "Method of designing a controlled by code generator of Balanced Boolean functions which satisfy the SAC", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 2, Volume 3, ISSN 1109-2742, pp: 753 - 757, April 2004.[Full paper, English].
19. Bardis N.G, Markovskyy A.P., Andrikou D.V., "Method for Design of pseudorandom binary sequences generators on nonlinear feedback shift register (NFSR)", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 2, Volume 3, ISSN 1109-2742, pp: 758 - 763, April 2004.[Full paper, English].

20. Bardis N.G, Markovskyy A.P., Mitrouli M, Polymenopoulos A. , "Methods for design of balanced Boolean functions satisfying strict avalanche criterion (SAC)", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 2, Volume 3, ISSN 1109-2742, pp: 770 - 776, April 2004.[Full paper, English].

21. Bardis N.G, Mitrouli M, Maris Th.I., Orlova M.N., "Some properties of Boolean functions and design of cryptographically strong balanced Boolean functions", WSEAS TRANSACTIONS on INFORMATION SCIENCE and APPLICATIONS, Issue 2, Volume 1, ISSN 1790-0832, pp: 717 - 723, August 2004.[Full paper, English].

22. Bardis N.G, Polymenopoulos A., Markovskyy A.P, M.Mitrouli,"Methods for Design of Balanced Boolean Functions Satisfying Strict Avalanche Criterion SAC", International Journal Computer Science 12(1), 2003. [Full paper, English].

23. Bardis N.G, Polymenopoulos A., Bardis E.G, Markovskyy A.P,"Methods for Increasing the Efficiency of the Remote User Authentication in Integrated Systems", International Journal Computer Science 12(1), 2003. [Abstract, English, Greek] [Full paper, English].

24. Bardis N.G., Leros A.P., Bardis E.G., Karadimas N., "Methods and Tools for Improving Efficiency of Symmetric Cryptographic Algorithms", WSEAS RECENT ADVANCES IN COMMUNICATIONS AND COMPUTER SCIENCE, ISSN 960-8052-86-6, 2003, pp: 155- 161. [Abstract, English, Greek] [Full paper, English] [presentation pdf].

25. N.G.Bardis, M.Mitrouli, A.P.Markovskyy, "Some properties of Boolean functions and design of Cryptographically strong balanced Boolean functions", International Conference on RECENT ADVANCES IN STATISTICAL DESIGNS AND RELATED COMBINATORICS, University of Athens

July 7-9, 2003, Athens [Abstract, English, Greek]

26.N.G.Bardis, A.Polymenopoulos, E.G.Bardis, A.P.Markovskyy, D.V.Andrikou, "An approach to determine the complexity of random and pseudo random binary sequences", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 1, Volume 1, ISSN 1109-2742, 2002, pp: 37 - 42.[Abstract, English, Greek] [Full paper, English]

27. Bardis N.G., Polymenopoulos A., Leros A.P., Karadimas N., Mastorakis N.E., "Topological methods for hash algorithms efficiency increase", WSEAS TRANSACTIONS on COMMUNICATIONS, Issue 1, Volume 1, ISSN 1109-2742, 2002, pp: 13 - 18.[Abstract, English, Greek] [Full paper, English]

28. Bardis N.G., Polymenopoulos A., Bardis E.G., Markovskyy A.P., Mastorakis N.E. , "Hash Algorithms: a design for parallel calculations", WSEAS TRANSACTIONS on SYSTEMS, Issue 1, Volume 1, ISSN: 1109-2777, 2002, pp. 48 - 56.[Abstract, English, Greek] [Full paper, English]

29.Polymenopoulos A., Bardis N.G, Bardis E.G., Markovskaja N.A., "Design and Implementation of Boolean Balanced Functions Satisfying Strict Avalanche Criterion (SAC)", WSEAS Press - Problem in Applied Mathematics and Computational Intelligence, ISBN: 960-8052-30-0, 2001, pp. 12-16.[Abstract, English, Greek] Full paper, English]

30. Polymenopoulos A., Bardis E.G., Bardis N.G., Markovskaja N.A., "Perfect Hashing Using Linear Boolean Functions", WSEAS Press - Problem in Applied Mathematics and Computational Intelligence, ISBN: 960-8052-30-0, 2001, pp. 5-11. [Abstract, English, Greek] [Full paper, English]

31. Bardis N., Markovskyy A., El Xamy Igiad, Redko S., "Method and Structure for Forming and Calculate Systems of Orthogonal Balance Boolean Functions", Bulletin of National Technical University of Ukraine (KPI), ISSN 0201-744X,ISSN 0135-1729,UDK 681.322, No.32, 1999, pp. 90-98.[Abstract, English, Greek]
32. Bardis E., Bardis N., Simonenko A., "The Algorithm for Dynamic Distributing of Processes in Real Time Distributed Computer Systems". Submitting as a special issue of IMACS/IEEE, CSCC'99 International MultiConference, "Recent Advances in Signal Processing and Communications", ISBN: 960-8052-03-3, pp. 166-169, 1999.[Abstract, English, Greek] [Full paper, English]
33. Bardis E.G., Bardis N.G., Markovskyy A.P., Spyropoulos A.P., "Design of Boolean Function from a Great Number of Variables Satisfying Strict Avalanche Criterion". Submitting as a special issue of IMACS/IEEE CSCC'99 International MultiConference, "Recent Advances in Signal Processing and Communications", ISBN: 960-8052-03-3, pp. 107-112, 1999.[Abstract, English, Greek] [Full paper, English]
34. Bardis E.G., Bardis N.G., Markovskyy A.P, Spyropoulos A.K, "Security Analysis of Cryptographic Algorithms by means of Boolean Functions". Submitting as a special issue of IMACS/IEEE CSCC'99 International MultiConference, " Progress in Simulation, Modeling, Analysis and Synthesis of Modern Electrical and Electronic Devices and Systems", ISBN: 960-8052-08-4, pp. 382-387, 1999.[Abstract, English, Greek] [Full paper, English]
35. Bardis E.G., Bardis N.G., Markovskyy A.P., Spyropoulos A.K., "High Storage Utilization of Hash Memory by Reducing of Information Redundancy for Hashing". Submitting as a special issue of IMACS/IEEE CSCC'99 International MultiConference, "Software and Hardware Engineering for the 21th Century", ISBN: 960-8052-06-8, pp. 272-276, 1999.[Abstract, English, Greek] [Full paper, English]
36. Bardis N.G., Markovskyy A.P., Abu Ysbax A.N, Kishenko A.B. "Analysis of Security of Cryptographic Algorithms Using Boolean Functions". Bulletin of National Technical University of Ukraine (KPI), ISSN 0201-744X,ISSN 0135-1729, UDK 681.322, No.31, 1998, pp.24-34.[Abstract, English, Greek]
37. Bardis N.G., Markovskyy A.P., Gavaagiin U. "Method for Increasing the Effectiveness and the Information Security Level of a Data Base System, based in Hash-Memory". Bulletin of National Technical University of Ukraine (KPI), ISSN 0201-744X,ISSN 0135-1729, UDK 681.322.01, No.31, 1998, pp.14-23.[Abstract, English, Greek]
38. Bardis N.G., Markovskyy A.P.,Samofalov K.G., Gavaagiin U. "Method for Design Balanced SAC-Functions for Security Informations Systems". Bulletin of National Technical University of Ukraine (KPI), ISSN 0201-744X,ISSN 0135-1729, UDK 681.322, No.31, 1998, pp.03-13.[Abstract, English, Greek]
39. Bardis E., Bardis N., Markovskyy A., "An Approach for Decrease the Information Redundancy in Data Base". Publication on GPNTB-UKRAINE N 2163, 1994.[Abstract, English, Greek]
40. Bardis E., Bardis N., "Effect of Memory Load Factor in Efficacy and in Authenticity of Hash-Functions". Publication on GPNTB-UKRAINE N 1965, 1994.[Abstract, English, Greek]