

CURRICULUM VITAE

Rza Bashirov

1. Education

- 1990 Ph.D. in Computer Science, Moskow State University
1982 M.S. in Applied Mathematics, Azerbaijan State University

2. Academic Positions

- 2010 - due date Professor of Computer Science, Eastern Mediterranean University
1997 - 2010 Associate Professor, Eastern Mediterranean University
1993 - 1997 Assistant Professor, Eastern Mediterranean University
1990 - 1993 Assistant Professor (on part-time basis), Baku State University

3. Administrative Experience

- 2011 – 2017 Dean, Faculty of Arts and Sciences, Eastern Mediterranean University
2011 – 2013 Founding Acting Head, Department of Biological Sciences, Eastern Mediterranean University
2010 - 2017 Founding Chair, University Elective Courses Committee, Eastern Mediterranean University
2005 - 2011 Vice Dean, Faculty of Arts and Sciences, Eastern Mediterranean University
1997-2005 Vice Head, Department of Mathematics, Eastern Mediterranean University
1992-1993 Head of Department, Institute of Cybernetics, Academy of Sciences

4. Thesis Supervision

Master Theses:

- Yazdanian, Y. *Network-based prediction of COVID-19 epidemic spreading in North Cyprus*, EMU, July 2022
- Ngandjou, G. Y. *Qualitative analysis of cancer pathways with transition and place invariants*, EMU, January 2019
- Adam, M. L. *Biomodeling with discrete, continuous and hybrid Petri nets*, EMU, January 2019

- Krivdić, A. *Comprehensive analysis of mathematical and computational models of cell cycle*, EMU, September 2015
- Akgün, G. *Performance Analysis of Hill cipher and its modifications*, EMU, February 2014
- Dolma, F. *Implementing Petri nets for modeling and simulation in biosciences*, EMU, January 2012
- Kayınzade, F. *Primality test algorithms*, EMU, February 2004
- Pilli, O. *Modeling interconnection networks with Petri nets*, EMU, August 2000
- Babagil, M. *Survey on containment of interconnection networks*, EMU, September 1997
- Yüce, F. B. *On rearrangeability of 5-stage interconnection networks*, EMU, August 1996
- Bilgen, A., *Rearrangeable butterfly type interconnection networks*, EMU, February 1995
- Esener, İ. *Efficient mapping of parallel algorithms based on recursive doubling scheme*, EMU, September 1994
- Gürbüz, R. *Efficient mapping of class of parallel algorithms into interconnection networks*, EMU, September 1994

Ph.D Theses:

- Duranay, R. *Exploiting fuzzy stochastic Petri nets to predict targeted efficient drug combinations for Spinal Muscular Atrophy*, EMU, September 2019
- Mehraei, M. *Exploiting hybrid functional Petri nets to investigate transcriptional activity of hemoglobin switching*, EMU, July 2016
- Akçay, İ.N. *Petri net-based quantitative modeling and validation of p16-mediated signaling pathway*, EMU, February 2016
- Karanfiller, T. *Exploiting Petri nets to reduce switch crosstalk and path-dependent-loss in optical interconnection networks*, EMU, February 2012
- Lort, H. *Analyzing the permutation admissibility with CP-nets*, EMU, December 2008

5. Publications

Articles in SCIE indexed journals:

- **Bashirov, R.** Qualitative analysis of signaling networks using Petri nets and invariant computation. *Eng* **2026** xx(x) (in press)
- Akgün, G., **Bashirov, R.** Optimal paradigms for quantitative modeling in systems biology demonstrated for spinal motor neuron synthesis. *Applied Sciences* (Special issue in Bioinformatics and Computational Biology) **2024**, *14*(22), 10696; <https://doi.org/10.3390/app142210696>
- Akçay, İ.N., **Bashirov, R.** Comparison of modelling approaches demonstrated for p16-mediated signalling pathway in higher eukaryotes. *BioSystems* **2021**, *210*, 104562; <https://doi.org/10.1016/j.biosystems.2021.104562>
- **Bashirov, R.**, Duranay, R., Şeytanoğlu, A., Mehraei, M., Akçay, İ.N. Exploiting fuzzy stochastic Petri nets to predict effective drug combinations for Spinal Muscular Atrophy.

Turkish Journal of Electrical Engineering and Computer Sciences **2019**, 27, 4009 – 4022;
<https://doi.org/10.3906/elk-1902-133>

- **Bashirov, R.**, Akçay, İ. Stochastic simulation-based prediction of the behavior of p16-mediated signaling pathway. *Fundamenta Informaticae* **2018**, 160, 167–179;
<https://doi.org/10.3233/FI-2018-1679>
- **Bashirov, R.**, Mehraei, M. Identifying targets for gene therapy of β -globin disorders using quantitative modeling approach, *Information Sciences (SCI)* 397-398, 2017, 37-47
- Mehraei, M., **Bashirov, R.**, Tüzmen, Ş., Target based drug discovery for β -globin disorders: drug target prediction implementing quantitative modeling with hybrid functional Petri nets. *Journal of Bioinformatics and Computational Biology* **2016**, 14(4), 1650026; <https://doi.org/10.1142/S0219720016500268>
- Akçay, İ., **Bashirov, B.**, Tüzmen, Ş. Validation of signaling pathways: case study of the p16-mediated pathway. *Journal of Bioinformatics and Computational Biology* **2015**, 13(2), 1550007; <https://doi.org/10.1142/S0219720015500079>
- **Bashirov, R.**, Karanfiller, T. On path dependent loss and switch crosstalk reduction in optical networks. *Information Sciences* **2010**, 180, 1040-1050;
<https://doi.org/10.1016/j.ins.2009.11.017>
- **Bashirov, R.**, Kordon, F., Lort, H. Exploiting colored Petri nets to decide on permutation admissibility, *Acta Informatica* **2009**, 46 (1), 43-55; <https://doi.org/10.1007/s00236-008-0084-1>
- **Bashirov, R.**, Crespi, V. Analyzing permutation capability of multistage interconnection networks with colored Petri nets, *Information Sciences (SCI)* 176, 2006, 3143- 3165,
<http://dx.doi.org/10.1016/j.ins.2005.12.012>
- **Bashirov, R.** Rearrangeability of $2\log-1$ stage networks employing a uniform connection pattern, *Calcolo* **2000**, 38, 85-95; <http://doi.org/10.1007/s100920170005>
- **Bashirov R.** On the rearrangeability of multistage interconnection networks employing uniform connection pattern, *Lecture Notes in Computer Science* 2000, 1909, 170-180.

Articles in other than SCI and SCIE indexed journals:

- **Bashirov, R.** Prediction of COVID-19 pandemic spreading in North Cyprus, *Journal of Modern Technology & Engineering (Google Scholar)* **2023**, 8(2), 73-83.
- **Bashirov, R.**, Ngandjoug, G.R.Y. Understanding behavior of biological network via invariant computation, *Advances in Intelligent Systems and Computing (Web of Science, Scopus)* **2020**, 1095, 390-396; https://link.springer.com/chapter/10.1007/978-3-030-35249-3_50
- Duranay R., **Bashirov, R.**, Şeytanoğlu, A. Simulation-based identification of optimal combination of drug candidates for Spinal Muscular Atrophy, *Procedia Computer Science (Web of Science, Scopus)* **2018**, 120, 253-259;
<https://doi.org/10.1016/j.procs.2017.11.236>

- **Bashirov R.** Analysis of rearrangeable single-stage interconnection networks, *Transactions of National Academy of Sciences of Azerbaijan. Series of Physical-Technical and Mathematical Sciences (AMS)* **1999**, 19(3-4), 166-171.
- **Bashirov R.** On the mapping some regular and irregular parallel algorithms, *Transactions of National Academy of Sciences of Azerbaijan. Series of Physical-Technical and Mathematical Sciences (AMS)* **1993**, 14, 63-69.

Preprints:

- Akgün, G.; **Bashirov, R.** Quantitative Modeling in Systems Biology: How to Develop Relevant Models. Preprints 2024, 2024101483.
<https://doi.org/10.20944/preprints202410.1483.v1>
- **Bashirov, R.** Qualitative Analysis of Signaling Networks Using Petri Nets and Invariant Computation. Preprints 2026, 197507.

Articles in proceedings of referred international conferences:

- **Bashirov, R.** A hybrid Petri net framework for predicting therapeutic targets for beta-globin disorders. In the Proceedings of the *3rd International Conference on Information Technologies and Their Applications*, Baku, Azerbaijan, 2026, pp. xxx (in press)
- **Bashirov, R.** Modeling North Cyprus COVID-19: Correlation between reproduction number, and age- and resource-dependent fatality rates, *6th International Conference on Problems of Cybernetics and Informatics (PCI)*, Baku, Azerbaijan, 2025, pp. 1-5, doi: 10.1109/PCI66488.2025.11219706
- **Bashirov, R.** Modelling Disease – Drug Networks with Petri Nets, In: *Proc. 5th International Conference on Problems of Cybernetics and Informatics (PCI)*, Baku, Azerbaijan, 2023, pp. 1-5, IEEE Explore,
<https://doi.org/10.1109/PCI60110.2023.10325934>
- **Bashirov, R.** Statistical analysis of deterministic, pure stochastic and fuzzy stochastic modelling approaches implemented for biological systems, In: *Proc. 6th International Conference on Advances in Statistics*, North Cyprus, 16-18 April 2020.
- Akçay, İ.N., **Bashirov, R.** The Interplay between Determinism, Stochasticity and Fuzzyness illustrated for p16-mediated pathway, In: *Proc. 6th International Conference on Advances in Statistics*, North Cyprus, 16-18 April 2020.
- **Bashirov, R.**, Ngandjou, G.R.Y. Understanding behavior of biological network via invariant computation, In: *Proc. 10th International Conference on Theory and Application of Soft Computing, Computing with Words and Perception*, Prague, Czech Republic, 27-28 August 2019
- Duranay, R., **Bashirov, R.**, Şeytanoğlu, A. Simulation-based identification of optimal combination of drug candidates for Spinal Muscular Atrophy, In: *Proc. 9th International Conference on Theory and Application of Soft Computing, Computing with Words and Perception*, Budapest, Hungary, 24-25 August 2017

- **Bashirov, R.** The integrated modelling of biological processes with differential equations and Petri nets, In: *Proc. 11th International Conference on Applications of Fuzzy Systems and Soft Computing*, Rouen, France, 2-3 September 2014, 47-55
- Çetin, İ.N., **Bashirov, R.** Tüzmen, Ş., Petri net-based modelling and simulation of p16-Cdk4/6-Rb pathway, In: *Proc. 4th International Workshop on Biological Processes and Petri nets*, CEUR, Vol. 988, Milan, Italy, 24-25 June 2013, 30-44
- **Bashirov, R.**, Karanfiller, T., Lort, H. An approach to reduce path-dependent-loss in optical networks implementing Petri nets, In: *Proc. 8th International Conference on Application of Fuzzy Systems and Soft Computing*, Quadrat Verlag, Helsinki, Finland, 1-3 September 2008, 91-96
- **Bashirov, R.** On admissibility of permutations to hybrid optical interconnection networks with minimum number of stages, In: *Proc. 4th International Conference on Soft Computing, Computing with Words and Perceptions in System Analysis, Decision and Control*, Antalia, Turkey, 27-28 August 2007, 309-315
- **Bashirov, R.**, Lort, H. A study of permutation admissibility with colored Petri nets, In: *Proc. 3rd International Symposium on Electrical, Electronic and Computer Engineering*, Nicosia, North Cyprus, 23-25 November 2006, 91-95
- **Bashirov, R.** Qualitative analysis of permutation capability through exploiting place invariants in colored Petri nets, In: *Proc. 7th International Conference on Application of Fuzzy Systems and Soft Computing*, Quadrat Verlag, Siegen, Germany, 13-14 September 2006, 106-112
- **Bashirov, R.**, Crespi, V. Qualitative analysis of permutation capability with colored Petri nets, In: *Proc. 13th IEEE Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems*, IEEE Press, Atlanta, USA, 27-29 September 2005, 463-470
- **Bashirov, R.** Using extended HCPN modeling for investigating the permutation capability of multistage interconnection networks, In: *Proc. 3rd International Conference on Soft Computing, Computing with Words and Perceptions in System Analysis, Decision and Control*, Quadrat Verlag, Antalia, Turkey, 1-2 September 2005, 226-236
- **Bashirov, R.** Analyzing multistage interconnection networks with hierarchical Petri nets, In: *Proc. 6th International Conference on Application of Fuzzy Systems and Soft Computing*, Quadrat Verlag, Barcelona, Spain, 28-30 September 2004, 232-239
- **Bashirov, R.** Lort, H. Analyzing permutation capability of multistage interconnection networks with colored Petri nets and Design/CPN, In: *Proc. 2nd International Conference on Soft Computing and Computing with Words in System Analysis, Decision and Control*, Quadrat Verlag, Antalia, Turkey, 9-11 September 2003, 197-207
- **Bashirov, R.** Using Petri net for analysis of permutation capability in multistage networks, In: *Proc. International Conference Parallel and Distributed Processing Techniques and Applications*, CSREA Press, Vol. 1, Las Vegas, USA, 25-28 June 2001, 226-231

- **Bashirov, R.** On the rearrangeability of 2s-1 stage nonsymmetric interconnection networks, In: *Proc. International Conference Parallel and Distributed Processing Techniques and Applications*, CSREA Press, Vol. 2, Las Vegas, USA, 26-29 June 2000, 907-913
- **Bashirov, R.** Combinatorial model of the class of rearrangeable nonsymmetric interconnection networks. In: *Proc. International Conference Parallel and Distributed Processing Techniques and Applications*, CSREA Press, Vol. 2, Las Vegas, USA, 26-29 June 2000, 891-899

Articles in proceedings of referred national conferences:

- **Bashirov, R.** Combinatorial model of optimal nonsymmetric multistage interconnection networks, In: *Proc. 7th Symposium of Turkish Mathematical Society*, 29 August – 2 September, Bilkent University, Ankara, Turkey, 1994, 33-47
- **Bashirov, R.,** Esener, I., Gürbüz, R. Two efficient mapping methods for parallel algorithms, In: *Proc. 7th Symposium of Turkish Mathematical Society*, 29 August – 2 September, Bilkent University, Ankara, Turkey, 1994, 171-185
- **Bashirov, R.** On the mapping of some parallel numerical methods. In: *Proc. 6th Symposium of Turkish Mathematical Society*, Eastern Mediterranean University, Famagusta, North Cyprus, 8-12 September 1993, 161-171

Invited plenary/keynote speaker presentations

- **Bashirov, R.** Quantitative Modeling of Biological Systems: How to Create Relevant Models, In: *Proc. 8th International Conference on Mathematical Models & Computational Techniques in Science & Engineering*, June 1-3, 2024, Athens, Greece, <https://springer.mmctse.org>
- **Bashirov, R.** Modelling Disease – Drug Networks with Petri Nets, In: *Proc. 5th International Conference on Problems of Cybernetics and Informatics*, August 28-30, 2023, Baku, Azerbaijan.
- **Bashirov, R.** Interplay between paradigms - how to select an appropriate approach for modeling biological systems, Keynote Presentation on *5th International Conference on Informational Science, Electrical and Automation Engineering*, March 24-26, 2023, Wuhan, China.
- **Bashirov, R.** Comparative statistical analysis of deterministic, pure stochastic and fuzzy stochastic modelling approaches implemented for biological systems, Plenary Speech in *6th International Conference on Advances in Statistics*, 16-18 April, 2020, Famagusta, North Cyprus.

Presentations at conferences:

- **Bashirov, R.** Cyber security problems in the period of digital economy, *Workshop on Digital Economy in the Modern World*, UNEC University, Gence, Azerbaijan, 4-7 June, 2021 (in Azerbaijani)
- Akçay, İ.N., **Bashirov, R.** The Interplay between determinism, stochasticity and fuzzyness illustrated for p16-mediated pathway, In: *Proc. 6th International Conference on Advances in Statistics*, North Cyprus, 16-18 April, 2020
- **Bashirov, R.** The essence of primality test in information security, In: *Proc. 2nd International Conference on Business, Management and Economics*, Yaşar University, Çeşme, Turkey, 16-18 June, 2006
- **Bashirov, R.** Information security and cryptographic techniques, In: *Proc. 1st International Conference on Business, Management and Economics in a Changing World*, Yaşar University, Çeşme, Turkey, 16-19 June, 2005

Books

- **Bashirov, R.** *Petri Nets in Systems Biology: Methodology and Applications*, 1st ed.; Springer Nature: Cham, Switzerland, 2026; (in press).
- **Bashirov, R.** *Ayrık Matematik*, 1. Basım; Nobel Akademik Yayıncılık: Ankara, Türkiye, 2023.
- **Bashirov, R.** *Discrete Mathematics*, 2nd Ed.; EMU Press, Famagusta, North Cyprus, 2023.
- **Bashirov, R.** *Discrete Mathematics*, 1st Ed.; EMU Press, Famagusta, North Cyprus, 2022.

Chapters in international refereed books:

- **Bashirov, R.** Mapping of some sorting algorithms into architecture of rearrangeable single stage interconnection networks, *Computer Architecture and Numerical Methods* (Ed. V. Voevodin), Academy of Sciences, Moscow, 1990, 3-12 (in Russian)
- **Bashirov, R.** Realization of some graphs on rearrangeable interconnection networks, *Computer Architecture and Numerical Methods* (Ed. V. Voevodin), Academy of Sciences, Moscow, 1988, 15-25 (in Russian)
- **Bashirov, R.** Routing algorithm for a class of universal interconnection networks, *Computer Architecture and Numerical Methods* (Ed. V. Voevodin), Academy of Sciences, Moscow, 1987, 35-44 (in Russian)
- **Bashirov, R.** On the universality of shuffle-exchange networks, *Computer Architecture and Numerical Methods* (Ed. V. Voevodin), Academy of Sciences, Moscow, 1985, 3-15 (in Russian)

6. Projects

- B-type research project (MEKB-08-09) of T.R.N.C. Ministry of Education: Deciding on permutation admissibility in multistage interconnection networks (Director: Rza Bashirov; Researcher: Hüseyin Lort; Start date: 01.12.2008; Duration: 12 months; Budget: 10,000 TL; Project completed on 01.12.2009)
- BAP-C research project (PDGC-04-18-0006) of Eastern Mediterranean University: Predicting efficient drug combinations for Spinal Muscular Atrophy using Petri net technologies (Director: Rza Bashirov; Researchers: Recep Duranay, Adil Şeytanoğlu; Start Date: 01.10.2018; Duration: 12 months; Budget: 8,000 TL; Project completed on 29.09.2019)

7. Other Academic Activities

- Reviewer for *Acta Informatica* (SCI)
- Reviewer for *Annals of Mathematics and Artificial Intelligence* (SCIE)
- Reviewer for *BioSystems* (SCI)
- Reviewer for *Computer Communications* (SCIE)
- Reviewer for *IEEE Transactions on Automation Science and Engineering* (SCI)
- Reviewer for *IET Systems Biology* (SCIE)
- Reviewer for *Information Sciences* (SCI)
- Reviewer for *Journal of Applied Mathematics* (SCIE)
- Reviewer for *Lecture Notes in Computer Science* (SCIE)
- Reviewer for *Turkish Journal of Electrical Engineering and Computer Sciences* (SCIE)
- Editor of Journal of Modern Technology and Engineering (Google Scholar)
- Member of Program Committee of 5th Conference on Problems of Cybernetics and Informatics, Baku, Azerbaijan, 28-30 August, 2023
- Chair of Organizing Committee of 27th International Conference on Implementation and Application of Automata, Famagusta, North Cyprus, 19-22 September, 2023
- Member of International Scientific Committee of 3rd International Conference on Industrial Manufacturing and Structural Materials, Guangzhou, China, February 17-19, 2023
- Member of Technical Committee of 5th Asia Symposium on Image Processing, Tianjin, China, 15-17 June 2023
- Member of Program Committee of 2nd International Conference on Internet of Things, Artificial Intelligence and Mechanical Automation (IoTAIMA 2021), Hangzhou, China, May 14-16, 2021
- Member of International Technical Committee of 2nd World Conference on Mechanical Engineering and Intelligent Manufacturing, Shanghai, China, 22-24 November, 2019
- Member of Program Committee of 27th Congress of Signal Processing and Communication Applications, Sivas, Turkey, 24-24 April, 2019

- Chair of Organizing Committee and Member of Program Committee of *7th Conference on Machines, Computations and Universality*, Eastern Mediterranean University, Famagusta, North Cyprus, 9-11 September, 2015
- Member of Program Committee of *National Conference in Biology and Biotechnology*, Antalia, Turkey, 15-18 November, 2012
- Member of Program Committee of *International Workshop on Petri Nets Tools and Applications (PNTAB'08)*, Marseille, France, 3 March, 2008
- Member of Program Committee of *6th ACS/IEEE International Conference on Computer Systems and Applications (AICCSA'2008)*, Doha, Qatar, 31 March 31 – 4 April, 2008
- Organizer and Chair of the session “Petri Nets” in *2008 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'2008)*, Las Vegas, USA, 2008
- Member of Organizing Committee of *6th International Conference on Application of Fuzzy Systems and Soft Computing (ICAFSSC'2004)*, Barcelona, Spain, 28-30 September, 2004
- Member of Organizing Committee of *2nd International Conference on Soft Computing and Computing with Words in Systems Analysis (ICSCCWS'2003)*, Antalia, Turkey, 9-11 September, 2003

8. Courses taught

Undergraduate courses:

- COMP181 Introduction to Computer Science I
- COMP182 Introduction to Computer Science II
- COMP285 Design and Analysis of Algorithms
- COMP275 Object Oriented Programming
- COMP286 Data Structures
- COMP322 Security and Information Assurance
- COMP333 Access for Windows
- COMP354 Computing Structures
- COMP385 Parallel Algorithms
- COMP386 Parallel Data Structures
- COMP483 Operating Systems
- MATE163 Ayrık Matematik (Discrete Mathematics in Turkish)
- MATH103 Mathematics for Business and Economics I
- MATH104 Mathematics for Business and Economics II
- MATH105 Mathematics for Arts and Social Sciences
- MATH106 Linear Algebra
- MATH111 Basic Mathematics I
- MATH112 Basic Mathematics II

- MATH161 Mathematical Logic of Computers
- MATH163 Discrete Mathematics

Graduate courses:

- COMP512 Theory of Algorithms
- COMP544 Petri Nets
- COMP551 Theory of Graphs
- COMP552 Combinatorics
- COMP553 Interconnecting Networks
- COMP558 Parallel Processing
- COMP586 Cryptography and Data Security
- COMP645 Mathematical and Computational Modeling of Biological Systems
- IS 501 Selected Topics in Information Systems I
- IS 505 Algorithms on Graphs
- IS 507 Parallel Methods and Models
- IF 513 Multimedia II
- IS 514 Computer Graphics
- IS 515 Network Data Security