

Prof. Dr. Andranik S. Akopov



POSITIONS

- **Leading Scientist of the Central Institute of Economics and Mathematics of the Russian Academy of Sciences, Russian Federation, Moscow**
- **Full Professor of the National Research University Higher School of Economics, Business Analytic Department, Russian Federation, Moscow**

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PERSONAL PAGES:

<https://www.hse.ru/en/org/persons/10440669>

https://www.researchgate.net/profile/Andranik_Akopov

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Researcher ID: G-9455-2015

Scopus Author ID (47561181900):

<https://www.scopus.com/authid/detail.uri?authorId=4756118190>

Google Scholar: <https://scholar.google.com/citations?user=pROZ0S8AAAAJ&hl=en>

BIRTH DAY: 24/09/1974

AREA OF SPECIALIZATION: Evolutionary computations, simulation modelling, agent-based modelling, ecological modelling, system dynamics, genetic optimization algorithms, machine learning, parallel computing and supercomputer technologies, Big Data, multi-objective optimization, decision supports systems, etc.

● UNIVERSITY EDUCATION AND ACADEMIC DEGREES:

- 2015: **Associate Professor.** The diploma was awarded by the Ministry of Science and Education of the Russian Federation.
- 2009: **Doctor of Science.** (A post-doctoral degree called Doctor of Sciences is given to reflect second advanced research qualifications or higher doctorates in ISCED 2011.) The dissertation was defined in the Dorodnicyn Computing Centre of the Russian Academy of Sciences (CCRAS), Moscow. Specialization is the 'Computer Science'.
- 2000: **Candidate of Sciences (PhD)** in Mathematical and Instrumental Methods in Economics. The diploma was awarded by the Central Institute of Economics and Mathematics of the Russian Academy of Sciences, Moscow.
- 1997–2000: **Postgraduate student at the Central Economics and Mathematics Institute of the Russian Academy of Sciences.**
- 1991–1997: **Master of Science (MS) in Engineering. The diploma of Engineer** was awarded by the **Moscow Aviation Institute (Technical University)**. Specialization is the 'Telecommunication systems and information technologies'.

● **RESEARCH AND TEACHING EXPERIENCE:**

2009 - Present: *Professor of the National Research University Higher School of Economics (HSE), Business Analytic Department, Faculty of Business Informatics, Moscow.*

- Researching in Computer Science and Simulation: creating new evolutionary algorithms, designing intellectual systems, creating different simulations (using of Powersim Studio and AnyLogic), parallel computing, etc.
- Teaching in the field of Computer Science:
 - Simulation methods and tools: system dynamics, discrete event modeling, agent based modeling, etc.
 - Optimization methods and algorithms: genetic algorithms, neural networks, stochastic modeling and optimization, etc.
 - CGE modeling (Computable General Equilibrium Models).
 - Mathematical methods in economics.
 - Databases and Data Warehouses (SAP BW, Oracle DWH).
 - Dynamic Balanced Scorecard Systems.
 - Business Intelligence Systems.
 - Advanced Data Management.
- Graduate Business Informatics (Master Studies).
- Supervision of Masters of Science and PhD candidates.

2000 - Present: *Leading Researcher of the Central Economics and Mathematics Institute of Russian Academia of Science*

- Designing Decision Support Systems for socio-economic and ecological planning.
- Leading of International Scientific Projects in a collaboration with the Center for Ecological Noosphere Studies of National Academy of Sciences of Armenia.
- Researching in Mathematical Economics and Computer Science.
- Developing CGE and DSGE models.
- System Dynamics modelling of socio-economic processes.
- Agent-based modeling in economics.
- Macroeconomics analysis and forecasting.
- Developing the Situation Centre of CEMI RAS.
- Creating and implementing simulations in organizations.

● **KEY SKILLS:**

- **Over twenty years of scientific and teaching experience in Computer Science and Mathematical Economics:** Developing simulation and optimization methods and algorithms including evolutionary computations (genetic optimization algorithms for large-scale multiobjective optimization), creating multi-agent systems (MAS) and embedded distributed systems, organizing parallel computing, etc.
- Excellent experience in the **Simulation Modelling** using **system dynamics, agent-based simulation, dynamic systems, discrete-event modelling, stochastic modeling, fuzzy logic**, etc.
- **Excellent programming skills:** Java 8 core (J2EE), JSP, JSF, Web Services (JAX-WS, JAXB, WSDL), C++ (Visual Studio), Boost/MPI, etc.

- Over ten years of operational experience in **Business Intelligence and Big Data**: SAP BW, SAP HANA, Oracle DWH, MS SQL Server, etc.
 - **Simulation tools**: Powersim Studio, AnyLogic, Simulink/MATLAB, IBM iLOG CPLEX.
 - **Programming languages**: C++, Java, Assembler, C#, etc.
 - **Programming tools**: Microsoft Visual Studio (C++, C#, VB.NET), IntelliJ IDEA and Eclipse.
 - **Business Intelligence Systems**: SAP BW (hold a certificate), IBM Cognos BI.
 - **Data Bases and Data Warehouse**: SAP BW, SAP HANA, Oracle (PL/SQL, Oracle Objects for OLE, OCI, OEM), MS SQL Server (TSQL), MySQL Server etc.
 - **Programming technologies and frameworks**: C++/MPI, Servlets, Web services, ODBC/JDBC/ADO/OLE, Hibernate, COM/COM+, etc.
 - **CASE – technologies**: Rational Rose (UML), ErWin/BpWin, ARIS.
 - **WEB – technologies**: Java 2 EE (JSP, Servlets, JB, EJB, JNDI, JAX-WS/JAXB), .NetFrameworks (C#, VB.NET), XML/DHTML, PHP, SOA, Apache Tomcat, IBM WebSphere, JBoss, etc.
- **LANGUAGES**: English: *fluent*
Russian: *native*

• **INTERNATIONAL CONFERENCES AND SEMINARS (SELECTED LIST):**

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| 11-12/05/2016,
Singapore | International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2016)
Paper: ‘Simulation of Agent-rescuer Behaviour in Emergency Based on Modified Fuzzy Clustering’ |
| 08-10/05/2016,
USA, MD, Baltimore
Towson University | The International Society for Ecological Modelling Global Conference 2016
Paper: ‘Agent-based modelling for ecological economics: A case study of the Republic of Armenia’ |
| 27-28/04/2014,
London, UK
Bank of America and
Merrill Lynch | 2014 IEEE Computational Intelligence for Financial Engineering and Economics
Paper: ‘Modelling the dynamics of the Smarter Region’ |
| 13-17/10/2013,
Manchester, UK | 2013 IEEE International Conference on Systems, Man and Cybernetics
Paper: ‘Multi-agent genetic algorithm for multi-objective optimization’ |
| 16-22/09/2012, Budva,
Montenegro | International scientific conference «Intellectualization of data processing 2012»
Paper: ‘Simulation of human crowd behavior in extreme situations’ |
| 26/06 – 06/07/2012
Tsakhkadzor,
Armenia | VII International school-seminar "Multidimensional Statistical Analysis and Econometrics" |

● **CERTIFICATIONS:**

SAP Business Warehouse Solution Consultant (2006, SAP AG).

Learning Mathematical Programming for IBM ILOG CPLEX Optimization Studio (2013, IBM).

Model Development with IBM ILOG CPLEX Optimization Studio (2013, IBM).

● **AWARDERS (SELECTED LIST):**

2004 - 'The Best Economist of the Russian Academia of Science'.

2013 - 'The Certificate of Merit' of the Russian Academia of Science for the number of works devoted to the problem of the 'Simulation human crowd behaviour in extreme situations'

● **MEMBERSHIPS:**

- Institute of Electrical and Electronics Engineers (IEEE),
- IEEE Systems, Man and Cybernetics Society,
- System Dynamics Society,
- International Institute of Business Analysis (IIBA). - Big Data Community, IEEE.

● **Supervision of PhD students:**

- Mr. Alexey Fomin. The PhD thesis in Mathematical Economics was defended in the National Research University Higher School of Economics at 2013.
- Mr. Maxim Khivincev. The PhD thesis in Computer Science was defended in the National Research University Higher School of Economics at 2015.
- Mr. Armen Beklaryan. The PhD thesis in Computer Science was defended in the National Research University Higher School of Economics at 2016.

Dr. Andranik S. Akopov have been published more than 70 scientific publications in the field of the Computer Science and Mathematical methods in Economics including a Handbook the 'Simulation Modelling' (2014).

RESEARCH PROJECTS (SELECTED LIST):

1. **The RFBR project (Russian Foundation for Basic Research), grant No. 15-51-05011 (INTERNATIONAL)**, Development of methods, models and software framework for optimal control of dynamics of agents of the ecological-economics system of the Republic of Armenia, 2015 – 2016.
2. **The RFBR project, grant No. 12-01-00768-a**. Systems with deviating argument with groups features, 2012 – 2014.
3. **The RFBR project, grant No. 09-01-00324-a**. The complex dynamics of functional-differential equations, 2009 – 2011.
4. **The RFBR project, grant No. 10-06-00088**. Development and approbation of the simulation models of the Russian economy for the situation center of CEMI RAS using web technologies, 2010 – 2012.

5. **The RFBR project, grant No. 04-06-80011.** Development of econometrics models of the Russian economy, 2004 – 2006.
6. **The RFBR project, grant No. 04-07-90005.** Creating a basic version of the situation center of CEMI RAS, 2004 – 2006.

PUBLICATIONS IN ENGLISH (SELECTED LIST):

Journal Papers:

1. Akopov A. S., Beklaryan L. A., Saghatelyan A. K. Agent-based modelling for ecological economics: A case study of the Republic of Armenia. *Ecological Modelling*, Vol. 346. P. 99118, 2017. <http://linkinghub.elsevier.com/retrieve/pii/S0304380016303295>
2. Khachatryan N.K., Akopov A. S. Model for organizing cargo transportation with an initial station of departure and a final station of cargo distribution. *Business Informatics*, No. 1(39). P. 25-35, 2017. <https://bijournal.hse.ru/data/2017/08/30/1173954610/3.pdf>
3. Beklaryan A. L., Akopov A. S., Saghatelyan A. K., Sahakyan L. V. Control system for ecological modernization of enterprises (on the example of the Republic of Armenia). *Business Informatics*, No. 2(36). P. 71-78, 2016. <https://bijournal.hse.ru/data/2016/08/11/1118261561/9.pdf>
4. Akopov A. S., Beklaryan L. An Agent Model of Crowd Behavior in Emergencies. *Automation and Remote Control*, No. 10. P. 1817-1827, 2015. <https://link.springer.com/article/10.1134%2FS0005117915100094>
5. Akopov A. S. Parallel genetic algorithm with fading selection. *International Journal of Computer Applications in Technology*, Vol. 49. No. 3/4. P. 325-331, 2014. <http://www.inderscience.com/offer.php?id=62368>
6. Akopov A. S. Designing of integrated system-dynamics models for an oil company. *International Journal of Computer Applications in Technology*, Vol. 45. No. 4. P. 220-230, 2012. <http://www.inderscience.com/offer.php?id=51122>
7. Akopov A. S., Beklaryan L. Simulation of human crowd behavior in extreme situations. *International Journal of Pure and Applied Mathematics*, Vol. 79. No. 1. P. 121-138, 2012. <https://ijpam.eu/contents/2012-79-1/10/10.pdf>

Conference Papers:

8. Beklaryan A. L., Akopov A. S. Simulation of Agent-rescuer Behaviour in Emergency Based on Modified Fuzzy Clustering, in: AAMAS'16: *Proceedings of the 2016 International Conference on Autonomous Agents & Multiagent Systems*. Richland: International Foundation for Autonomous Agents and Multiagent Systems, P. 1275-1276, 2016. <http://trust.sce.ntu.edu.sg/aamas16/pdfs/p1275.pdf>
9. Akopov A. S., Hevencev M.A. A Multi-agent genetic algorithm for multi-objective optimization, in: *Proceedings of IEEE International Conference on Systems, Man and Cybernetics*, 2013. Manchester: IEEE. P. 1391-1395, 2013. <http://ieeexplore.ieee.org/document/6721993/?arnumber=6721993>
10. Akopov A. S., Beklaryan G. L. Modelling the dynamics of the “Smarter Region”, in: *Proceedings of 2014 IEEE Conference on Computational Intelligence for Financial Engineering & Economics*. L.: IEEE, P. 203-209, 2014. <http://ieeexplore.ieee.org/document/6924074/>