

## Andrey I. TRUFANOV, PhD

( Network Ontologies, Models &Practice; Disaster Risk Reduction; Information Security& Information Sharing )



### Affiliation and official address:

Institute of Information Technology & Data Science;  
Irkutsk National Research Technical University( INRTU),  
Lermontova, 83, 664074, Irkutsk, Russia

### Contacts:

Office tel./fax: 73952405387

Mobile: 79501199778

e-mail: [troufan@istu.edu](mailto:troufan@istu.edu), [troufan@gmail.com](mailto:troufan@gmail.com)

web-page: [http://www.istu.edu/eng/ob\\_irmitu/person/trufanov\\_andrey\\_ivanovich](http://www.istu.edu/eng/ob_irmitu/person/trufanov_andrey_ivanovich)

**Key research domains:** Network Science, Information Security, Radiation Physics

**ORCID:** 0000-0002-6967-3495

**Date and place of birth:** Jan,6,1950, St. Petersburg (Leningrad)

**Nationality:** Russian

### Education :

Ph.D. , Nuclear Physics , April, 1980 – Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

M.S. , Radiation Physics , February 1973- Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia

Senior Researcher, 1990

### Career:

**2020-** Head, Center for Interdisciplinary Research & Projects; Institute of Information Technology & Data Science, INRTU

#### **1982- PRESENT :**

Supervisor, Manager, Principle Researcher of numerous Projects under International, National , and local Projects on Complex Networks, Disaster Risk Reduction , Information Sharing, Information Security Policy, and Information Management

#### **1994 – PRESENT:**

Professor, INRTU :

- Institute of Information Technology & Data Science
- Automated Systems Dept., Institute of High Technologies ;
- Technologies & Equipment of Machinebuilding Industry Dept., Institute of Aircraft Construction, Mechanical

Engineering and Transport;

- Geophysics and Geoinformatics Dept. , School of Geology, Geoinformatics and Geoecology;
- Automated Systems Dept., School of Cybernetics;
- Radio engineering and cable technology Dept., School of Power Engineering

#### **2013 – PRESENT:**

Head, MEGANE Lab, INRTU

#### **2001- 2003 :**

Director, Information Policy Center, Irkutsk State Technical University

#### **1980- 1994 :**

Assistant professor, Senior Researcher, Leading Researcher, Irkutsk State Technical University

### Specialization:

(i) **main field** Network Architectures and Applications;

(ii) **other fields** Countering Global & Local Threats; Information Sharing & Information Security Policies ; ICT Prevention Medicine ; Math Simulation , Radiation Physics

(iii) **current research interest**

- **NETWORK SCIENCE:** Complex Network Models for Applied domains ( Information Security and Information Sharing; Resiliency of Environmental, Technological and Socio-Economic Systems; Smart Systems, Disaster and Emergency Medicine, Geospatial Analysis, Lie Detection);

- **INFORMATION SECURITY :** Information Security and Information Sharing Policies while Countering Man Made and Natural Hazards in Huge, Complex, International and Multidisciplinary Systems.

### Lecturer of the courses:

- Networks , network structures, and network modelling;
- Economic and legal aspects of the information systems and technology market;

- Search technologies & engines ;
- Cloud computing technologies;
- Corporate information Systems;
- Information security and information protection;
- Mathematical and software methods of information protection;
- Copyright in programming;
- Computer technologies;
- Real-time systems ;
- Interfaces;
- Physics of dielectrics and semiconductors.

#### **Supervisor :**

- graduate projects in the field of information systems and networks;
- PhD students in the following areas:- “ Methods and systems of information protection, information security”;
- -“ Mathematical modeling, numerical methods and program complexes”;
- numerous national R & D projects on the problems of resilient cities, sustainable development, information sharing, information security, and radiation effects in semiconductor electronics.

#### **Honours, Awards, Fellowships, Membership of Professional Societies:**

- Member, Editorial Board, Russian National Journal “Security of Information Technologies”, Moscow, Russia (1995 -2001; 2017- ) ;
- Member, Editorial Board, Ukrainian Journal “Security of Information ”, Kiev, Ukraine, ( 2013 -);
- Active Member, International Informatization Academy, Non-Government Organization in General Consultative Status with the Economic and Social Council of the UN from 1995, Moscow, RF ( 2010 - );
- Co-founder, NISHADA International Association – Milan, Italy- Irkutsk, RF-Simferopol, Ukraine ( 2010 );
- Vice-president, Supercourse, WHO Collaboration Center ( 2006 - );
- Member, Editorial Board, Journal “Civilization Challenges”, Irkutsk, Russia ( 2005-2010) ;
- Award of the Ministry of Education, Russian Federation ( 2001);
- Leader, Baikal region seminar “Interdisciplinary Interworking In The Problem of Information Security», Irkutsk, Russia (1998-).

#### **Recent Grants:**

- Russian Foundation for Basic Research (RFBR), Supervisor :
- “Acoustic monitoring of the technical condition of electric motors”, 2022 (Grant En+ and INRTU)
  - 20-57-44002 “Interdisciplinary network platform for modeling socio-economic and environmental processes in the cross-border territories of the Russian Federation and Mongolia with limited transport accessibility”, 2020
  - 17-37-50078 " Evaluation of crowdsourcing methods for emotion tagging, taking into account the topology of social interaction of performers ", 2018;
  - 17-37-50075 " Chat bots in fostering interaction between generation communities within social networks ", 2018.

#### **Principal Speaker at Conferences and Workshops - International Level:**

- International Conference on Future Information & Communication Engineering (ICFICE2017), with presentation “Complex Network Domain at Irkutsk National Research Technical University : Ontologies, Models, and Applications “ , sponsored by Korea Institute of Information and Communication Engineering ( academic society) KIICE , RK, Irkutsk , Russian Federation, June 26 – July 1, 2017;
- International Conference “In Search of Synergy: Integration of Transport and Urban Planning and Use of Traffic Management Techniques to Ensure Efficient and Safe Mobility in Cities” with presentation “Topological Aspects of Urban Territory Sustainability: Network Approach”, sponsored by Ministry of Transport , RF , Irkutsk , Russian Federation, September 10-11, 2015 ;
- NATO Advanced Study Institute “Applying Lessons Learned and Sharing Best Practices in Addressing Influenza Pandemics and Catastrophic Events ”, Slavonski Brod, Croatia, Nov. 26- Dec 11, 2011;
- International Conference “UN Millennium Declaration Decade Hence: Summary and Perspectives”, International Informatization Academy , Moscow, Russian Federation, November 26, 2010;
- II International Investment Forum of Turkmenistan, Ashgabat, Turkmenistan , October 18-19, 2010;
- NATO Advanced Study Institute “Architects of Secure Networks”, Genova, Italy, May 17- 22, 2010;
- NATO Advanced Study Institute “Preparing Regional Leaders with the Knowledge, Training and Instruments for Information Sharing and Decision-Making against Biological Threats and Pandemics” , Milan, Italy, November 30 - December 8, 2008;
- NATO Advanced Study Institute , Strengthening National Public Health Preparedness and Response for Chemical, Biological, and Radiological Agents Threats” , Skopje, Former Yugoslavian Republic of Macedonia, June 19- 29 , 2006;
- NATO Advanced Research Workshop "Scientific Networking for the Prevention of Threat From Man Made and Natural Disasters" , Kaunas , Lithuania, August 8-12, 2005;
- LEFIS General Conference "Digitalization and Administration of Justice" , Zaragoza, Spain, August 31 – September 2, 2004

**Permanent participant and keynote speaker:**

- Annual All-Russian Scientific and Practical Conference "Information Security Problems in the Higher Education System", Moscow; RF;
- Annual All-Russian Scientific and Practical Conference "Problems of Information Security of the Government, Society and Individual", Tomsk, RF.

**Publications :**

- **Number of papers in refereed journals:** more than 150
  - **Number of communications to scientific meetings:** approximately 70
  - **Book, co-edited:** "Bioterrorism and Pandemics" : A Transdisciplinary Information Sharing and Decision-Making against Biological Threats. Ed. By **A. Trufanov**, A. Rossodivita, and M. Guidotti. IOS Press , 2010.
  - **some recent of co-authored papers:**
1. Kuklina, M.; Dirin, D.; Filippova, V.; Savvinova, A.; **Trufanov, A.**; Krasnoshtanova, N.; Bogdanov, V.; Kobylkin, D.; Fedorova, A.; Itegelova, A.; Batotsyrenov, E. Transport Accessibility and Tourism Development Prospects of Indigenous Communities of Siberia. *Sustainability* 2022, 14, 1750. <https://doi.org/10.3390/su14031750> URL: <https://www.mdpi.com/2071-1050/14/3/1750>
  2. MV Kuklina, NE Krasnoshtanova, **AI Trufanov**, VN Bogdanov and SN Erdinieva. Border area tourism with problems and prospective: RF-Mongolia. *E3S Web Conf.* Volume 284, 2021 Topical Problems of Green Architecture, Civil and Environmental Engineering (TPACEE-2021), 10003 – 8 p. <https://doi.org/10.1051/e3sconf/202128410003> [https://www.e3s-conferences.org/articles/e3sconf/pdf/2021/60/e3sconf\\_tpacee2021\\_10003.pdf](https://www.e3s-conferences.org/articles/e3sconf/pdf/2021/60/e3sconf_tpacee2021_10003.pdf)
  3. M Kuklina, **A Trufanov**, N Krasnoshtanova, N Urazova, D Kobylkin, M Bogatyreva (2021) Prospects for the Development of Sustainable Tourism in the Okinsky District of the Republic of Buryatia. *Sustainability*, 13, 8042. <https://doi.org/10.3390/su13148042> <https://www.mdpi.com/2071-1050/13/14/8042/pdf>
  4. D Kobylkin, N Krasnoshtanova, M Kuklina, **A Trufanov**, E Altangerel, Z Dashdorj, A Tikhomirov, G Jafari (2021) Network landscape representation: ecosystem services context. *IOP Conference Series: Earth and Environmental Science*, 751 (1) 012010. IOP Publishing doi:10.1088/1755-1315/751/1/012010 <https://iopscience.iop.org/article/10.1088/1755-1315/751/1/012010/pdf>
  5. MV Kuklina, **AI Trufanov**, NE Krasnoshtanova, MV Makarov, E Altangerel (2021) Actor-network relations between consumer and provider in tourism on Lake Baikal. *IOP Conference Series: Earth and Environmental Science* 751 (1), 012012 doi: 10.1088/1755-1315/751/1/012012 <https://iopscience.iop.org/article/10.1088/1755-1315/751/1/012012/pdf>
  6. Berestneva, O, Lyzin, I, Yumasheva, A, Marukhina, O, Trufanov, A (2021). The use of computer visualization in the analysis of breathing curves. *IOP Conf. Ser.: Mater. Sci. Eng.* 1019 012007 doi:10.1088/1757-899X/1019/1/012007 <https://iopscience.iop.org/article/10.1088/1757-899X/1019/1/012007/pdf>
  7. Tikhomirov A., **Trufanov A.**, Grigoryev S., Berestneva O., Burkatovskaya Yu. (2020) Global brain and beyond: a concerted model of interacting networks *J. Phys.: Conf. Ser.* 1680 : 012049 IOP Publishing doi:10.1088/1742-6596/1680/1/012049 <https://iopscience.iop.org/article/10.1088/1742-6596/1680/1/012049/pdf>
  8. Tikhomirov, A A, Berestneva, O G, Mokina, E, Kinash N, Kuklina, M, **Trufanov, A I**, Rossodivita, A, Kuklina, V, Bilichenko, I, Bogdanov, V. Converting network-unlike data into complex networks: problems and prospective. *J. Phys.: Conf. Ser.* 1661 International Conference on Information Technology in Business and Industry (ITBI 2020) 6-8 April 2020, Novosibirsk, Russia. 2020. 012015 URL: <https://iopscience.iop.org/article/10.1088/1742-6596/1661/1/012015/pdf> doi: <https://doi.org/10.1088/1742-6596/1661/1/012015>
  9. Portnyagin, D G, Kravchuk, E I, **Trufanov, A I**, Ivanov, A S, Berestneva, O G, Tikhomirov, A A. Network marks of montage in audio recordings. *J. Phys.: Conf. Ser.* 1661 International Conference on Information Technology in Business and Industry (ITBI 2020) 6-8 April 2020, Novosibirsk, Russia. 2020. 012072 URL: <https://iopscience.iop.org/article/10.1088/1742-6596/1661/1/012072/pdf> doi: <https://doi.org/10.1088/1742-6596/1661/1/012072>
  10. Afsharizand B, Chaghoei P.H, Kordbacheh A.A., **Trufanov A.**, Jafari G. Market of stocks during crisis looks like a flock of birds. *Entropy*. 2020, 22, 1038; Available at: <<https://www.mdpi.com/1099-4300/22/9/1038/html>>, doi: <https://doi.org/10.3390/e22091038>
  11. Kuklina, M.; **Trufanov, A.**; Bayaskalanova, T.; Urazova, N.; Tikhomirov, A.; Berestneva, O.; Marukhina, O.; Vidyayev, I.; Fisochenko, O.; Lyzin, I.; Berestneva, E.; Hoch, N. Network Platform for Tourism Sector: Transformation and Interpretation of Multifaceted Data. *Sustainability* 2020, 12, 6314. Available at: <<https://www.mdpi.com/2071-1050/12/16/6314>> doi: <https://doi.org/10.3390/su12166314>
  12. Duga, S.; **Trufanov, A.** The knowledge graph concept of decision support system in preliminary investigation. *IT Security (Russia)*, [S.l.], v. 27, n. 3, p. 55–66, 2020. ISSN 2074-7136. Available at: <<https://bit.mephi.ru/index.php/bit/article/view/1292>> DOI: <http://dx.doi.org/10.26583/bit.2020.3.05> (In Russian)
  13. Berestneva, O., Lyzin I., Yumasheva A., Marukhina, O., & **Trufanov, A.** (2019) The Use of Computer Visualization in the Analysis of Breathing Curves: In the Proceedings of the 14th International Forum on Strategic Technology (IFOST 2019); Tomsk Polytechnic University. – Tomsk: TPU Publishing House, 2019.P.139-147, ISBN 978-5-4387-0906-0 IEEE CATALOG NUMBERS CFP47755-USB Available at: <[http://earchive.tpu.ru/bitstream/11683/57460/1/conference\\_tpu-2019-C127\\_p139-147.pdf](http://earchive.tpu.ru/bitstream/11683/57460/1/conference_tpu-2019-C127_p139-147.pdf)><https://icam.tsu.ru/data/uploads/programm.pdf>>
  14. Duga S.V., Sebyakin A. G., **Trufanov A. I.**, Nosyreva L. L. The concept of decision support system in preliminary investigation. *IT Security (Russia)*, [S.l.], v. 26, n. 3, p. 45-57, 2019. ISSN 2074-7136. doi: <http://dx.doi.org/10.26583/bit.2019.3.04> <https://bit.mephi.ru/index.php/bit/article/view/1216/1153>

15. Berestneva O., Marukhina O., Rossodivita A., Tikhomirov A., **Trufanov A.** Networkalization of Network–Unlike Entities: How to Preserve Encoded Information. *Creativity in Intelligent Technologies and Data Science*, 2019. 143–151 doi:10.1007/978-3-030-29743-5\_11
16. Urazova N., Kuklina M., Kotelnikov N., Kaymonova O., **Trufanov A.** (2019) Application of the Theory of Complex Networks in Analysis of Tourist Infrastructure// In: *Proceedings of the International Conference on "Humanities and Social Sciences: Novations, Problems, Prospects" (HSSNPP 2019)*. 2019.07 doi: 10.2991/hssnpp-19.2019.137 URL: <https://download.atlantis-press.com/article/125913488.pdf>
17. **Trufanov A.I.**, Rossodivita A., Tikhomirov A.A., Berestneva J.G., Marukhina O.V. Public health component in building information modeling. *J. Phys.: Conf. Ser.* 2018.1015 032090 – 7 p. doi :10.1088/1742-6596/1015/3/032090 <http://iopscience.iop.org/article/10.1088/1742-6596/1015/3/032090/pdf>
18. Rossodivita A., Tikhomirov A., **Trufanov A.**, Kinash N., Berestneva O., Nikitina S., Casati F., Visconti A., Saporito T. Cyber-social networks in Preventing Terrorism: Topological Scope . *World Academy of Science, Engineering and Technology International Journal of Law and Political Sciences Vol:12, No:5, 2018 – P.8*
19. **Trufanov A.**, Kinash N., Tikhomirov A., Berestneva O., Rossodivita A. Image Converting into Complex Networks : Scale- Level Segmentation Approach. In: *Proc. IV Int.Conf. "Information technologies in Science, Management, Social sphere and Medicine" (ITSMSSM 2017)*. Series: *Advances in Computer Science Research (ACSR)*. Atlantis Press. 2017. Volume 72 .P. 417-422
20. **Trufanov A.**, Kinash N., Tikhomirov A., Berestneva O., Rossodivita A. Optimal Information Security Investment in Modern Social Networking. In: *Gonçalves B., Menezes R., Sinatra R., Zlatic V. (eds) Complex Networks VIII. CompleNet 2017. Springer Proceedings in Complexity. Springer, Cham. - 2017 .- P.175-182 DOI: 10.1007/978-3-319-54241-6\_15*
21. Tikhomirov, A., Rossodivita, A., Kinash N., **Trufanov, A.**, Berestneva O. General topologic environment of the Russian railway network// *J. Phys.: Conf.* – 2017. Ser. 803 012165 4 p. (<http://iopscience.iop.org/1742-6596/803/1/012165>)
22. Kinash N., Tikhomirov A., **Trufanov A.**, Vulnerability of r-mat networks with communities // *Security of Information technologies.* -2016. -№ 2. - P. 33-35 [http://bit.mephi.ru/wp-content/uploads/2016-2/part\\_04.pdf](http://bit.mephi.ru/wp-content/uploads/2016-2/part_04.pdf)
23. Kuular E., Tikhomirov A., **Trufanov A.** Identification of sound information sources by network analysis// *Security of Information technologies.* - 2016. -№ 2. -P. 43-48 [http://bit.mephi.ru/wp-content/uploads/2016-2/part\\_06.pdf](http://bit.mephi.ru/wp-content/uploads/2016-2/part_06.pdf)
24. Afanasyev A., Tikhomirov A., **Trufanov A.** Network Paradigm of Information Security // *Security of Information technologies.* -2016. -№ 1. -P.8-10 [http://bit.mephi.ru/wp-content/uploads/2016-1/part\\_01.pdf](http://bit.mephi.ru/wp-content/uploads/2016-1/part_01.pdf) (In Russian)

### **International Experience**

- 10/2013 – 10 days Research activity on the project “E-government Information Security” at the Inha University, Incheon, RK, sponsored by UNPOG, UN;
- 07/2010 - 1 week, Invited Consultant, Revision of Drafts of Standards (Codes of Practice) for Implementation of Document Management System of Turkmenistan, Ministry of Economics and Development of Turkmenistan, Ashgabat, Turkmenistan, sponsored by UNDESA, UN;
- 11/2008-12/2008 , Co-directing of NATO Advanced Study Institute “Preparing Regional Leaders with the Knowledge, Training and Instruments for Information Sharing and Decision-Making against Biological Threats and Pandemics”, Milan, Italy;
- 09/2003-10/2003 , Revision of information security courses at Russian universities with aiming at human rights and democratic values, Faculty of Law, University of Zaragoza, Zaragoza, Spain, sponsored by Tempus Programme, EC;
- 02/2000- 06/2000 , Research activity on the project “From Total Secrecy through Privacy Media to Genuine Free Exchange of Information in New Russia” , School of Information Science, University of Pittsburgh, PA, USA, sponsored by USIA through IREX organization;
- 02/1998-04/1998 , Research activity on the project “Data Protection Policy in University system” at the Norwegian Research Center for Computers and Law, University of Oslo, Oslo, Norway, sponsored by Ministry of Education of RF and Norwegian Research Council.

### **Knowledge of foreign languages:**

- English – fluent;
- Spanish – poor;
- Norwegian – bare.