Dmitriy Shevchenko

PhD, Candidate of Engineering, Associate Professor

Area of Interest:

- Reliability Assurance and Analysis;
- Functional Safety;
- Probabilistic and Statistical Methods.

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General Information

- **Major:** Automatics, Telemechanics, and Communications in Railway Transport (specialization: Microprocessor-Based Information and Control Systems), 1998.
- **Academic Degree:** PhD in Engineering, 05.13.18 Mathematical Modeling, Numerical Methods, Software Suites, 2003.
- **Academic Title:** Associate Professor. Major: Computer Science and Engineering, 2006.

More information: https://www.linkedin.com/in/dmitriy-shevchenko-27a97a134/

Primary place of employment

- Unitsky String Technologies Inc., Chief Specialist (Reliability and Functional Safety), after 2020.
- Belarusian State University of Transport, Department of Applied Mathematics, Department of Information and Control Systems and Technologies, until 2020. More information: https://www.linkedin.com/in/dmitriy-shevchenko-27a97a134/

Subject area

- electronic safety-related control systems;
- railway automation systems;
- rolling stock control systems (brake system, positioning system, door control system, etc.);
- unmanned rail vehicles;
- communication-based train control (CBTC, ERTMS-3).

Key Skills

Improving models and automating methods for reliability and functional safety analysis:

- risk assessment;
- FMEDA;
- FTA;
- Markov reliability analysis;
- reliability block diagram method, logical-probabilistic method;
- Monte Carlo method;
- simulation modeling.

Publications

List of significant publications

Publication Title	Type	Publication Details	Co-authors
Probability Theory and Mathematical Statistics	Textbook	Educational and methodological manual for students of electrotechnical specialties – Gomel: BelSUT, 2006. - 318 p.	
Fundamentals of Reliability Theory	Textbook	Educational and methodological manual for students of technical specialties / D. N. Shevchenko; edited by L. A. Sosnovsky; Ministry of Education of the Republic of Belarus, Belarusian State University of Transport. – Gomel: BelSUT, 2010. - 250 p. https://www.twirpx.com/file/4537179/	Sosnovsky L.A.
Reliability. Risk. Quality	Monograph	Monograph / L.A. Sosnovsky [et al.]; scientific editor L.A. Sosnovsky; Ministry of Education of the Rep. of Belarus, Belarusian State University of Transport. – Gomel: BelSUT, 2012. – 358 p.	Sosnovsky L.A.; Gadenin M.M., Gapanovich V.A., Zhmailik V.A., Komissarov V.V., Lazarevich A.A., Makhutov N.A., Taranova E.S., Troshchenko V.T., Shcherbakov S.S.
A Model for Studying the Reliability of Reconfigurable Systems with Repairable Components	Article	Materials, Technologies, Tools, Vol. 2 (2002), No. 3. pp. 38-41.	
Modeling System Reliability Using the FTA Method: New Opportunities	Article	Proceedings of the International Conference: Modern Information Computer Technologies: collection of scientific articles. Part 2. – Grodno, Y. Kupala GSU, 2008. – pp. 154–157.	
On the Model of Gradual Failure Considering the Scatter of the Initial Value of the Object's Output Parameter	Article	Materials, Technologies, Tools, Vol. 13 (2008), No. 2. pp. 10–12.	
Review of Methods and Tools for Functional Safety Analysis of Railway Automation Systems	Article	Innovations in Railway Transport – 2009. Reports of the Jubilee Scientific and Technical Conference (on the 200th anniversary of PGUPS) / ed. V.V. Sapozhnikov. – St. Petersburg: Petersburg State Transport University, 2009. pp. 48–58.	Bochkov K.A., Kharlap S.N.

Publication Title	Type	Publication Details	Co-authors
Reliability Issues of Fiber-Optic Transmission Lines	Article	"Vesnik suvyazi" scientific and industrial journal, No. 4 (96), 2009. – pp. 37–40.	Semenyuta N.F., Zdorovtsov I.A.
Reliability Analysis of Structures of Modern Microprocessor Interlocking Systems	Article	Automation and Telemechanics in Railway Transport: Collection of reports of the Fifth International Scientific and Practical Conference "TransZhAT–2010". – Rostov-on-Don, pp. 246–253.	Bochkov K.A., Kharlap S.N., Logvinenko A.V.
Simulation Model of Shaft Wear	Article	Bulletin of the Belarusian State University of Transport: Science and Transport. 2010. No. 1 (20). pp. 95–99.	
Technology of Simulation Modeling of Parametric Failures of Technical Systems	Article	System Research and Information Technologies. 2011. No. 3 (22). pp. 29–37.	Maksimey I.V.
Methods and Tools for Demonstrating Functional Safety of Microelectronic Railway Automation Systems	Article	Electromagnetic Compatibility and Safety in Railway Transport. – 2011. – No. 2. – D.: Publication of DNUZhT, 2011. – pp. 73–81.	Bochkov K.A., Kharlap S.N.
Analysis of a Dynamic Fault Tree	Article	Electromagnetic Compatibility and Safety in Railway Transport. – 2011. – No. 2. – D.: Publication of DNUZhT, 2011. – pp. 142–148.	
Distribution Function of Time to Sequential Accumulation of Failures During Regular System Testing	Article	Probability Theory, Stochastic Processes, Mathematical Statistics and their Applications: collection of scientific articles / ed. by N.N. Trush, G.A. Medvedev, Yu.S. Kharin. – Minsk: RIVSh, 2014. – pp. 252–257.	
Statistical Estimation of Failure Rate of Typical Executive-Level Subsystems of Domestic MPDI Systems	Article	Bulletin of the Belarusian State University of Transport: Science and Transport. 2016. No. 2 (33). pp. 140–141.	
Optimization of the Amount of Signaling Equipment in the Operational Reserve of Railway Stations	Article	Automation, Communication, Informatics. 2017. No. 10. – pp. 10-12.	Kravchenya I.N.
Automation Tools for Reliability Analysis of Railway Automation Systems Using the Markov Method	Article	Automation, Communication, Informatics. 2018. No. 9. – pp. 11-12.	
Simulation Modeling of a State Graph in Problems of Reliability Analysis of Technical Systems	Article	Problems of Physics, Mathematics and Technics. 2018. No. 3 (36). – pp. 101-104.	Litvin A.Yu., Fedyanin M.A.
Engineering Method for Quantitative Analysis of Fault Trees of Railway Automation Systems	Article	Automation, Communication, Informatics. 2023. No. 6. – pp. 22-24.	

Publication Title	Type	Publication Details	Co-authors
Technological Limitations of the Markov Method for Reliability Analysis	Article	Dependability. 2024. No. 1. – pp. 34-40. https://www.dependability.ru/jour/article/view/570/828	
Traffic Safety Concept in the String Transport Complex	Article	Dependability. 2024. No. 2. – pp. 61-71. https://www.dependability.ru/jour/article/view/591/843	Yunitsky A.E., Garakh V.A., Litvinovich T.S.
Requirements for Architectural Constraints of IEC 61508	Article	Standards and Quality. 2025. No. 6 (1056). – pp. 30-35.	

The full list is available at https://elibrary.ru (SPIN code: 8307-2148)