

2025 VI International Conference on Neural Networks and Neurotechnologies (NeuroNT 2025)

**Saint Petersburg, Russia
20 June 2025**



**IEEE Catalog Number: CFP25AN0-POD
ISBN: 979-8-3315-7455-0**

**Copyright © 2025 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP25AN0-POD
ISBN (Print-On-Demand):	979-8-3315-7455-0
ISBN (Online):	979-8-3315-7454-3

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Content NeuroNT'2025

HYBRID INTELLIGENCE BUILDING CONCEPTS

<i>Domain-specific Language Models for Continuous Learning</i> O. N. Zlobin, V. L. Litvinov, F. V. Filippov	3
<i>Hybrid Deep Learning Neural Network for Optimizing Video Streaming Traffic Prediction over a Content Delivery Network</i> Hamza Majid Hamid, Rana Fareed Ghani	6
<i>Concept of Hierarchically Organized Explainable Intelligent Systems: Synthesis of Deep Neural Networks, Fuzzy Logic and Incremental Learning in Medical Diagnostics</i> Yu. V. Trofimov, A. V. Shevchenko, A. N. Averkin, I. P. Muravyov, E. M. Kuznetsov	14
<i>An Investigation of Machine Learning Techniques for Object Classification in Sequential Astronomical Imagery</i> Anton Shchukin, Mark Polyak	18
<i>Critical Information Infrastructures Intelligent Protection: Digital Twins and Neural Network-Based Threat Detection Methods</i> Evgenii S. Mityakov, Andrey I. Ladynin, Igor D. Kazakevich, Anna G. Shmeleva	22
<i>Critical Information Infrastructures Protection Architecture Based on Hybrid Data Analysis and AI Algorithms</i> Evgenii S. Mityakov, Andrey I. Ladynin, Igor D. Kazakevich	26

ARTIFICIAL INTELLIGENCE TECHNOLOGIES AND THEIR APPLICATIONS

<i>Using Semi-structured Sparsity of Activations to Accelerate Neural Networks</i> T. M. Tatarnikova, A. S. Raskopina	30
<i>Software Implementation of the Behavior Assignment of an Autonomous Mobile Robot with a Bioinspired Control System</i> V. V. Ivanova, A. M. Korsakov	34
<i>Comparative Evaluation of Deep Learning and Traditional Methods for Retinal Image Stitching on Mobile-Based Imaging Devices</i> Ali Sultan Mayya, Zein Mohammad Moussa	38
<i>Changes in the Technological Process of Equipment Condition Monitoring with the Implementation of Acoustic Recognition System</i> Natalia Verzun, Mikhail Kolbanov, Adelina Salieva, Kirill Egorov	41
<i>Experimental Comparison of the Randomized and Fully Connected Neural Networks for Anomaly Detection in the Industrial Systems</i> Elizaveta Kuznecova, Elena Fedorchenko	45
<i>Clustering of Survey Results</i> A. K. Petrova, S. E. Abramkin, A. A. Petrov	49
<i>Development of an Aviation Electric Fuel Pump Control System</i> Thang Duy Nguyen, Mikhail P. Belov	52
<i>Fine-tuning LLM's for Domain-specific Text Generation in Environments with Limited Resource Capabilities</i> Aleksandr P. Stepanov, Yulia A. Shchikina	56
<i>Application of Deep Learning Networks for Brain Cancer Detection</i> Nahida Karaja, N. A. Zhukova, Tarek Alnajjar	59
<i>DeepCyber-IDS: A Deep Learning Based Intrusion Detection System</i> Zaman Najii Hussein, Dalal Abdulmohsin Hammood, Ziad Qais Al-Abbasi	62
<i>Modification of U-Net architecture based on Gabor filters with trainable parameters to improve biomarker segmentation on OCT images</i> Egor Volkov, Alexey Averkin	66
<i>Forecasting the Trend, Seasonal and Random Components of the Average Accident Rate on Public Roads using Recurrent Neural Networks</i> Andrey Abalyaev, Lyubov Grunskaya	69
<i>Machine Learning in Predicting the Performance of Acoustic Emission Signal Filtering Methods: Association between Predictors</i> Yeldos A. Altay, Abu-Alim E. Ayazbay, Alexey V. Fedorov	72

DATA MANAGEMENT AND ORGANIZATION OF COMPUTING IN INTELLIGENT SYSTEMS

<i>Analysis of Preprocessing and Augmentation Methods for Robust 3D Reconstruction from a Single 2D Image</i> Anastasia R. Popova, Alyona S. Syryh, Gleb O. Bondarenko, Yegor V. Patoka, Evgenii I. Geichenko, Vladislav S. Pavluk	76
<i>Methods for Generating 3D Scenes from a Single Image using Depth Maps and Segmentation</i> Anastasia R. Popova, Alyona S. Syryh, Gleb O. Bondarenko, Yegor V. Patoka, Evgenii I. Geichenko, Vladislav S. Pavluk	80

<i>Leveraging Video Surveillance and Deep Learning Techniques to Maximize Accuracy in Public Safety Applications</i>	
K. M. Mostafa, A. S. Mohammed, S. A. Abbas, K. S. Attia	83
<i>Comparative Analysis of Standard Deep Learning Architectures for MRI Brain Tumor Classification</i>	
Yasser Nizamli, Weaam Fadel, Anton Filatov, Yulia A. Shichkina, Kinda Mreish, Salam Karheily	86
<i>Reconciliation of Correlated Measurement Results under a Constraint on the Domain of Possible Values in the Form of an Ellipse</i>	
Konstantin K. Semenov, Vladimir A. Garanin	90
<i>Statistical Characteristics of the Urban Bus Driving Cycle: Measurement and Analysis</i>	
Alexey Arbuzov, Alexander Pashkov, Konstantin K. Semenov, Viktor Sushnikov	94