

2024 V International Conference on Neural Networks and Neurotechnologies (NeuroNT 2024)

**Saint Petersburg, Russia
20 June 2024**



**IEEE Catalog Number: CFP24AN0-POD
ISBN: 979-8-3503-6374-6**

**Copyright © 2024 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:	CFP24AN0-POD
ISBN (Print-On-Demand):	979-8-3503-6374-6
ISBN (Online):	979-8-3503-6373-9

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

Content NeuroNT'2023

I. HYBRID INTELLIGENCE BUILDING CONCEPTS

<i>Implementation of Biosimilar Behavioral Functions of a Mobile Robot on a Compartmental Spiking Neuron Model</i>	3
Victoria V. Ivanova, Aleksandr V. Bakhshiev, Anton M. Korsakov, Alexandra A. Demcheva	3
<i>Assessment of Human State Based on Data from Keyboard Activity</i>	6
Danting Ma	6
<i>Application of Machine Learning Tools in Computer-Aided Design of Technological Processes (CAPP)</i>	11
Aleksandr A. Laptev, Sergey D. Tretyakov	11
<i>Russian Regions Industrial Development Dynamics Intellectual Analysis and Forecasting</i>	15
Evgenii S. Mityakov, Tamara M. Kryukova, Andrey I. Ladynin, Ekaterina A. Nazarova, Sergey N. Mityakov	15
<i>Machine Learning Methods for Predicting the Performance of Online Courses</i>	19
Maxim A. Burnaev, Elena A. Boldyreva	19
<i>Generation of a Three-Dimensional Scene based on a Single Two-Dimensional Image using Deep Neural Networks</i>	22
Alyona S. Syryh, Gleb O. Bondarenko	22
<i>Comparison of Different Machine Learning Approaches for Individual Subject Classification of Single-trial Event Related Potentials during Perception of Correct and Incorrect Math Solutions</i>	25
Zhanna V. Nagornova, Alena S. Sivtseva, Natalia V. Shemyakina	25
<i>Application of Large Language Models for Intent Mining in Goal-oriented Dialogue Systems</i>	28
Alexander E. Shukhman, Vadim R. Badikov, Leonid V. Legashev	28
<i>Integrating Deep Learning and Explainable AI for Non-Invasive Prediction of EGFR and KRAS Mutations in NSCLC: A Novel Radiogenomic Approach</i>	32
Faridoddin Shariaty, Vitalii A. Pavlov, Svetlana V. Fedyashina, Nikita A. Serebrennikov	32
<i>Development of a Deepfake Detection Method: Application of Frequency Analysis and Reduction of the Image Color Space to Improve Classification Accuracy</i>	36
Vitalii Rogovoi, Viktoria M. Korzhuk, Olga A. Kokorina	36
<i>Object Recognition and Localization through Computer Vision</i>	40
Vladimir V. Kovalev, Ekaterina V. Ilatovskaya, Denis M. Filatov, Anastasiya O. Fedorkova, Danil P. Mikhailov	40
<i>The Impact of Using Artificial Intelligence on Cognitive Skills of Schoolchildren: the Subjective Assessment</i>	43
Maksim A. Sorochinskiy, Sayana G. Prokhorova, Ksenia A. Bazanova	43
<i>Using an Evolutionary Algorithm such as Genetic Algorithm (Ga) to Optimize Linear Equations</i>	46
Abdul sttar Ismail Wdaa, Shokhan M. Al-Barzinji, Hiba A. Tarish	46
<i>The Impact of Digital Accounting Technologies in Achieving the Quality of Accounting Information</i>	53
Ammar Ghazi Ibrahim, Kubra Mohammed Tahir	53

II. ARTIFICIAL INTELLIGENCE TECHNOLOGIES AND THEIR APPLICATIONS

<i>Computer Vision Model for Analyzing Registry Workload CDC "Almazov National Medical Research Centre"</i>	58
Grigorii V. Orlov, Alexander N. Kalinichenko	58
<i>Development of Neural Network Module for Autocompletion of Examination Protocol for Modular Medical Information System</i>	62
Ivan M. Kiriakov, Sergey A. Molodyakov	62
<i>Leukemia Detection Performance: A Comparative Study of EfficientNetB3 and EfficientNetB5</i>	66
Aseel Alshoraihy, Housam Hasan Bou Issa, Anagheem Ibrahim, Osazee Osca Agbonrhiernhien.....	66
<i>Using Artificial Intelligence and Perovskite Material Technology to Monitor Light Pollution</i>	69
Dmitrii Y. Terekhov, Anastasia R. Popova, Egor V. Patoka, Viacheslav D. Burlaka, Mihail S. Kozlov	69
<i>3D Tumor Segmentation with Interpolation using Deep Neural Networks based on 3D Medical Images for Subsequent 3D Visualization</i>	72
Alyona S. Syryh, Gleb O. Bondarenko	72
<i>Application of Spatial Attention Module in Convolutional Neural Network for OCT Images Analysis</i>	75
Egor N. Volkov	75
<i>!Detection of Vineyard Rows with U-NET using Remote Sensing Data</i>	79
Sergey A. Shkviro, Mark D. Polyak	79
<i>Deep Learning for Comprehensive Retinal Health: Beyond Automated Fundoscopy – Classification, Segmentation, and Retinal Image Reconstruction</i>	83
Ali Sultan Mayya	83
<i>Verification of Musical Education with Face Images Using Convolutional Neural Network and Vision Transformers</i>	87
Mark D. Polyak, Yana O. Senichenkova	87
<i>Neural Networks Features in the Task of Forecasting the Level of Accidents on the Public Roads</i>	91
Andrey Yu. Abalyaev, Lyubov V. Grunskaia	91

<i>Evaluation of Physical Exercise Performance using Deep Learning Methods</i>	93
Marina D. Korableva, Yana A. Bekeneva	93
<i>Application of Chord Length Histogram to Enhance the Accuracy of Pulmonary Nodule Recognition on Computed Tomograms</i>	
Daria S. Smirnova, Ekaterina I. Pchitskaya, Vyacheslav S. Chukanov	96
<i>Artificial Intelligence-Assisted Water Quality Model: Long-Term Follow-up Data</i>	
Yeldos A. Altay, Lashin Bazarbay	101
III. DATA MANAGEMENT AND ORGANIZATION OF COMPUTING IN INTELLIGENT SYSTEMS	
<i>Clustering of Non-stationary Time Series</i>	
M. A. Kalmykov	104
<i>Implementation of Temporal Action Detection Workflow for Video Data Analysis with the Use of Machine Learning Operations</i>	
Mikhail S. Kupriyanov, Yulia A. Shichkina, Semyon E. Ilin	107
<i>Personal Document Security Tool for Cloud Application</i>	
Bdoor Alaa Mahmood	110
<i>Bayesian Analysis of Zero-Inflated Count Data Using Beta-Lindley Distribution</i>	
Atheer Ismael Fadhel, Hossein Jabbari Khammei	115
<i>Fault-Tolerant Humidity Sensor Based on Neural Networks</i>	
Svetlana V. Artemova, Anna G. Shmeleva, Andrey I. Ladynin, Nikita S. Ershov, Maria A. Kamenskaya	120
<i>Collective Re-entry Classifiers</i>	
Alexander Yu. Dorogov	124
<i>Classification of Raw Single-trial EEG/ERP Signals of a Combined Subjects' Data Sample in Response to the Presentation of Mathematical Sums, Correct and Incorrect Answers to them, using CNNs</i>	
Mikhail O. Petrov, Zhanna V. Nagornova, Natalia V. Andreeva, Natalia V. Shemyakina	128
<i>Fault Prediction using Artificial Intelligence Data and Perovskite Material Technology</i>	
Dmitrii Yu. Terekhov, Anastasia R. Popova, Egor V. Patoka, Viacheslav D. Burlaka, Mihail S. Kozlov	132
<i>Generative Reader Optimization in the RAG-system</i>	
Andrey P. Sokolov, Pavel Zamelin, Yulia Kamelina, Polina Plastova	135
<i>Hardware Implementation of the ART-2 Classifier</i>	
Olga I. Bureneva, Yaseer B. Ibrahim, Shivani Verma, M. S. Prasad	139
<i>Trajectory Analysis of a Swarm of 3U CubeSats in Sun-Synchronous Orbit with Varying RAAN and Non-Overlapping Revisit Time</i>	
Shivani Verma, M. S. Prasad	143
<i>Performance Evaluation of Ramanujan Transform with OMP and BP Algorithms</i>	
Shivani Verma, M. S. Prasad, Olga I. Bureneva, Yulia A. Shichkina	149
<i>Estimation of the Impact of Dimensionality Reduction of the Feature Space on the Efficiency of Movements Classification based on Surface Electromyography</i>	
Ivan V. Kuznetsov, Yulia V. Ponomarchuk	155
<i>Evaluating Optimizer Performance in Convolutional Neural Networks for Breast Microcalcification Classification: A Comparative Investigation</i>	
Esther Chiadikaobi Ugwueke, Dimitrios Palogiannidis	159
<i>Application of a Stacking Algorithm to Identify Deviations in Gas Transmission Network Data</i>	
Aigul K. Petrova, Sergej E. Abramkin	163
<i>The Use of Machine Learning Methods to Transform the Parameters of the Gas Turbine Operation for the Diagnosis of a Turbocharger</i>	
Vladislav S. Kareljin, Ivan V. Popov, Petr V. Sokolov	167
<i>Accurate Anomaly Detection in Medical Images using Transfer Learning and Data Optimization: MRI and CT as Case Studies</i>	
Yasser Nizamli, Anton Yu. Filatov, Weam Fadel, Yulia A. Shichkina	170
<i>Predictive Diagnostics of Power Generating Equipment Failures Based on Neural Network Technology</i>	
Ivan V. Nekrasov, Yurij D. Konstantinovskij, Nikolay S. Kukin	174