The 7th International Conference on
Deep Learning in Computational Physics

DLCP'2023
Scientific program

June 21-23, 2023
SPbSU, St.Petersburg, Peterhof, Russia

Scientific program

Moscow time (MSK)
On site and ZOOM
  * - on-line report

June 21, 2023

11:15-11:45	**Welcome coffee**	
11:45-12:00	**Opening of the conference**	
12:00-12:30	**L.Dudko** MSU, Moscow	**Methodology for the use of neural networks in the data analysis of the collider experiments**
12:30-12:45	**Ju.Dubenskaya** SINP MSU, Moscow	Generating Synthetic Images of Gamma-Ray Events for Imaging Atmospheric Cherenkov Telescopes Using Conditional Generative Adversarial Networks
12:45-13:00	**R.Fitagdinov** MIPT, Moscow region; INR RAS, Moscow	Generation of the ground detector readings of the Telescope Array experiment and the search for anomalies using neural networks
13:00-13:15	**K.Galaktionov** SPbSU, St.Petersburg	Neural network approach to impact parameter estimation in high-energy collisions using the microchannel plate detector data
13:15-13:30	**E.Gres** IGU, Irkutsk	* The selection of rare gamma event from IACT images with deep learning methods
13:30-14:30	**LUNCH**	
14:30-15:00	**A.Kryukov** MSU, Moscow	**Machine Learning in Gamma Astronomy**
15:00-15:15	**A.Kryukov** SINP MSU, Moscow	Preliminary results of convolutional neural network models in HiSCORE experiment
15:15-15:30	**S.Pavlov** SPbSU, St.Petersburg	Application of machine learning methods to numerical simulation of hypersonic flow
15:30-15:45	**A.Leonov** MIPT, Moscow region	Using Neural Networks for Reconstructing Particle Arrival Angles in the Baikal-GVD Neutrino Telescope
15:45-16:00	**A.Matseiko** MIPT, Moscow region; INR RAS, Moscow	Application of machine learning methods in Baikal-GVD: background noise rejection and selection of neutrino-induced events
16:00-16:30	**Coffee Break**	
16:30-16:45	**A.Zaborenko** MSU, Moscow	Novelty Detection Neural Networks for Model-Independent New Physics Search
16:45-17:00	**A.Kryukov** SINP MSU, Moscow	The use of conditional variational autoencoders for simulation of EASs images from IACTs

June 22, 2023

10:00-10:30	**A.Boukhanovsly** ITMO University, St.Petersburg	**Generative AI for large models and digital twins**
10:30-10:45	**S.Dolenko** SINP MSU, Moscow	Decomposition of Spectral Contour into Gaussian Bands using Improved Modification of Gender Genetic Algorithm
10:45-11:00	**A.Hvatov** ITMO University, St.Petersburg	* Robust equation discovery as a machine learning method
11:00-11:15	**N.Bykov** ITMO University, St.Petersburg	Reconstruction Methods for a Partial Differential Equation: Application to Physical and Engineering Problems
11:15-11:45	**Coffee Break**	
11:45-12:00	**A.Shevchenko** SSTU, Samara	Determination of the charge of molecular fragments by machine learning methods
12:00-12:15	**D.Poliakov** SPbSU, St.Petersburg	Hyper-parameter tuning of neural network for high-dimensional problems in the case of Helmholtz equation
12:15-12:30	**M.Borisov** MIPT, Moscow region	Estimating cloud base height from all-sky imagery using artificial neural networks
12:30-12:45	**I.Gadzhiev** SINP MSU, Moscow	Classification Approach to Prediction of Geomagnetic Disturbances
12:45-13:00	**V.Golikov** MIPT, Moscow region	* Client-server application for automated estimation of the material composition of bottom sediments in the >0.1 mm fraction from microphotography using modern deep learning methods
13:00-13:15	**S.Dolenko** SINP MSU, Moscow	Transfer Learning for Neural Network Solution of an Inverse Problem in Optical Spectroscopy
13:15-13:30	**I.Isaev** SINP MSU, KIRE RAS, Moscow	The study of the integration of physical methods in the neural network solution of the inverse problem of exploration geophysics with variable physical properties of the medium
13:30-14:30	**LUNCH**	
14:30-15:00	**A.Moskovsky** RSC	**High-performance computer systems for machine learning problems**
15:00-15:15	**M.Krinitsky** Shirshov IO, RAS, Moscow	Estimating significant wave height from X-band navigation radar using convolutional neural networks
15:15-15:30	**V.Latypova** SINP MSU, Moscow	A universal method for separating extensive air showers by primary mass using machine learning for a Cherenkov telescope of the SPHERE type
15:30-15:45	**M.Ledovskikh** SPbSU, St.Petersburg	* Recognition of skin lesions by images
15:45-16:00	**A.Polyakov** SPbSU, St.Petersburg	A technique for the total ozone columns retrieval using spectral measurements of the IKFS-2 instrument
16:00	**Social events**	

June 23, 2023

10:00-10:30	**M.Petrovsky** MSU, Moscow	**Deep learning methods for the tasks of creating "digital twins" for technological processes**
10:30-10:45	**A.Savin** MIPT, Moscow region; Shirshov IO, RAS, Moscow	SMAP sea surface salinity improvement in the Arctic region using machine learning approaches
10:45-11:00	**A.Orekhov** SPbSU, St.Petersburg	Unsupervised machine learning methods for determination of critical points of the fluorescence accumulation curve for real-time polymerase chain reaction
11:00-11:15	**A.Vasiliev** MSU, AI, Moscow	* The role of artificial intelligence in the preparation of modern scientific and pedagogical staff. The experience of the course "Neural networks and their application in scientific research" of Moscow State University named after M. V. Lomonosov
11:15-11:45	**Coffee Break**	
11:45-12:00	**Z.Kurdoshev** Tomsk State University, Tomsk	* The importance of the number of overfits in time series forecasting by some optimizers and loss functions in neural networks
12:00-12:15	**A.Tyshko** Shirshov IO, RAS, Moscow	* Automatic detection of acoustic signals from white whales and bottle-nosed dolphins
12:15-12:30	**I.Khabutdinov** Shirshov IO, RAS, Moscow	* Identifying cetacean mammals in high-resolution optical imagery using anomaly detection approach employing Machine Learning models
12:30-12:45	**M.Zotov** SINP MSU, Moscow	* Search for Meteors in the Mini-EUSO Orbital Telescope Data with Neural Networks
12:45-13:00	**A.Vorobev** Geophysical Center RAS, Moscow	* Machine learning for diagnostics of space weather effects in the Arctic region
13:00-13:15	**V.Rezvov** Shirshov IO, RAS, Moscow	* Improving the accuracy of the neural network estimation of meaningful height of wind waves based on ship navigation radar data by means of preliminary training on synthetic data
13:15-13:30	**A.Kasatkin** Shirshov IO, RAS, Moscow	* Machine learning techniques for anomaly detection in high-frequency time series of wind speed and greenhouse gas concentration measurements
13:30-13:45	**Closing of the conference**	

Poster section

- ***V.Kalninsky***, SPbSU, St.-Petersburg
  Modification of soft connectives in machine learning models
- ***O.Sarmanova***, SINP MSU, Moscow
  Decoding fluorescence excitation-emission matrices of carbon dots aqueous solutions with convolutional neural networks to create multimodal nanosensor of metal ions.