

14th International Symposium “Intelligent systems” (INTELS’20)
December 14-16, 2020
Lomonosov Moscow State University, Moscow, Russia

Preliminary Program

December 14, 2020

Plenary Talk 1:

Dr. Swagatam Das (India Statistical Institute, Kolkata, India)

Multi-modal, Noisy and Large-Scale Engineering Optimization with Differential Evolution – Some Recent Approaches and Future Challenges

Plenary Talk 2:

Prof. Fernando Manuel Ferreira Lobo Pereira (University of Porto, Institute for Systems and Robotics, Porto, Portugal)

Control and Optimization for Operational Robotic Systems

Section 1: «Robotic Systems»

The section presents reports on the latest achievements in robotics, and on the results of research in the field of control of robotic systems.

Fernando Lobo Pereira, Roman Chertovskih, Dmitry Karamzin, Askhat Diveev, Elena Sofronova, A Computational Approach to the Time Optimal Robot Motion Control under State Constraints

Alexander Puzicha, Peter Buchholz, Decentralized model predictive control for autonomous robot swarms with restricted communication skills in unknown environments

Nguyen Quang Vinh, Optimization of the vehicle braking distance using hedge algebra controller

Khranilov V.P., Misevich P.V., Pankratova E.N., Ermilov A.E, Models for Supporting the Operating Scenarios during a Life Cycle in Automated Systems

Prokopyev I.V., Sofronova E.A., Study on Model Identification Method and Control Methods for Unmanned Vehicle Movement along a Spatial Path

Section 2: «Numerical Methods for Intelligent Control Systems»

The section presents reports on the results of research and development of new methods, as well as on the effective application of well-known numerical methods for solving problems arising in the process of creating intelligent control systems.

Daryina Anna, Karamzin Dmitry, Sofronova Elena, Diveev Askhat, A Computational Approach to the Time Optimal Robot Motion Control under State Constraints

Askhat Diveev, Elizaveta Shmalko Comparative Study of Numerical Solutions for the Optimal Control Problem in the Presence of Uncertainties

N. Gabdrakhmanova, V. Fedin, B. Matsuta The modeling of forecasting new situations in the dynamics of the economic system on the example of several financial indicators

Tatiana Avdeenko, Konstantin Serdyukov, Adaptation of Genetic Algorithm for Optimal Code Coverage with Test Data

Sofronova E.A., Diveev Askhat, Approximation of Unknown Urban Road Subnetworks by Artificial Neural Networks

December 15, 2020

Plenary Talk 3:

Prof. Mohammed Chadli (University Paris-Saclay, IBISC Lab-UEVE, France)
Observer Design in Finite Frequency domain: Application to Fault Diagnosis

Plenary Talk 4:

Prof. Geraldo Nunes Silva (UNESP – Universidade Estadual Paulista, Brazil)
Minimax control problem: necessary and sufficient conditions of optimality

Section 3: «AI-based Control»

The section presents reports on the development and application of intelligent control systems. A distinctive feature of intelligent control systems is the use of conditional operators and logical functions in control. Control systems for complex objects or objects operating in difficult conditions always have the signs of intelligent control systems. Intelligent control systems include smart systems and systems that replace the human operator in the control loop.

Hoang Minh Dac, Nguyen Duc Thanh, Truong Dang Khoa, Identify aerodynamic derivatives of airplane's attitude channel using spiking neural network

Korsun O.N., Yurko V.N., Convolutional neural networks emotion recognition and blink characteristics analysis for operator state estimation

Nikolskiy I.M. On one approach to information loss reduction in wireless sensor networks

Samer El-Khatib, Sergey Rodzin, Comparison of Hybrid ACO-k-means algorithm and Grub cut for MRI images segmentation

Mitrokhin M.A., Sleptsov N.V., Kochegarov I.I., Lysenko A.V., Yurkov N.K. Control of network representation efficiency in neurogenesis

Izotova Anastasiia, Valiullin Adel Comparison of Poisson process and machine learning algorithms approach for credit card fraud detection

Kirill Krinkin, Alexander Vodyaho, Igor Kulikova, Nataly Zhukova, The method of inductive synthesis of hierarchical knowledge graphs of telecommunication networks based on statistical data

Tianxing Man A Decision Support System for DM Algorithm Selection Based on Module extraction

Tureshbaev A.T., Omarova U.Sh. Modeling the dynamics of particles of gas-dust clouds in the photogravitational field of binary stellar systems

Section 4: «Fundamental Research in Intelligent Systems»

The section presents reports on theoretical mathematical research in the field of intelligent systems, mathematical formulations of problems, proofs of theorems, lemmas, statements defining the properties of intelligent systems and methods for solving problems arising in the process of their development.

Le Tran Thang, Vuong Anh Trung, Optimization of the vehicle braking distance using hedge algebra controller

Karpenko A.P., Kuzmina I.A. Structural and parametric synthesis of population algorithms for global optimization

Mitrishkin Y.V., Kartsev N.M., Prokhorov A.A., Pavlova E.A., Korenev P.S., Konkov A.E., Kruzhkov V.I., Ivanova S.L. Tokamak plasma models development for plasma magnetic control systems design by first principle equations and identification approach

Yulia Belinskaya, Mikhail Dmitriev, Dmitry Makarov, Correction of an Admissible Control in a Nonlinear Perturbed Problem with Fixed Ends

Pupkov K.A., Fadi Ibrahim, Using Chaotic Predictions to Enhance Interaction between Different Sciences and Environment

Pupkov K.A., Brovanskaya Y.K., Dynamic and Information Properties of Intelligent Control Systems

Lvovich I.Ya., Lvovich Ya.E., Preobrazhenskiy A.P., Choporov O.N. Algorithmization of control of information and telecommunication systems based on the optimization model

Armando de Jesús Plasencia Salgueiro, Yulia Shishkina, Arlety García García, Lynnette González Rodríguez Parkinson's Disease Classification and Medication Adherence Monitoring Using Smartphone-based Gait Assessment and Deep Reinforcement Learning Algorithm

December 16, 2020

Plenary Talk 5:

Prof. Askhat Diveev (Federal Research Center "Computer Science and Control" of Russian Academy of Sciences, RUDN University, Moscow, Russia)
Control Training

Section 5: «Elements of Intelligent Control Systems»

The section presents reports on the research of elements of intelligent control systems, as well as the solution of particular problems arising in the process of developing intelligent systems.

Samuel S. Cembranel, Inês Tavares, João Soares, Zita Vale, Sérgio Ramos, Data mining techniques for electricity customer characterization

Foroozandeha Z., Sérgio Ramosra, João Soaresra, Zita Valea, Energy Management in Smart Building by A Multi-Objective Optimization Model and Pascoletti-Serafini Scalarization Approach

Matthias Volk, Bernhard Heiden, Bianca Tonino-Heiden, Volodymyr Aliexsieiev, Framing Artificial Intelligence (AI) Additive Manufacturing (AM)

Dula Jose H., Nemirko Anatoly, Machine learning algorithm based on convex hull analysis

Anna Zamansky, Yana Bekeneva, Denis Kozlov, Dmitry Kaplun, Aleksandr Sinitca, Alisa Sufelfa, Prediction of dogs suitability for work based on data mining

Rubipara Fernandes, Samuel S. Cembranel, Data mining techniques for electricity customer characterization

Tin Tun Aung, Aung Myo Thaw, Zhukova Nataly, IoT Data Processing Model for Mobile IoT Systems

Malykh Sergey, Nikulchev Evgeny, Silaeva Anastasiy, Ilin Dmitry Use of LDA and text preprocessing for analyzing open-ended questions in mass web-surveys

Nailia Gabdrakhmanova, Maria Pilgun Artificial Neural Networks and Stochastic Differential Equations in Predictive Analytics of Conflict Development: on Social Media Data

Andriyanov Nikita, Kargashin Yuri, Dementiev Vitaly, Analysis of the impact of visual attacks on the characteristics of neural networks in image recognition

Xu Yang, A.V. Bobkov Development of a vision system for safe and high-precision soft landing on the Moon

Anna Belova, Mikhail Kuznetsov, Maria Nikishova, Artificial Intelligence in City Governance Transformation

Zoya V. Ilyichenkova, Svetlana M. Ivanova Cluster Keyboard Handwriting

The final program will be announced after the reviewing process and registration