



# Cyber- netics

2 (212)  
2023

КІБЕРНЕТИКА ТА ОБЧИСЛЮВАЛЬНА ТЕХНІКА

ISSN 2663-2586 (Online)  
ISSN 2663-2578 (Print)

and

COMPUTER  
ENGINEERING

## Editorial board

Gritsenko V.I. — Editor-In-Chief (*International Research and Training Center for International Technologies and Systems, Kyiv, Ukraine*)

Kozak L.M. — Deputy Editor-In-Chief (*IRTCITS, Kyiv, Ukraine*)

### Computer Science and Information Technologies:

Abdel-Badeeh M. Salem (*Ain Shams University, Cairo, Egypt*), Abraham A. (*Machine Intelligence Research Labs, Washington, USA*), Fainzilberg L.S. (*IRTCITS, Kyiv, Ukraine*), Gorbunovs A. (*Riga Technical University, Riga, Latvia*), Gubarev V.F. (*Institute of Space Research, Kyiv, Ukraine*), Kutsyak O.A. (*IRTCITS, Kyiv, Ukraine*), Rachkovskij D.A. (*IRTCITS, Kyiv, Ukraine*), Wunsch D.C. (*Missouri University of Science & Technology, Rolla, USA*)

### Applied Mathematics:

Anisimov A.V. (*T. Shevchenko National University, Kyiv, Ukraine*), Chikrii A.O. (*Glushkov Institute of Cybernetics, Kyiv, Ukraine*), Gupal A.M. (*Glushkov Institute of Cybernetics, Kyiv, Ukraine*), Kogut P.I. (*Dnipropetrovsk State University, Dnipro, Ukraine*), Mordukhovich Boris (*Wayne University, Detroit, USA*), Vlahavas I. (*Aristotle University of Thessaloniki, Thessaloniki, Greece*)

### Technologies of medical diagnostics and treatment:

Azarhov O.Yu. (*Priazovsky State Technical University, Mariupol, Ukraine*), Belov V.M. (*IRTCITS, Kyiv, Ukraine*), Kovalenko O.S. (*IRTCITS, Kyiv, Ukraine*), Rybak I. (*Drexel University College of Medicine, Philadelphia, USA*), Yavorsky O.V. (*Kharkiv State Medical University, Kharkiv, Ukraine*)

### Biology:

Antomonov M.Yu. (*Marzyeyev Institute of Public Health, Kyiv, Ukraine*), Ermakova I.I. (*IRTCITS, Kyiv, Ukraine*), Knigavko V.G. (*Kharkiv State Medical University, Kharkiv, Ukraine*), Navakatikyan M., (*National Centre for Classification in Health, Sydney, Australia*)

The journal is included in the List of Scientific Professional Editions of the Ministry of Education and Science of Ukraine (MESU) for PhD applicants, category “B”, in biological and medical sciences, (order of the MES of Ukraine № 409, 17.03.2020), technical and physical-mathematical sciences (order of the MES of Ukraine № 1188, 24.09.2020)

The journal is included in Google Scholar, information resource Scientific Periodicals of Ukraine (V.I. Vernadsky NLU), ULRICHS WEB, Crossref (DOI), ROAD, DOAJ, Index Copernicus, Electronic Journals Library (Germany)

Certificate of State Registration KB № 12649-1533P, 14.05.2007

## Editorial address:

**International Research and Training Center  
for Information Technologies and Systems of the National Academy of Sciences of  
Ukraine and the Ministry of Education and Science of Ukraine  
40, Acad. Glushkov av., Kyiv, 03187**

Phone: 503 95 62. E-mail: [kvt.journal@kvt-journal.org.ua](mailto:kvt.journal@kvt-journal.org.ua), <http://kvt-journal.org.ua/>

Executive secretary *Pezentsali H.O.*

Editor *Charchiyan N.A.*

Computer layout *Tupalskiy O.V.*

Web-master *Voychenko O.P.*

Підп. до друку 30.06.2023. Формат 70×108/16. Гарн. Times New Roman.  
Ум. друк. арк. 10,33. Обл. вид. арк. 9,84. Тираж 62. Зам. №

---

Віддруковано ВД «Академперіодика» НАН України  
01024, Київ 4, вул. Терещенківська, 4.

Свідоцтво про внесення до Державного реєстру суб'єкта видавничої справи

Серії ДК № 544 від 27.07.2001 р.