<p style="text-align:center">CURRICULUM VITAE</p>

Family name: Bohaienko
First name: Vsevolod
Date of birth: 3 October 1983
Nationality: Ukraine

Education:

Institution	Degree(s) or Diploma(s) obtained:
International Solomon University, Kyiv (1997-2002)	Master degree in computer science (software development for automation systems, thesis title: "Computations and results visualization while studying physical processes in ecology", diploma KB №21226043)
V.M. Glushkov Institute of Cybernetics of NAS of Ukraine, Kyiv (2002-2006)	PhD (mathematical modeling and numerical methods, thesis title: "Automation of three-dimensional incomplete data problems solution", diploma ДК №036675, https://nrat.ukrintei.ua/searchdoc/0406U002931/) *The thesis is devoted to the development of numerical-analytical algorithms for solving direct and inverse three-dimensional problems of mathematical physics with incomplete data and a software that allows to solve such problems. On the base of pseudo-inversion apparatus a set of functions that describe solutions of boundary value and control problems is obtained. Estimates of accuracy and criteria of uniqueness of solutions of the studied systems are established, numerical-analytical (sequential and parallel) algorithms are developed.*

Present position: Senior researcher in V.M. Glushkov Institute of Cybernetics of National Academy of Science of Ukraine

Key qualifications:
- Mathematical modeling of ecological and agricultural problems including stiff and inverse ones;
- Development of computational schemes for initial-boundary value problems for partial differential and integro-differential equations;
- Development of high-performance algorithms for MPI-based GPU-enabled clusters.

Main skills:
- Development of physical processes' models in porous media;
- Development of finite-difference and finite-element schemes;
- C/C++ software development using MPI and OpenCL;
- Data processing automation using Python;
- Usage of remote sensing data for assessing the state of soil and its surface.

Scientific profiles:

https://orcid.org/0000-0002-3317-9022

https://www.scopus.com/authid/detail.uri?authorId=8708467600

https://scholar.google.com/citations?user=PuK9Hy8AAAAJ

https://www.researchgate.net/profile/Vsevolod-Bohaienko

Grants, scholarships, and projects:
- Scholarship of President of Ukraine (2007-2008);
- Grant of President of Ukraine for the support of scientific researches of young scientists (2009, "New mathematical models and parallel algorithms for solving ecological problems", http://nrat.ukrintei.ua/searchdoc/0210U005616/)
  The results of the project: a mathematical model of contaminants migration in soils that takes into account chemical processes along with the ingress of contaminants into the soil from the atmosphere and allows the decomposition into weakly related sub-problems; a parallel algorithm for simulating pollution migration and an algorithm for automatic optimization of computational schemes;

- Grant for young scientists of NAS of Ukraine (2009-2010, "New mathematical models and algorithms of analysis of ecological processes in soils", https://nrat.ukrintei.ua/searchdoc/0210U007903/)
   The results of the project: a mathematical model and parallel algorithms for simulation on distributed-memory systems of three-dimensional filtration-consolidation processes taking into account the salinity of porous solution, osmosis and thermoosmosis;
- Scholarship of President of Ukraine (2011-2012);
- Collaboration in the grant project "Monitoring of soil moisture reserves according to remote sensing data" funded by National Fund of Fundamental Research of Ukraine (2018, https://nrat.ukrintei.ua/searchdoc/0218U001926/)
   The results of the project: a method of drought identification has been developed using artificial neural networks tools to obtain relationships between soil moisture and remote sensing data acquired by Sentinel satellites. The trained neural networks were applied for the determination of moisture reserves changes and the identification of the phenomenon of soil drought. A comparison of the results of the proposed method with the results obtained by known drought indices was performed;
- Collaboration in the grant project "Assessment of the impact of climate changes on crops water supply and develop a GIS-system of irrigation and water management" funded by National Fund of Fundamental Research of Ukraine (2017-2018, https://nrat.ukrintei.ua/searchdoc/0218U007920/)
   The results of the project: mathematical models of soil moisture transfer and decision support tools that form the basis of information technology of irrigation management have been developed. The identification of the parameters of classical and fractional-differential one-dimensional moisture transfer models has been conducted. Verification of moisture transfer models by modeling of soil moisture change was carried out. Software implementation of algorithms in QGIS environment was performed;
- Collaboration in FAO project "Development of integrated natural resources management combined approach for land in arid conditions: implementation of agroecological practices with underground drip irrigation and shelterbelt reconstruction" (2019-2021);
- Collaboration in FAO project "The strengthening capacity on the land degradation neutrality monitoring system development: reclamation and drainage land data collection and mapping" (ongoing).

Professional experience:

Date	Institution	Position	Description
2006-	V.M. Glushkov Institute of Cybernetics of NAS of Ukraine, Kyiv, Ukraine	Junior researcher (2006-2008), Researcher (2008-2010), Senior researcher (2010-)	Main results are in the fields of - numerical schemes, parallel algorithms and software for solving heat and mass transfer problems using explicit and implicit finite-difference schemes; - algorithms including parallel ones for the analysis of ill-conditioned linear systems; - models, numerical schemes, and computational algorithms for modeling soil consolidation processes; - heuristic optimization algorithms for decision support in engineering. Current main field of interest — computational methods and algorithms for solving fractional differential equations.
2012-	Institute of Water Problems and Land Reclamation of NAAN, Kyiv, Ukraine	Part time researcher	Development of algorithms and software for agricultural research and practice including: - 1D and 2D mathematical modeling of water transport in soil under irrigation; - decision support system in irrigation management; - decision support algorithms for fertilizers and crop rotations selection; - estimation of soil moisture and shelterbelts' influence on it using remote sensing data. I took part in the collaboration of World Bank with the Institute on the creation of a concept of Water Information Management System for Ukraine.
2007-2013	International Solomon university, Kyiv, Ukraine	Part-time professor	Teaching of courses related to high performance computing and computer graphics. Supervising students' graduate theses.

Recent significant publications

- V Bohaienko Accuracy and speed of splitting methods for three-dimensional space–time fractional diffusion equation with ψ-Caputo derivatives // Mathematics and Computers in Simulation, 188: 226-240 (2021) https://doi.org/10.1016/j.matcom.2021.04.004
- V Bohaienko On the recurrent computation of fractional operator with Mittag-Leffler kernel // Applied Numerical Mathematics, 162: 137-149 (2021) https://doi.org/10.1016/j.apnum.2020.12.016
- MI Romashchenko, VO Bohaienko, TV Matiash, VP Kovalchuk, AV Krucheniuk Numerical simulation of irrigation scheduling using fractional Richards equation // Irrigation Science, 39(3): 385-396 (2021) https://doi.org/10.1007/s00271-021-00725-3
- V Bohaienko, V Bulavatsky Fractional-Fractal Modeling of Filtration-Consolidation Processes in Saline Saturated Soils // Fractal and Fractional, 4(4): 59 (2020) https://doi.org/10.3390/fractalfract4040059
- V Bohaienko A fast finite-difference algorithm for solving space-fractional filtration equation with a generalised Caputo derivative // Computational and Applied Mathematics, 38(3):1-21 (2019) https://doi.org/10.1007/s40314-019-0878-5
- V Bohaienko Numerical schemes for modelling time-fractional dynamics of non-isothermal diffusion in soils // Mathematics and Computers in Simulation, 157: 100-114 (2019) https://doi.org/10.1016/j.matcom.2018.09.025
- V Bohaienko Parallel algorithms for modelling two-dimensional non-equilibrium salt transfer processes on the base of fractional derivative model // Fractional Calculus and Applied Analysis, 21(3): 654-671 (2018) https://doi.org/10.1515/fca-2018-0035

I am aware of the criminal penalties that I could incur for false declarations.

Kyiv, May 24, 2022   Vsevolod Bohaienko