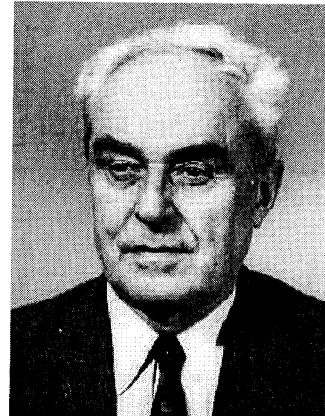


**Corresponding Member of NAN of Ukraine,  
Honored Worker of Science and Technology  
of Ukraine, Winner of State Prizes of Ukraine**

**Alexey Grigoryevich Ivakhnenko is 90!**



On March 30, 2003, Alexey G. Ivakhnenko will be 90. The Editorial Board of the Journal sends him its cordial congratulations on the occasion of his jubilee and wishes health, happiness and many new years of fruitful work!

One cannot overestimate great services of Alexey Grigoryevich in formation and development of the theory of automatic control in Ukraine. He wrote hundreds of research papers, published several dozens of monographs and, which is the most important, he introduced to science not less, than 150 new people. Dozens of his pupils became Doctors of Science long ago. His doctor students were young people from about all regions of the Soviet Union, from Poland and Bulgaria, from German Democratic Republic and Hungary, Cuba, India and China. In this respect he, undoubtedly, deserves entering in the Guinness Book of Records.

Alexey G. Ivakhnenko was born in the family of a teacher in the town of Kobelyaki of Poltava province. That place had a beautiful, scenic landscape, what positively affected forming him as a personality.

Alexey Grigoryevich received higher education in Leningrad Electrotechnical Institute. He graduated from the Institute in 1938 and immediately started his labor activity in All-Union Electrotechnical Institute in Moscow, which later became very famous. That time, fortune brought together many talented people in the Institute.

Gift of Alexey Grigoryevich as a researcher and as a lecturer completely exposed itself in Kyiv, where he moved in 1944 together with Academy of Sciences of Ukraine, that returned back from evacuation.

He achieved great successes both in science and in teaching young researchers and gained recognition of his accomplishments by colleagues and science and technical community working during many years (from 1946 till 1963) in the Institute of Electrotechnics of Academy of Sciences of Ukraine. The same time he started his very fruitful activity in Kyiv Polytechnical Institute, that continued for about fifty years. During this period, some thousand students attended his lectures and many of them keep an indelible impression of them.

Academic career of Alexey G. Ivakhnenko also developed successfully (for the time being, however, let us speak of that later). In 1961 he was elected a Corresponding Member of Academy of Sciences of Ukrainian SSR and soon after that received an invitation from Director of just founded, first in the USSR Institute of Cybernetics of Academy of Sciences of Ukraine, Academician V.M. Glushkov, to come to this institute together with the headed by him Department. That time Alexey Grigoryevich has already become

well-known also among foreign professionals in automation. In particular, as a guest of Royal Society of London he delivered lectures in Great Britain in 1962. By his invitation "the father of cybernetics" Norbert Wiener, a well-known specialist in control theory Professor O. Smith (University of California, USA) and others visited Kyiv and delivered public lectures.

His textbook "Electric automatics", that ran through two editions and later was reprinted in China and Bulgaria gained a great popularity among students, doctor students and engineers in fifties and sixties. A significant success was also gained by his monograph "technical cybernetics" republished in several countries.

It is a difficult task to summarize briefly major scientific results obtained by Alexey Grigoryevich. Here first of all we should mention his works in the theory of combined control and invariance theory, where he further developed ideas of Professor G.V. Shchimpanov and Academicians V.S. Kulebakin and N.N. Luzin.

On initiative of Alexey Grigoryevich, in 1959 the first All-Union Meeting in invariance theory and its applications was organized in Kyiv. This meeting initiated a series of such meetings and gave an opportunity to rehabilitate works of Professor G.V. Shchimpanov. Alexey Grigoryevich remains bounded up to this scientific field during all his life.

In the middle of sixties Alexey G. Ivakhnenko makes a sharp turn in his research activity and with a great enthusiasm starts development of a new method designed mostly for construction of mathematical models of insufficiently explored complex phenomena and processes under very restricted body of experimental data of their flow, that was called by him "The Group Method of Data Handling" (GMDH). Many papers, books and dissertations of his pupils and followers have been devoted to this method.

A great contribution was brought by Alexey G. Ivakhnenko into organization and development of Kyiv local group of National Committee of the USSR for automatic control, the predecessor of present Ukrainian association for automatic control, the local organization of International Federation for Automatic Control (IFAC). For many years he was its permanent chairman.

Congratulating Alexey Grigoryevich with his jubilee, the Editorial Board of the Journal would like to remind our readers, that he was the founder of the Journal and during many years its editor-in-chief.

Speaking of Alexey G. Ivakhnenko as of an outstanding scientist, we should say of him also as of an exceptional personality. Nature generously endowed him with various talents and a very communicative and friendly character. A brilliant lecturer and speaker, Alexey Grigoryevich could not but "awake thirst of cognition" in the souls of his students and doctor students and carry them by his ideas. Talents of Alexey Grigoryevich as a personality with versatile interests and abilities were displayed not only in science. Senior people saw him in the role of King Carl XII in the well-known feature film "Peter The First".

Like many "people of sixties", Alexey Grigoryevich naively believed that Khrushchov's thaw and democracy were serious and forever. However, watchful eye of KGB fixed and did not excuse him too frank opinions of our Soviet reality and too extensive and close contacts with foreign colleagues. So, from the middle of sixties Alexey Grigoryevich for many years, up to "perestroyka" becomes the "not leaving the country" with all negative consequences implied by that.

Dear Alexey Grigoryevich, Editorial Board of the Journal once again congratulates you with your ninety years jubilee and cordially wishes you strong health, well-being and successes in your work!

Main dates of Alexey Grigoryevich Ivakhnenko

Alexey G. Ivakhnenko was born in 1913 in the town of Kobelyaki of Poltava province in the family of a teacher.

1932: graduated from Kyiv Energy College.

1934–38: study in Leningrad Electrotechnical Institute.

1938–44: work in All-Union Electrotechnical Institute, Moscow.

1944: received Candidate of Science (Ph. D) degree.

In 1944 returned back to Kyiv, was working in the Institute for Construction Mechanics, then up to 1963 in the Institute for Electrotechnics AN Ukrainian SSR.

1963: by invitation of Academician V.M. Glushkov joined Institute of Cybernetics of Ukrainian SSR.

From 1945: part-time Dotsent (Senior Lecturer), then Professor of Kyiv Polytechnical Institute.

1954: received Doctor of Science degree.

1961: elected Corresponding Member of AN Ukrainian SSR.

Up to 1989 headed Department of Combined Control Systems, from that time up to now Chief Research Fellow and Councilor of Board of Directors. From 1997 Councilor of Board of Directors of International Research and Training Center of Information Technologies and Systems of National Academy of Sciences of Ukraine and Ministry of Education and Science of Ukraine.

### **Main scientific results**

Alexey G. Ivakhnenko gained a worldwide recognition as an outstanding scientist in the field of automatic control, cybernetics and informatics. The first results of studies by Alexey G. Ivakhnenko belong to the field of electric automation. Here he developed new principles of automatic regulation of speed of electric motors and calculation of systems with magnetic amplifiers.

Accomplishments of Alexey G. Ivakhnenko in the invariance theory and in the theory of combined systems of automatic control, based on principles of compensation of measured perturbations are universally recognized.

Further development of principles of combined control in works by Alexey G. Ivakhnenko is related to the use of devices and techniques of self-tuning in control systems. He wrote the first domestic monograph in cybernetics, that was republished abroad.

For design of automatic systems, Alexey G. Ivakhnenko suggested using principles of self-learning and pattern recognition and predictive devices. He applied a system of situation recognition for construction of searchless extremal regulators.

In 1968 Journal "Avtomatica" (new title "Problemy upravleniya i informatiki") published the article by Alexey G. Ivakhnenko "The Group Method of Data Handling (GMDH), a competitor of the method of stochastic approximation". Thus began the main stage of his scientific creative work and a new scientific branch arose, heuristic self-organization of models or inductive modeling.

GMDH is a method of automatic models derivation by experimental data, that uses principles of automatic generation of variants, nonterminal decisions and successive selection. For comparison, selection and choice of the best models, external criteria, based on subdivision of a sampling into parts, are used. This method enables one to effectively solve complex actual problems of modeling and pattern recognition in ecology, hydrometeorology, economics, technology; it acquired a wide popularity both in our country and abroad as a reliable method of solution of applied problems.

At the beginning of eighties Alexey G. Ivakhnenko established an organic analogy between the problems of model construction by noised data and signal transmission through a channel with noise. Thus he has founded the theory of noise-immune modeling. Since that time development of the GMDH theory began as an inductive method of extracting knowledge from experimental data. The worldwide recognition of this method and accomplishments of its author confirmed by publishing in the USA in 1984 of a collective monograph by American and Japanese researchers in theoretical and applied problems of GMDH, devoted to the 70th anniversary of Alexey G. Ivakhnenko. Popularity of the method is confirmed by numerous publications GMDH annually appearing in journals all over the world and active daily traffic of an English Internet site [www.gmdh.net](http://www.gmdh.net).

Alexey G. Ivakhnenko never interrupted his active creative search. In 1992 his new book was published in the USA. Now he is developing resources of his method on the way of its synthesis with achievements of theory and practice of neural networks: a computational structure in the form of a neuron network, which are GMDH algorithms, becomes a network with active neurons.

Some 200 Candidate of Science (Ph.D) dissertations were prepared under supervision of Alexey G. Ivakhnenko, about 20 his pupils became Doctors of Science; thousands of students attended his lecture courses at Kyiv Polytechnical Institute. Alexey Grigoryevich published more, than 400 research papers and about 30 monographs, many of them were translated into English, German, Polish, Bulgarian and Chinese.

In 1963–1988 Alexey Grigoryevich was editor-in-chief of the Journal "Avtomatica" ("Problemy upravleniya i informatiki"), which is republished in the USA in English translation. He is one of the major organizers and participants of four All-Union Meetings in invariance theory and its applications in automatic systems, held in Kyiv in sixties.

Alexey G. Ivakhnenko is a researcher with keen feeling of new and an exceptional scientific intuition, generously generating new ideas.

### List of major monographs of Alexey G. Ivakhnenko

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6. Ivakhnenko A.G., Self-learning systems of recognition and automatic control [in Russian], Tekhnika, Kyiv, 1969.
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10. Ivakhnenko A.G., Inductive methods of self-organization of models of complex systems [in Russian], Naukova dumka, Kyiv, 1982.
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12. Self-organizing methods in modeling: GMDH type algorithms, ed. by S.J. Farlow, Marcel Decker Inc, New York, Basel, 1984.
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16. Rao H.M., Ivakhnenko A.G., Inductive learning algorithms for complex systems modeling, CRC Press, London, Tokyo, 1994.