

“the author of the unique technology” of cognitive modeling” Vetrov Anatoly Nikolaevich
www.vetrovan.(spb.)ru
RF, Saint-Petersburg city

THE APPLIED SCIENTIFIC RESEARCHES DIRECTION
“APPLICATIONS OF NANO-TECHNOLOGIES AND INFORMATION TECHNOLOGIES
IN MEDICINE” (“APNANO-T AND INFT IN M”)

OF “SEC “SFA CMT” OF “RA(M)S” N. A. ACAD. BURDENKO N.N.” (PART 1)

The developed “The applied scientific researches direction “Applications of nano-technologies and information technologies in medicine”” (“APNANO-T and INFT in M”) treats to the applied scientific researches divisions of “The scientific-educational centre “System and financial analysis based on cognitive modeling technology” of “RA(M)S” named after acad. Burdenko N.N.” (“SEC “SFA CMT” of “RA(M)S” n. a. acad. Burdenko N.N.” – SEC) as the first SEC in the structure of “SIO “Academy of cognitive natural sciences”” (“SIO “ACNS””) as the add. component of the system of science and education of the modern country for the creation, distribution and use of the main and derivative scientific results of the cognitive modeling technology (CMT) (www.vetrovan.(spb.)ru) [see the applied scientific researches directions and departments of SEC]: 1) it is executed by the principle of “administrative-economy submission”; 2) works in the several main directions, which allow to provide the development of the applied main and derivative scientific results (my second report on SRW from 2006-2008(9) y. was submitted to “SPbSETU “LETI”” and “The Government of RF” for the translation, carrying out of int. action and receiving of “The Nobel prize”); 3) includes the several various main divisions: I. “The applied scientific researches department “Applications of medical electronics, radio-technics and connection”” (“APMELR-T and CONN”) [*the applied scientific researches in area “Applications of medical electronics and radio-technics”* – usage of the theoretical bases of medical electronic technics, usage of theory of medical radio-technics, usage of theory of materials for the medical electronics and radio-technics, usage of theory of technology and equipment for the medical electronic and radio-technical production, usage of theory of designing and constructing of the medical electronic devices and radio-electronic equipment, usage of theory of medical electrical-vacuum and gas-discharge devices and units, usage of theory of medical accelerators of charged particles and plasma, usage of theory of medical solid-state devices, usage of the theoretical bases of quantum medical electronics, usage of theory of medical holography, usage of the theoretical bases of medical cryo-electronics, usage of theory of medical radio-electronic schemes, usage of theory of propagation of radio-waves in the biological construct of the organism, usage of theory of medical antennas, usage of theory of medical waveguides, usage of theory of elements of the medical microwave-technics, usage of theory of medical radio-transmitting and radio-receiving devices, usage of theory of medical radio-technical systems of sensing, location and navigation, usage of theory of medical television technics, usage of theory of recording and reproducing of the signals in medicine, usage of theory of medical electrical-acoustics, usage of theory of ultra-sound and infra-sound medical technics, usage of theory of infra-red medical technics, usage of theory of nodes, details and elements of the medical radio-electronic equipment, usage of theory of devices for the radio-technical measurements in medicine, usage of theory of medical systems and devices of the displaying of information and usage of the cognitive modeling technology in the applications of medical electronics and radio-technics;

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“The Nobel committee” (The Kingdom of Norway and The Kingdom of Sweden)

(it was submitted to “SIO “ACNS”” on the int. conf. “IQOR and D in MO: CA” on the 01st-31st of October 2020 y.)

the applied scientific researches in area "Applications of communication in medicine" – usage of the theoretical bases of communication in medicine, usage of theory of designing and constructing of the medical devices of communication, usage of theory of technology and equipment for the assembly and adjustment of the medical equipment of communication, the systems of transmission and the lines of communication, usage of theory of multi-channel communication in medicine, usage of theory of networks and modes of communication in medicine, usage of theory of the medical services and the facilities of communication in medicine, usage of theory of medical telegraph communication and equipment, usage of theory of medical systems and equipment of the transmission of data, usage of theory of medical tele-information services and equipment, usage of theory of medical telephone communication and equipment, usage of theory of medical systems of the transmitting of moving images and sound, usage of theory of medical facsimile communication and equipment, usage of theory of medical radio-communication and radio-broadcasting, usage of theory of medical light-guiding communication and equipment, usage of theory of television in medicine, usage of theory of medical optical communication in the free space and medical equipment, usage of theory of medical postal communication and usage of the cognitive modeling technology in the applications of communication in medicine].

II. "The applied scientific researches department "Applications of medical automatics, computing technics and the system analysis based on the cognitive modeling technology" ("APMAUTCT and SAB on CMT") (*)

[the applied scientific researches in area "Applications of medical automatics and computer engineering" – usage of the theoretical bases of medical automatics and computer engineering, usage of theory of automatic control in medicine, usage of the theoretical bases of programming in medicine, usage of the theoretical bases of computer engineering in medicine, usage of theory of the elements, units and devices of automatics and computer engineering in medicine, usage of theory of the devices of input-output in medicine, usage of theory of the memory devices in medicine, usage of theory of technology and equipment for the production of the medical means of automatics and computer engineering, usage of theory of the keyboard and counting-perforating machines in medicine, usage of theory of the analog calculating machines (ACM) in medicine, usage of theory of the digital calculating machines and calculating complexes (CCM) in medicine, usage of theory of the analog-digital (hybrid) calculating machines and calculating complexes in medicine, usage of theory of calculating centers (CC) in medicine, usage of theory of calculating networks (CN) in medicine, usage of theory of the software of the calculating machines, complexes and networks in medicine, usage of theory of the systems of automatic control, regulation and measurement in medicine, usage of theory of the systems of tele-control and tele-measurement in medicine, usage of theory of the automated control systems of the technological processes in medicine, usage of theory of the automated organizational managerial control systems in medicine, usage of theory of design automation in medicine, usage of theory of the automation of scientific researches in medicine and usage of the cognitive modeling technology in the applications of medical automatics and computer engineering;

the applied scientific researches in area “Applications of the system analysis in medicine” ()* – usage of the theoretical bases of the system analysis in medicine, usage of theory of tendencies, dependencies and regularities of the system analysis of the objects, processes and phenomena in medicine, usage of theory of the cognitive modeling technology with the dynamic cloning, verification and subverification in medicine, usage of theory of the iterative cycle of the cognitive modeling technology in medicine, usage of theory of the technique of use of the cognitive modeling technology in medicine, usage of theory of the parametrical cognitive models block for the system analysis of the information-educational environments in medicine and the improving of functioning efficiency of the automated training system with the properties of adaptation based on the cognitive models in medicine (the cognitive models of the subject of training and the means of training), usage of theory of the ways of representation of the structure of the cognitive models and problem environments in medicine: the formal classical of the 0th generation (the logical and production models), the non-formal classical of the 0th generation (the semantic network, the frame network and ontology), the formal new of the 0th generation (the calculus of theory of sets and corteges on domains and the innovative calculus of theory of sets and graphs), the non-formal new of the 0th generation (the multi-level structural scheme and the multi-level encapsulated pyramids combining theory of graphs and theory of sets), the flat of the 1st generation (the cognitive circle and the cognitive disc), the volumetric of the 1st generation (the cognitive cylinder, the cognitive cone and the cognitive sphere), the flat and volumetric of the 2nd generation (the one-, two-, three-, four-, five- and more cognitive circle, cognitive disc, cognitive cylinder, cognitive cone and cognitive sphere), the hybrid of the 3rd generation (the combinations of the existing cognitive models), usage of theory of the algorithms of formation of the structure of the cognitive models of the 0th, 1st, 2nd and 3rd generations in medicine, usage of theory of the techniques of research of the parameters of the cognitive models of the 0th, 1st, 2nd and 3rd generations in medicine, usage of theory of the algorithms of the analysis of the a posteriori results of research in medicine, usage of theory of the adaptive automation means of the information-educational environment in medicine (the main and applied diagnostic module, the electronic textbook, the laboratory practical work, the electronic dean's office, the electronic library and others), usage of theory of the technical means of support of the adaptive information interaction in medicine (the adaptive representation of sequence of information fragments processor, the question-answers structures sequence processing processor, the linguistic processor and others), usage of theory of statistical justification of the practical use of the obtained results in medicine, usage of theory of the factors affecting on the efficiency of formation of knowledge in the information-educational environment in medicine and the effectiveness of functioning of the complex objects, processes and phenomena in medicine, usage of theory of organization and plan of the carrying out of experiment in medicine, usage of theory of research of the parameters in medicine, usage of theory of the preliminary processing of a posteriori results of diagnostics in medicine, usage of theory of selection of the methods of the statistical analysis of the formed samples of data in medicine, usage of theory of the analysis of dynamics of the resultativity of training in medicine, usage of theory of the dispersion, regression, discriminant, cluster analysis, multidimensional scaling, factorial analysis and bibliographic lists in medicine and usage of the cognitive modeling technology in the applications of the system analysis in medicine].

The applied scientific researches directions and departments of SEC allow to develop the main and derivative scientific results of CMT.