Vetrov Anatoly Nikolaevich
www.vetrovan.spb.ru
RF, Saint-Petersburg city

THE FEATURES OF THE ELECTRONIC CARD FOR THE AUTOMATED TRAINING SYSTEM WITH THE PROPERTIES OF ADAPTATION BASED ON THE COGNITIVE MODELS

The electronic card ("iCardVAN") acts as the additional component of the automated training system with the properties of adaptation based on the parametrical cognitive models block (www.vetrovan.spb.ru):

1) it is made by the classical architecture "proto-frame↔frame-instance";

2) it is functioning in the several main modes, which allow to provide: "SMART-card" (the storage of the parameters of the parametrical cognitive models block and others); "FLASH-card" (the storage of the profile of user for the realization of wandering profile – the parameters of the operating system, programs, desktop, the folder "My documents" and others); "PROXIMITY-card" (the authentication of the user as the nominal holder of the card directly at the interaction with the physical field of the reader unit) or "TOUCH-card" (the authentication of the user as the nominal holder of the card directly at the galvanically contact with the reader unit) and others;

3) it includes the several basic elements of the modern architecture of program;

3.1) "SMART-card" (the parameters of the parametrical cognitive models block and others): the main parameters of the scientific or educational establishment (the codifiers, the name, the location, the management and others), the main parameters of the faculty (the codes, the name, the location, the management and others), the main parameters of the chair (the codes, the name, the location, the management and others), the parameters of the group of users (the codifier and the name of the group of users); the parameters of the user (the codifier, the L.F.P., the gender, the age, the password and the photo of the user), the basic parameters of the final user (the home and work address: the country, the post index, the city, the street, the house, the flat, the phone, the fax and others), the additional parameters of the user for the work in the adaptive training environment (the codifier, the name, the average value and the value of the cognitive model, the portrait, the kind of properties, the elementary property, the vector of parameters, the elementary parameter with the possibility of adding and removing of the elements), the parameters of the subject of studying (discipline) (the codifier, the name and others), the parameters of language of the information fragments (the codifier, the name and others), the parameters of the attempt of passing of the test (the codifier, the name, the date and time), the advanced parameters of the attempt of passing of the test by the final user (the quantity of correct and incorrect answers, the level of knowledge by the coarse scale, the sum of scored (penalty) points for the each (in)correct variant of answer, the estimation of knowledge by the exact scale based on the sum of scored points on the test);

the parameters of the cognitive model of the subject of training for the inf.-educational environment:
$PR_{1.1}$ "The physiological portrait of the cognitive model of the subject of training";
$KP_{1.1}$ "The sensory perception of the eye as the optical device and the biological construct";
$Pr_{1.1}$ "The visual system (the eye as the optical device and the biological construct)";
$VP_{1.1}$ "The anomalies of refraction of the eye as the optical device and the biological construct" ($P_{1.1}$ "astigmatism", $P_{1.2}$ "myopia", $P_{1.3}$ "hypermetropia" and others);
$VP_{1.2}$ "The anomalies of perception of the eye as the optical device and the biological construct" ($P_{1.4}$ "acuity of vision", $P_{1.5}$ "field of vision", $P_{1.6}$ "estimation of distance" and others);
$VP_{1.3}$ "The color vision of the eye as the optical device and the biological construct" ($P_{1.7}$ "achromasia", $P_{1.8}$ "protanopia", $P_{1.9}$ "deuteranopia", $P_{1.10}$ "tritanopia" and others);
$Pr_{1.2}$ "Acoustic analyzer (the acoustic sensory system of the subject of training)";
$VP_{1.4}$ "The functions of the external, middle and internal ear of the subject of training" ($P_{1.11}$ "absolute sensitivity", $P_{1.12}$ "thresholds of sensitivity", $P_{1.13}$ "maximal sensitivity of the acoustic sensory system" and others);
$PR_{1.2}$ "The psychological portrait of the cognitive model of the subject of training";
$KP_{1.2}$ "The intellectual abilities"; $Pr_{1.3}$ "The convergent intellectual abilities";
$VP_{1.5}$ "The level properties of intellect" ($P_{1.14}$ "verbalization", $P_{1.15}$ "deductive generalization", $P_{1.16}$ "associative combinatorics", $P_{1.17}$ "classification and reasoning", $P_{1.18}$ "mathematical analysis", $P_{1.19}$ "numerical induction", $P_{1.20}$ "mnemonic and memory", $P_{1.21}$ "plane thinking", $P_{1.22}$ "volumetric thinking" and others);
$Pr_{1.4}$ "The divergent intellectual abilities";
$VP_{1.6}$ "The verbal creativity" ($P_{1.23}$ "associativity", $P_{1.24}$ "originality", $P_{1.25}$ "uniqueness", $P_{1.26}$ "selectivity" and others);
$VP_{1.7}$ "The figurative creativity" ($P_{1.27}$ "associativity", $P_{1.28}$ "originality", $P_{1.29}$ "uniqueness", $P_{1.30}$ "selectivity" and others);
$Pr_{1.5}$ "The cognitive styles of the subject of training";
$VP_{1.8}$ "field-dependence ($P_{1.31}$) / field-independence ($P_{1.32}$)";
$VP_{1.9}$ "impulsivity ($P_{1.33}$) / reflexivity ($P_{1.34}$)";
$VP_{1.10}$ "rigidity ($P_{1.35}$) / flexibility ($P_{1.36}$)";
$VP_{1.11}$ "concretization ($P_{1.37}$) / abstraction ($P_{1.38}$)";
$VP_{1.12}$ "cognitive simplicity ($P_{1.39}$) / difficulty ($P_{1.40}$)";
$VP_{1.13}$ "categorical narrowness ($P_{1.41}$) / width ($P_{1.42}$)";
$Pr_{1.6}$ "The learning ability of the subject of training";
$VP_{1.14}$ "The kind of learning ability" ($P_{1.43}$ "implicit", $P_{1.44}$ "explicit" and others);
$PR_{1.3}$ "The linguistic portrait of the cognitive model of the subject of training";
KP_{13} "The language communication of the subject of training"; $Pr_{1.7}$ "The language of statement";
$VP_{1.15}$ "The level of proficiency" ($P_{1.45}$ "level of proficiency in the language of statement", $P_{1.46}$ "level of proficiency in the dictionary of terms and keywords", $P_{1.47}$ "level of proficiency in the elements of the interface" and others);

<u>the parameters of the cognitive model of the means of training for the inf.-educational environment:</u>
PR$_{2.1}$ "The physiological portrait of the cognitive model of the means of training";
KP$_{2.1}$ "The representation of information"; Pr$_{2.1}$ "The visual representation of information";
VP$_{2.1}$ "The parameters of background" (P$_{2.1}$ "type of pattern",
P$_{2.2}$ "color of background", P$_{2.3}$ "combination of colors" and others);
VP$_{2.2}$ "The parameters of font" (P$_{2.4}$ " headset of font",
P$_{2.5}$ "size of symbol point-type", P$_{2.6}$ "color of symbol" and others);
VP$_{2.3}$ "The color schemes" (P$_{2.7}$ "at achromasia", P$_{2.8}$ "at protanopia",
P$_{2.9}$ "at deuteranopia", P$_{2.10}$ "at tritanopia" and others);
Pr$_{2.2}$:The sound representation of information fragments";
VP$_{2.4}$ "The parameters of reproduction of the sound stream by the means of training"
(P$_{2.11}$ "volume", P$_{2.12}$ "timbre", P$_{2.13}$ "type of stream", P$_{2.14}$ "sound scheme" and others);
PR$_{2.2}$ "The psychological portrait of the cognitive model of the means of training";
KP$_{2.2}$ "The way of representation of the information by the means of training";
Pr$_{2.3}$ "The type of information"; VP$_{2.5}$ "The kind of information" (P$_{2.15}$ "textual",
P$_{2.16}$ "tabular", P$_{2.17}$ "flat scheme", P$_{2.18}$ "volumetric scheme",
P$_{2.19}$ "sound main", P$_{2.20}$ "sound accompaniment",
P$_{2.21}$ "combined scheme", P$_{2.22}$ "special scheme" and others);
Pr$_{2.4}$ "The additional capabilities of the adaptive means of training";
VP$_{2.6}$ "The additional parameters" (P$_{2.23}$ "navigation on course",
P$_{2.24}$ "addition of modules", P$_{2.25}$ "selection of the kind of information",
P$_{2.26}$ "selection of the style of representation", P$_{2.27}$ "selection of speed", P$_{2.28}$ "creative tasks",
P$_{2.29}$ "additional modules", P$_{2.30}$ "additional literature" and others);
Pr$_{2.5}$ "The style of representation by the means of training";
VP$_{2.7}$ "complete (P$_{2.31}$) / detailed representation (P$_{2.32}$)";
VP$_{2.8}$ "automatic (P$_{2.33}$) / manual switching (P$_{2.34}$)";
VP$_{2.9}$ "constant (P$_{2.35}$) / variable type of information (P$_{2.36}$)";
VP$_{2.10}$ "concretization (P$_{2.37}$) / abstraction (P$_{2.38}$)";
VP$_{2.11}$ "simplicity (P$_{2.39}$) / complexity of statement of the content (P$_{2.40}$)";
VP$_{2.12}$ "wide (P$_{2.41}$) / narrow set of terms and keywords (P$_{2.42}$)";
Pr$_{2.6}$ "The speed of representation of the information fragments";
VP$_{2.13}$ "The speed of display" (P$_{2.43}$ "fast", P$_{2.44}$ "slow" and others);
PR$_{2.3}$ "The linguistic portrait of the cognitive model of the means of training";
KP$_{23}$ "The language communication"; Pr$_{27}$ "The language of statement of the means of training"
(P$_{2.45}$ "level of statement of the material of the subject of studying (discipline)",
P$_{2.46}$ "level of statement (set) of the dictionary of terms and keywords",
P$_{2.47}$ "level of representation (set) of the elements of interface" and others);
3.2) <u>"FLASH-card"</u> – the carrier with the file system ("NTFS", "FAT32", "FAT16" and other)
allows to store the (non)protected objects (folders, files and shortcuts) of the user;
3.3) <u>"PROXIMITY" (or "Touch Memory")-card</u> – "iButton" "Dallas Semiconductor"
"DS1990A-FS" (for the access into the room), "DS1996" (for the transfer of information) and others.

The cognitive modeling technology allows to realize the system analysis of the information-educational environment and to increase the efficiency of functioning of the automated training system with the properties of adaptation based on the cognitive models of the educational establishment as the subject of the system of education of the country at the creating, distributing and using of the educational production.

The references

1. Vetrov A.N. The features of evolution of the theory of information and information technologies on a threshold of the XXIst century: the attestation work in the form of scientific monography on the rights of manuscript (philos. sciences) (spec. 01.02.01, 05.13.01, 05.13.10, 19.00.02 (19.00.03), 08.00.10) *"To the 60th anniversary of "The Victory in GPW 1941-1945 y.""* / A.N. Vetrov; "SPbSETU "LETI"". – SPb.: "SPbSETU "LETI"", 2004, M.: ""VINITI" of "RAS"", 2004, M.: "RAS", 2007, Riga: "The Lambert academic publishing" ("OMNI Scriptum publishing group"), 2018. – 141 p.

2. Vetrov A.N. The environment of automated training with the properties of adaptation based on the cognitive models: the dissertation – the attestation work (in the form of scientific monography) on the rights of manuscript (techn., phys.-mathem. and med. sciences) (spec. 05.13.01, 05.13.10, 19.00.02 (19.00.03)) / A.N. Vetrov; "The S.-Petersburg.st.un-ty". – SPb.: "SPbSETU "LETI"", 2005, M.: "RAS", 2007, SPb.: "SPbSU", 2018, 2020. – 272 p. (256 p.).

3. Vetrov A.N. The cognitive modeling technology for the financial analysis and audit of the organization: the attestation work in the form of scientific monography on the rights of manuscript (econ. sciences) (spec. 08.00.10, 08.00.12, 08.00.13, 08.00.14) / A.N. Vetrov; "SPbSETU "LETI"". – SPb.: "SPbSETU "LETI"", 2004, 2007, 2010, "IBI", 2004, 2007, 2010, "SPbSUE and F "FINEC"", 2004, 2007, 2010, "SPbSU", 2010, "SPbSEEU "INGECON"", 2010. – 352 p.

4. Vetrov A.N. Informatics: the textbook for students and pupils (techn., nat., hum., soc. and med. sciences) / A.N. Vetrov; "SPbSETU "LETI"". – SPb.: "SPbSETU "LETI"", 2005, M.: ""VINITI" of "RAS"", 2008, M.: "RAS", 2008. – 331 p.

5. Vetrov A.N. The factors of success in the educational activity of modern HEI: The tendencies of development of the information environment of remote education: the coll. scientific monography (nat., techn., hum., soc. and med. sciences) / A.N. Vetrov, N.A. Vetrov; edited by the memb.-corr. of "The int. Higher education academy of sciences" I.N. Zakharov. – SPb.: The publishing house of "IBI", 2004. – P.54-65 (13 p. from 148 p.).

6. Vetrov A.N. The factors of success in the educational activity of modern HEI: The cognitive model for the adaptive systems of remote training: the coll. scientific monography (nat., techn., hum., soc. and med. sciences) / A.N. Vetrov, E.E. Kotova; edited by the memb.-corr. of "IHEAS" I.N. Zakharov. – SPb.: The publishing house of "IBI", 2004. – P.65-78 (14 p. from 148 p.).

7. The scientific-educational portal of "AUT CMT SFA" Vetrov A.N. www.vetrovan.spb.ru.