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Fuzzy Dynamic Fuzzy Sets. Variable Fuzzy Hierarchical Dynamic Fuzzy Structures (Models, Operators) for Dynamic, Singular, Hierarchical Fuzzy Sets. FUZZY PROGRAM OPERATORS ffSprt, fftprS, ffS1epr, ffSeprt1

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Abstract

The purpose of the article is to create new constructive mathematical fuzzy objects for new technologies, in particular for a fundamentally new type of neural network with parallel computing, in particular for creating artificial intelligence, but this is not the main task of a neural network, and not with the usual parallel computing through sequential computing. Significance of the article: in a new qualitatively different approach to the study of complex processes through new mathematical, fuzzy hierarchical, fuzzy dynamic fuzzy structures, in particular those processes that are dealt with by Synergetics. Here is to create new fuzzy fprogram operators for a fundamentally new type of neural network with parallel computing, and not with the usual parallel computing through sequential computing.

Key Words: Fuzzy Hierarchical Fuzzy Structure (Operator), Fuzzy Dynamic Fuzzy Set, Fuzzy fSprt-Elements, Fuzzy Capacity, Fuzzy ftSpr- Elements, Fuzzy fS1pre - Elements, Fuzzy fSeprt^1- Elements, Fuzzy fSprt-Program Operators (ffSprt-Program Operators), Fuzzy ftprS-Program Operators (fftprS-Program Operators), Fuzzy fS^{1}epr - Program Operators (ffS^{1}epr-Program Operators), Fuzzy fSeprt$_1$- Program Operators (ffSeprt$_1$-Program Operators).

1. Introduction

There is a need to develop an instrumental mathematical base for new technologies. The task of the work is to develop new approaches for this through the introduction of new concepts and methods. Significance of the article: in a new qualitatively different approach to the study of complex processes through new mathematical, fuzzy hierarchical, fuzzy dynamic structures, in particular those processes that are dealt with by Synergetics.

We consider expression

$$\overset{C}{\underset{D}{\mu_2}}\text{ffSprt}\overset{A}{\underset{B}{\mu_1}} \quad (*_1)$$

where A fuzzy fits into B with measure of fuzziness μ_1, D is fuzzy forced out of C with measure of fuzziness μ_2. The result of this process will be described by the expression

$$\overset{C}{\underset{D}{\mu_2}}\text{ffSrt}\overset{A}{\underset{B}{\mu_1}} \quad (*_2)$$

If A, B, D, C are taken as fuzzy sets, then we will call (*1) a fuzzy dynamic fuzzy set. The need (*1) arose to describe processes in networks.

Threshold element ffSprt - $\overset{b}{\underset{\{qy\}}{\mu_2}}$ ffSprt(t) $\overset{\{a\tilde{x}\}}{\underset{b}{\mu_1}}$, b- artificial neurons of type ffSprt (designation - mnffSprt) , $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|,\dots,x_n|\mu_{\tilde{x}}(x_n)|$) is the fuzzy set of values of the initial signals, a=($a_1,a_2,\dots,a_n$) are the weights of Sit-synapses and $\tilde{y}$=($y_1|\mu_{\tilde{y}}(y_1)$, $y_2|\mu_{\tilde{y}}(y_2)|,\dots,y_n|\mu_{\tilde{y}}(y_n)|$) is the fuzzy set of values of the output signals with weights q=($q_1,q_2,\dots,q_n$). It can be considered a simpler version of the fuzzy dynamic fuzzy set

$$\mathrm{ffSprt}\,\mu\,\begin{matrix}A\\ \\ B\end{matrix}\quad (**_1)$$

where fuzzy set A fuzzy fits with measure of fuzziness μ into fuzzy set B, the result of this process will be described by the expression

$$\mathrm{ffSrt}\,\mu\,\begin{matrix}A\\ \\ B\end{matrix}\quad (**_2)\ \text{or}$$

$$\begin{matrix}B\\ \\ A\end{matrix}\,\mu\,\mathrm{ffSprt}\quad (***_1)$$

where fuzzy set A is fuzzy forced out of B with measure of fuzziness μ, the result of this process will be described by the expression

$$\begin{matrix}B\\ \\ A\end{matrix}\,\mu\,\mathrm{ffSrt}\quad (***_2)$$

We consider: the measure:

1) $\mu^{**}\left(\mu_2\begin{matrix}b\\ \\ D\end{matrix}\mathrm{ffSrt}\,\mu_1\begin{matrix}A\\ \\ b\end{matrix}\right)=\frac{\mu(A)}{\mu(D)}\frac{\mu_1}{\mu_2}$, where μ(A),μ(D) –usual measures of fuzzy sets A, D.

2) measure of fuzziness $\mu_{\overline{\mu_2 \begin{matrix}b\\D\end{matrix}\mathrm{ffSrt}\mu_1\begin{matrix}A\\b\end{matrix}}}{}^{**}\left(\mu_2\begin{matrix}b\\ \\ D\end{matrix}\mathrm{ffSrt}\,\mu_1\begin{matrix}A\\ \\ b\end{matrix}\right)=\frac{\mu_{\tilde{A}}(A)}{\mu_{\tilde{D}}(D)}\frac{\mu_1}{\mu_2}$, where $\mu_{\tilde{A}}(A)$, $\mu_{\tilde{D}}(D)$ -measures of fuzziness of fuzzy sets A, D. $\mu_{\tilde{x}}(\tilde{x})$ - measure of fuzziness of $\tilde{x}$ =($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|,\dots,x_n|\mu_{\tilde{x}}(x_n)|$) let's define it as $\frac{\mu_{\tilde{x}}(x1)+\mu_{\tilde{x}}(x2)+\cdots+\mu_{\tilde{x}}(xn)}{n}|$.

Remark. One can consider some generalization for ($*_1$), ($*_2$): $\begin{matrix}q_1(C)\\ \mu_2\\ D\end{matrix}\ \mathrm{ffSprt}\ \begin{matrix}A\\ \mu_1\\ q(B\end{matrix}$, $\begin{matrix}q_1(C)\\ \mu_2\\ D\end{matrix}\ \mathrm{ffSrt}\ \begin{matrix}A\\ \mu_1\\ q(B\end{matrix}$, where A is contained into B through q, D is forced out of C through q_1, A, B, D, C are taken as fuzzy sets. Similarly for ($**_1$), ($**_2$): ffSprt $\begin{matrix}A\\ \mu\\ q(B)\end{matrix}$,ffSrt $\begin{matrix}A\\ \mu\\ q(B)\end{matrix}$, where A is contained into B through q, for ($***_1$), ($***_2$): $\begin{matrix}q(B\\ \mu\\ A\end{matrix}$ ffSprt, $\begin{matrix}q(B\\ \mu\\ A\end{matrix}$ ffSrt, where D is displaced from C through q.

Our constructive approach to set theory differs from the construction of constructive sets by A. Mostowski we construct completely different types of constructive sets [1]. We construct new mathematical objects constructively without formalism. The formalism by its contradiction may destroy this theory in accordance with Gödel's theorem on the incompleteness of any formal theory. But in the next article we will give the formalism of the theory its due: the proof of axioms and theorems. Let us introduce the concepts fCha, the fuzzy capacity measure, and fCca, the measure of its fuzzy content. fCca is the same as the number of fuzzy capacity content items. Consider the compression ratios of the fuzzy dynamic fuzzy set: q_1=ffSprt$\mu\begin{matrix}A\\B\end{matrix}$ answers I compression power of fuzzy dynamic fuzzy set q_2= ffSprt$\mu\begin{matrix}q_1\\B\end{matrix}$ compression power of fuzzy dynamic fuzzy set A, …, q_{n+1}=ffSprt$\mu\begin{matrix}q_n\\B\end{matrix}$ –n+1 compression power of fuzzy dynamic fuzzy set A. In contrast to the classical one-attribute fuzzy set theory where only its contents are taken as a fuzzy set, we consider a two-attribute fuzzy set theory with a fuzzy set as a fuzzy capacity and separately with its contents [2,3]. We introduce the designations: CofQ—the contents of the fuzzy capacity Q. Previously the axiom of regularity (A8) is removed from the axioms of set theory, so we naturally obtain the possibility of using singularities in the form of fself- fuzzy (fuzzy sets), fself- fuzzy (fuzzy elements), which is exactly what we need for new mathematical models for describing complex processes [4-17]. Instead of the axiom of regularity, we introduce the following axioms: Axiom R1. ∀B (Srt_{CoB}^{CoB}=B). Axiom R2. ∀B (∃B^{-1}).

2. Fuzzy fSprt – Elements

2.1 Fuzzy fSprt - Elements

Definition 1.1.1. The fuzzy set of elements $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|$, ..., $x_n|\mu_{\tilde{x}}(x_n)|$) at one point q with measure of fuzziness μ of space X we shall call fuzzy fSprt– element(designation - ffSprt– element), and such a point in space is called fuzzy capacity of the ffSprt– element. We shall denote

$ffSprt\mu_q^{\tilde{x}}$. The result of this process we shall denote $ffSrt\mu_q^{\tilde{x}}$.

Definition 1.1.2. $ffSprt\mu_q^{\tilde{x}}$ — fuzzy dynamic with measure of fuzziness μ fuzzy set $\tilde{x}$ at q.

Definition 1.1.3. An ordered fuzzy set of elements at one point q in space with measure of fuzziness μ: $ffSprt\mu_q^{\vec{r}}$,$r = \tilde{x}$, is called an ordered ffSprt– element.

It's possible to $ffSrt\mu_q^{\tilde{x}}$ correspond to the fuzzy set of elements $\tilde{x}$, and to the ordered ffSprt-element - a fuzzy fvector, a fuzzy fmatrix, a fuzzy ftensor, a fuzzy directed fsegment in the case when the totality of elements is understood as a fuzzy set of elements in a fuzzy segment.

It's allowed to sum ffSprt– elements: $ffSprt\mu_q^{\tilde{x}} + ffSprt\mu_q^{\tilde{y}} = ffSprt\,\mu_q^{\tilde{x}\cup\tilde{y}}$.

These structures are more suitable for using fuzzy sets for energy space, for any objects. The operator ffSprt is adapted for ordinary energies, using their property to overlap.

2.2 Fuzzy fcapacity in Itself

Definition 1.2.1. The fuzzy fcapacity A in itself of the first type is the fuzzy capacity fuzzy containing with measure of fuzziness μ itself as an element. Denote $ffS_1 f\mu A$.

Definition 1.2.2. The fuzzy fcapacity A in itself of the second type is the fuzzy capacity that fuzzy contains with measure of fuzziness μ elements from which it can be generated. Denote $ffS_2 f\mu A$.

An example of the fuzzy capacity in itself of the first type is a fuzzy set containing itself. An example of capacity in itself of the second type is a living organism since it contains a program: DNA and RNA.

Definition 1.2.3. Fuzzy partial fcapacity A in itself of the third type is the fuzzy capacity A in itself, which partially fuzzy contains with measure of fuzziness μ itself or fuzzy contains with measure of fuzziness μ elements from which it can be generated in part or both. Let us denote $ffS_3 f\mu A$.

All fuzzy fcapacities in fuzzy fself-space are fuzzy capacities in themselves by definition. Fuzzy fcapacities in themselves can appear as fuzzy fSrt -capacities and ordinary fuzzy capacities. In these cases, the usual fuzzy measures and methods of fuzzy topology are used.

2.3 Connection of ffSprt– Elements with Fuzzy Fcapacities in Themselves

For example, $ffSrt\,\mu_{\tilde{g}\{\tilde{R}\}}^{\{\widetilde{R}\}}$ is the fuzzy fcapacity in itself of the second type if $\tilde{g}\{\tilde{R}\}$ is a fuzzy program capable of fuzzy generating $\{\widetilde{R}\}$.

Consider a third type of fuzzy fcapacity in itself. For example, based on $ffSprt\mu_q^{\tilde{x}}$, where

$\tilde{x}$=(x1|μ$_{\tilde{x}}$(x1), x2|μ$_{\tilde{x}}$(x2)|,...,xn|μ$_{\tilde{x}}$(xn)|) i.e. n - elements at one point, we can consider the fuzzy fcapacity ffS_3fμ in itself with m elements from $\tilde{x}$, m<n, which is formed according to the form:

w_{mn} = (m, (n,1)) (1)

that is, the structure $\text{ffSprt}\mu_{q}^{\tilde{x}}$ contains only m elements. Form (1) can be generalized into the following forms:

$w^1_{m,n,k} = (k, (\begin{matrix}(n_1, 1)\\(\dots)\\(n_m, 1)\end{matrix}))$ (1.1)

or

$w^2_{m,n,k} = (k, (l, \begin{matrix}(n_1)\\(\dots)\\(n_m)\end{matrix}))$ (1.2)

$w^3_{m,n,k,l} = Q((\begin{matrix}d_1\\\dots\\d_l\end{matrix}), (\begin{matrix}(n_1, 1)\\(\dots)\\(n_m, 1)\end{matrix}))$ (1.3),

where Q(x, y) – any operator, which makes a match between set $(\begin{matrix}d_1\\\dots\\d_l\end{matrix})$ and set $(\begin{matrix}(n_1, 1)\\(\dots)\\(n_m, 1)\end{matrix})$ or

$$w^4_{m,m_1,n_1,m_2,n_2,m_3,n_3} = (m, ((m_1, n_1), ((m_2, n_2), (m_3, n_3)))) \ (1.4),$$

or

(Q, R) (1.5),

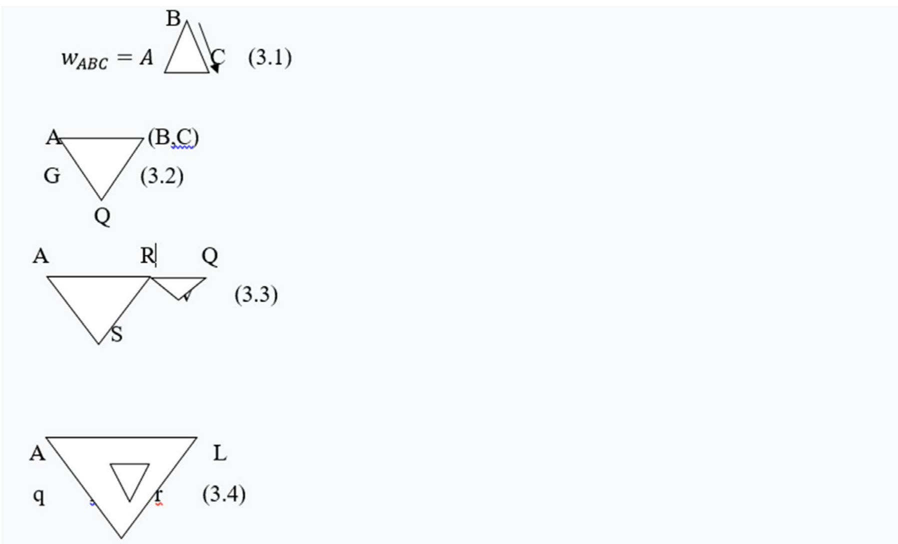
where Q – any, R – any structure, R could be anything can be anything, not just structure. In this case, (1.5) can be used as another type of transformation from Q to R. Fuzzy fcapacities in themselves of the third type can be formed for any other structure, not necessarily ffSprt, only by necessarily reducing the number of elements in the structure, in particular, using form

$$w_{m_1 \cdots m_n} = (m_1, (m_2, (\dots (m_n, 1) \dots))) \ (2)$$

Structures more complex than ffS3f can be introduced. For example, through a forms that generalizes (1):

w_{ABC}=(*A*,(*B*,*C*)) (3)

where A is fuzzy compressed (fuzzy fits) in C in the fuzzy compression fuzzy structure B in C (i.e. in the fuzzy structure $\text{ffSprt}\mu_{C}^{B}$); or



or through the more general form that generalizes (2):

$w_{A_1A_2\ldots A_nC} = (A_1, (A_2, (\ldots(A_n, C)\ldots)))$ (4)

and corresponding generalizations of (4) on (3.1) - (3.4), etc.

(3), (4) are represented through the usual 2-bond. Science is the discipline of 2-connections, since everything in science is carried out through 2-connected logic, quantum logic is also a projection of 3-connected logic onto 2-connected logic. (3.1) - (3.4) schematically interpret the fuzzy formation of fuzzy capacity in itself through a pseudo 3-connected form with a 2-connected form. The ideology of ffSprt and ffS3f can be used for programming.

Remark 1.3.1. Fuzzy self, in particular, according to a fuzzy form- fuzzy analogue of the form of type (1):

(1▌ μ_1, (2| μ_2 ,1▌ μ_3)), (1*)

μ_1(i=1,2,3)– the fuzziness of the indicated positions. For example

1) fuzzy forming from element with fuzziness μ in the form {2,1}: (1▌ μ, (2 ,1))
2) fuzzy forming from element in the form {2,1} with fuzziness μ: (1, (2 ,1)▌ μ)
3) fuzzy formation of partial self in the form (1) with fuzziness μ: (1, (2 ,1))▌μ
4) It is also possible to generalize the other remaining forms (1) – (4) to fuzzy forms
5) etc.

The energy of fuzzy self- (fuzzy containment) in itself closes on itself.

2.4 Math Fuzzy Self-Fuzzy

Let's consider ffSprt arithmetic first:

1. Simultaneous fuzzy addition of a fuzzy set of elements $\tilde{x}$=(x1|$\mu_{\tilde{x}}$(x1), x2|$\mu_{\tilde{x}}$(x2)|,…,xn|$\mu_{\tilde{x}}$(xn)|) is carried out using ffSprt $\underset{q}{\overset{\tilde{x}+}{\mu}}$ = ffSprt $\underset{q}{\overset{\{x1 * \mu_{\tilde{x}}(x1) + x2 * \mu_{\tilde{x}}(x2) + \ldots + xn * \mu_{\tilde{x}}(xn)\}}{\mu}}$.

2. Similarly, for simultaneous multiplication ffSprt $\underset{q}{\overset{\tilde{x}*}{\mu}}$: the notation of the fuzzy set B with elements $b_{i_1 i_2 \ldots i_n} =$ (ffSprt $\underset{q}{\overset{\{x_{1_{i_1}} * \mu_{\tilde{x}}\left(x_{1_{i_1}}\right) *, x_{2_{i_2}} * \mu_{\tilde{x}}\left(x_{2_{i_2}}\right) *, \ldots, x_{n_{i_n}} * \mu_{\tilde{x}}\left(x_{n_{i_n}}\right)\}}{\mu}}$ $)_R$

for any $\{i_1, i_2, \ldots, i_n\}$ without repetitions, q = $St_w{}^{\{K\}}$,K-set of any $\{k_1 *, k_2 *, \ldots, k_n *\}$ without repeating them, k_i-any digit, i=1,2,…,n, R= $St_w{}^{\{i_1+, i_2+, \ldots, i_n\}}$, R is the index of the lower discharge (we choose an index on the scale of discharges):

index	discharge
n	n
…	…
1	1
,	0
-1	1st digit to the right of the point
-2	2nd digit to the right of the point
...	...

Table 1. Index on the scale of discharges

Then ffSprt $\underset{q}{\overset{B+}{\mu}}$ gives the final result of simultaneous multiplication. Any system of calculus can be chosen, in particular binary. The most straightforward functional scheme of the assumed arithmetic-logical device for Sit-multiplication:

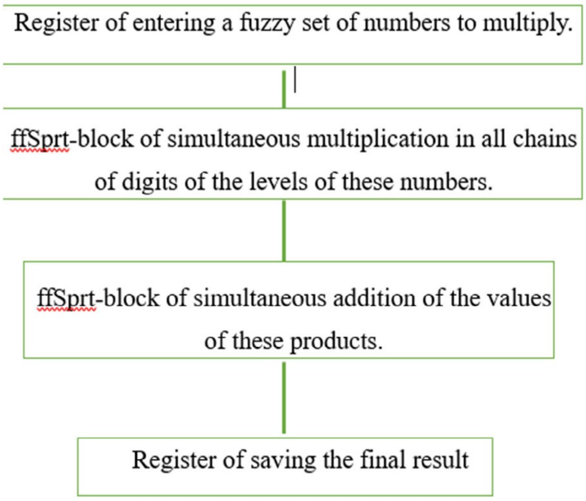


Figure 1: The straightforward functional scheme of the assumed arithmetic-logical device for ffSprt-multiplication.

Remark. The algorithm for simultaneously adding a set of numbers can also be implemented as the simultaneous addition of elements of a simultaneously formed composite matrix: a triangular matrix in which the elements of the first row are represented by multiplying the first number from the fuzzy set by the rest: each multiplication is represented by a matrix of multiplying the digits of 2 numbers, taking into account the bit depth, the elements of the second rows are represented by multiplying the second number from the fuzzy set by the ones following it, etc.

3. Similarly for simultaneous execution of various operations: ffSprt $\overset{\tilde{x}\tilde{q}}{\underset{r}{\mu}}$, where $\tilde{q}$=($q_1|\mu_{\tilde{q}}(q_1)$, $q_2|\mu_{\tilde{q}}(q_2)|, \ldots, q_n|\mu_{\tilde{q}}(q_n)|$) q_i -an operation, i = 1, …, n.

4. Similarly, for the simultaneous execution of various operators: ffSprt $\overset{\tilde{F}\tilde{x}}{\underset{r}{\mu}}$, where $\tilde{F}$=($F_1|\mu_{\tilde{F}}(F_1)$, $F_2|\mu_{\tilde{F}}(F_2)|, \ldots, F_n|\mu_{\tilde{F}}(F_n)|$) F_i is an operator, i = 1, …, n.

5. The arithmetic itself for fuzzy fcapacities in themselves will be similar: addition - $ffS_1f\mu\{\tilde{x}+\}$, (or $ffS_3f\mu\{\tilde{x}+\}$ for the third type), multiplication $ffS_1f\mu\{\tilde{x}*\}$, $(ffS_3f\mu\{\tilde{x}*\})$.

6. Similarly with different operations: $ffS_1f\mu\{\tilde{x}\tilde{q}\}$, $(ffS_3f\mu\{\tilde{x}\tilde{q}\}$, and with different operators: $ffS_1f\mu\{\tilde{F}\tilde{x}\}$, $(ffS_3f\mu\{\tilde{F}\tilde{x}\}$).

7. ffSrt $\overset{A}{\underset{B}{\mu}}$ $-$ the result of the fuzzy containment operator. For fuzzy sets A, B we have

ffSrt $\overset{A}{\underset{B}{\mu}} = \{A \cup B - A \cap B\ , D\}$, where D is fuzzy self-(fuzzy set) for $A \cap B$. There is the same for structures if it`s considered as fuzzy sets.

8. ffSprt- derivative of g($x_1, x_2, \ldots, x_n$) is ffSrt $\overset{\left\{\frac{\partial}{\partial x_{1_i}}, \frac{\partial}{\partial x_{2_i}}, \ldots, \frac{\partial}{\partial x_{k_i}}\right\}}{\underset{g(x_1,, x_2, \ldots, x_n)}{\mu}}$, where $\tilde{x}_0$=($x_{1_i}|\mu_{\tilde{x}}(x_{1_i})$, $x_{2_i}|\mu_{\tilde{x}}(x_{2_i})$, … $x_{k_i}|\mu_{\tilde{x}}(x_{k_i})$)- any fuzzy set from $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|, \ldots, x_n|\mu_{\tilde{x}}(x_n)|$) Let's designate ffSprt - $\frac{\partial^k g(x)}{\partial x_{1_i}\partial x_{2_i}\ldots\partial x_{k_i}}$. ffSprt-integral off $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$,

$\tilde{x}_0$=(x_{1_i} |$\mu_{\tilde{x}}(x_{1_i})$, x_{2_i}|$\mu_{\tilde{x}}(x_{2_i})$,... x_{k_i} |$\mu_{\tilde{x}}(x_{k_i})$)- any fuzzy set from $\tilde{x}$=(x1|$\mu_{\tilde{x}}$(x1), x2|$\mu_{\tilde{x}}$(x2)|,...,xn|$\mu_{\tilde{x}}$(xn)|) Let's designate ffSprt - $\frac{\partial^k g(x)}{\partial x_{1_i}\partial x_{2_i}...\partial x_{k_i}}$. ffSprt-integral off $\tilde{x}$=(x1|$\mu_{\tilde{x}}$(x1), x2|$\mu_{\tilde{x}}$(x2)|, ..., xn|$\mu_{\tilde{x}}$(xn)|) is ffSprt $\mu\begin{matrix}\{\int()dx_{1_i}, \int()dx_{2_i}, ..., \int()dx_{k_i}\} \\ g(\widetilde{x})\end{matrix}$, where $\tilde{x}_0$=(x_{1_i} |$\mu_{\tilde{x}}(x_{1_i})$, x_{2_i}|$\mu_{\tilde{x}}(x_{2_i})$,... x_{k_i} |$\mu_{\tilde{x}}(x_{k_i})$)- any fuzzy set from $\tilde{x}$=(x1|$\mu_{\tilde{x}}$(x1), x2|$\mu_{\tilde{x}}$(x2)|, ..., xn|$\mu_{\tilde{x}}$(xn)|). Let's designate ffSprt -$\int...\int g(\widetilde{x})dx_{1_i}dx_{2_i}...dx_{k_i}$-k-multiple fuzzy integral. ffSprt -lim off $\tilde{x}$=(x1|$\mu_{\tilde{x}}$(x1), x2|$\mu_{\tilde{x}}$(x2)|, ..., xn|$\mu_{\tilde{x}}$(xn)|) is ffSprt $\mu\begin{matrix}\left\{\lim_{x_{1_i}\to a_{1_i}}, \lim_{x_{2_i}\to a_{2_i}}, ..., \lim_{x_{k_i}\to a_{k_i}}\right\} \\ f(\widetilde{x})\end{matrix}$. Let's designate ffSprt - $\lim_{\substack{x_{1_i}\to a_{1_i} \\ \cdot\ \cdot\ \cdot \\ x_{k_i}\to a_{k_i}}} g(x_1,, x_2, ..., x_n)$. fself-$\lim_{x\to a}$ = ffSprt $\mu\begin{matrix}\lim_{x\to a} \\ \lim_{x\to a}\end{matrix}$.

9. In the case of fself- (fuzzy derivatives(designation-fderivatives)), fself is designation for fuzzy self, inclusions of multiple fuzzy fderivatives are obtained. The same is true for fself- (fuzzy integrals(designation-fintegrals)): we get inclusions of multiple fuzzy fintegrals.

10. Let's denote fself-(fself-$\tilde{Q}$) through fself^2-$\tilde{Q}$, fS(n,$\tilde{Q}$)= fself-(fself-(...(fself-$\tilde{Q}$))) = fself^n-$\tilde{Q}$ for n-multiple fuzzy self.

2.4.1 ffOperator itself

Definition 1.4.1. An operator that transforms ffSprt$\mu\begin{matrix}\tilde{x} \\ q\end{matrix}$ into any $fS_i f\mu\{\tilde{b}\}, i = 2,3$; where$\{\tilde{b}\} \subset \{\tilde{x}\}$; is the foperator itself, foperator is designation for fuzzy operator.

Example. The operator fuzzy contains the fuzzy set in itself.

2.4.2 ffLim-itself

1. ffLim-Sprt, in particular, for partial limits.

For example, the double limit:$\mathrm{fflim}_{\substack{x\to a1 \\ y\to a2}} \tilde{G}(x,y)|\mu_{\tilde{G}}$ corresponds to ffSrt $\mu\begin{matrix}\tilde{G}(x,y) \\ (a_1 a_2)\end{matrix}$.

Similarly, for fflim-Sprt with n variables.

In the case of fflim-itself, for example, for m variables, it suffices to use the forms (1), (1*) of fflim-Sprt for n variables (n>m). The same is true for integrals of variables m (for example, the double integral over a rectangular region is through the double limit).

The sequence of actions can be "collapsed" into an ordered ffSprt element, and then translate it, is the sequence of steps 1)$\frac{\partial u}{\partial x}$→ 2) $\frac{\partial}{\partial x}(\frac{\partial u}{\partial x})$. "collapses" into an ordered ffSprt $\underset{q}{\underset{\mu}{\left\{\frac{\partial u}{\partial x},\frac{\partial}{\partial x}(\frac{\partial u}{\partial x})\right\}}}$, which can be translated into the corresponding ffS_1fμ. The differential operator ffSprt $\underset{q}{\underset{\mu}{\left\{\frac{\partial u}{\partial x},\frac{\partial}{\partial x}(\frac{\partial u}{\partial x})\right\}}}$ - is interesting too.

Remark1.4.1 ffSprt-displacement of A from B with measure of fuzziness μ will be denote by $\underset{A}{\overset{B}{\mu}}$ffSprt. Then the notation $\underset{D}{\overset{C}{\mu_2}}$ffSprt$\underset{B}{\overset{A}{\mu_1}}$ is both the ffSprt-containment of A in B with measure of fuzziness μ2 and ffSprt-displacement of D from C with measure of fuzziness μ1 simultaneously.

We can consider the concept of ffSprt - element as ffSprt$\underset{B}{\overset{A}{\mu}}$, where A fuzzy fits with measure of fuzziness μ in the fuzzy capacity B. Then ffSprt$\underset{B}{\overset{B}{\mu}}$ it will mean ffS_1f μ B

2.5 About ffSprt and ffS3f programming

The ideology of ffSprt and ffS_3f can be used for programming. Here are some of the ffSprt programming operators:

1. Simultaneous fuzzy assignment of the expressions $\tilde{p}$=($p_1|\mu_{\tilde{p}}(p_1)$, $p_2|\mu_{\tilde{p}}(p_2)|,\dots,p_n|\mu_{\tilde{p}}(p_n)|$) to the variables $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|,\dots,x_n|\mu_{\tilde{x}}(x_n)|$). This is implemented via ffSprt $\underset{q}{\underset{\mu}{\{\{\tilde{x}\} := \{p\}\}}}$.
2. Simultaneous fuzzy checking the fuzzy set of conditions $\tilde{g}$=($g_1|\mu_{\tilde{g}}(g_1)$, $g_2|\mu_{\tilde{g}}(g_2)|,\dots,g_n|\mu_{\tilde{g}}(g_n)|$) for the fuzzy set of expressions $\tilde{B}$=($B_1|\mu_{\tilde{B}}(B_1)$, $B_2|\mu_{\tilde{B}}(B_2)|,\dots,x_n|\mu_{\tilde{B}}(B_n)|$) Implemented via ffSprt $\underset{q}{\underset{\mu}{IF\left\{\{\tilde{B}\}\{\tilde{g}\}\right\}\ then\ \tilde{Q}}}$. where $\tilde{Q}$ can be anything.
3. Similarly for loop operators and others.

ffS_3fμ– fuzzy software operators will differ only in that the aggregates $\{\tilde{x}\},\{\tilde{p}\},\{\tilde{B}\},\{\tilde{g}\}$ will be formed from the corresponding ffSprt program operators in form (1) or form (1.1) - (4), (1*) and analogs of forms (1.1) - (4) by type (1*) for more complex operators.

The OS (operating system), the computer's principles, and the modes of operation for this programming are interesting. But this is already the material for the following publications.

Using elements of the mathematics of ffSprt we introduce the concept of ffSprt–change in physical fuzzy quantity $\tilde{B}$: ffSprt $\underset{q}{\underset{\mu}{\{\Delta_1\tilde{B}:,\dots,\Delta_n\tilde{B}\}}}$. Then the mean ffSprt- velocity will be $\tilde{v}_{cpffst}$(t, Δt) =

ffSprt $\overset{\left\{\frac{\Delta_1\tilde{B}}{\Delta t},\dots\frac{\Delta_n\tilde{B}}{\Delta t}\right\}}{\underset{q}{\mu}}$. and ffSprt-velocity at time t:$\tilde{v}_{ffst} = \lim_{\Delta t\to 0} \tilde{v}_{\text{cp}ffst}(\text{t}, \Delta\text{t})$. ffSprt– acceleration

$a_{ffst} = \frac{d\tilde{v}_{ffst}}{dt}$.

When using ffSprt with "target weights", we get, depending on the "target weights", one or another modification, namely, for example, the velocity $\tilde{v}^{g}_{ffst}$(with a "target weight"" f in the case when two fuzzy velocities $\widetilde{v_1}, \widetilde{v_2}$ are involved in the fuzzy set $\{\widetilde{v_1}g, \widetilde{v_2}\}$ for $\tilde{v}^{g}_{ffst}$ = ffSprt $\overset{\{\widetilde{v_1}g,\widetilde{v_2}\}}{\underset{x}{\mu}}$ g – instantaneous replacement we get an instantaneous substitution $\widetilde{v_1} by\ \widetilde{v_2}$ at point x of space at time t_0.

Consider, in particular, some examples: 1) ffSprt $\overset{e}{\underset{\{x1|\mu_{\tilde{x}}(x1),\, x2|\mu_{\tilde{x}}(x2)\}}{\mu}}$ describes the fuzzy presence of the same electron e at two different fuzzy points $\{x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2)\}$. 2) The nuclei of atoms can be considered as Srt elements.

Similarly, the concepts of ffSprt- force and ffSprt- energy, for example, $E\mu^{g}_{ffsprt}$ = ffSprt $\overset{\{E_1 g, E_2\}}{\underset{x}{\mu}}$ it would mean the instantaneous fuzzy replacement of fuzzy energy E_1 by E_2 at time t_0. Two aspects of ffSprt–energy should be distinguished: 1) carrying out the desired "target weight" and 2) fixing the result of it. Do not confuse energy - ffSrt (the node of energies) with fSprt– energy that generates the node of energies, usually with the "target weights." In the case of ordinary energies, the energy node is carried out automatically.

Remark1.5.2. ffSprt– elements are all ordinary, but with "target weights," they become peculiar. Here you need the necessary energy to carry them out. As a rule, this energy is at the level of Fself. This is natural since it's much easier to manage elements of the k level via the elements of a more structured k +1 level. Let us consider the concepts of capacities of physical objects in themselves. The question arises about the fself-energy of the object. In particular, according to the results of the publication [4] - [16]: «St^{B}_{B} will mean S_1f B.». For example, St^{DNA}_{DNA} allows you to reach the level of DNA fself-energy, St^{Q}_{Q} allows you to reach the level of fself-energy Q. The law of fself-energy conservation operates already at the level of fself-energy. Also, in addition to capacities in themselves, you can consider the types of fuzzy containment of oneself in oneself: the first type of the fuzzy containment of oneself in oneself: the second type of the fuzzy containment of oneself in oneself: potentially, for example, in the form of programming oneself, the third type is partial fuzzy containment of oneself in themselves—for example, fself-operator, fself-action, whirlwind. A container fuzzy containing itself can be formed by fself-containment, i.e., fuzzy containment in oneself. Let us clarify the concept of the term fuzzy fcapacity in itself: it is a fuzzy fcapacity containing itself potentially. Consider fself-Q, where Q can be anything, including Q=fself; in particular, it can be any action. Therefore, fself-Q is when Q is fuzzy made by itself; it makes itself. There is a partial fself-Q for any Q with partial fself-fulfillment. Let's consider several examples for capacities in themselves: ordinary lightning, electric arc discharge, and ball lightning.

A fself-search of the solution of the equations $\widetilde{f_i(\tilde{x})}$=0, where i=1,2,…,n, $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$|,…,$x_n|\mu_{\tilde{x}}(x_n)$|).
will be realized in

$$\text{ffSprt}\overset{\left\{f_1(\tilde{x}) = 0?\,\tilde{x}|\mu_{\widetilde{f(\tilde{x})}}\left(\widetilde{f_1(\tilde{x})} = 0\right),\, f_2(\tilde{x}) = 0?\,\tilde{x}|\mu_{\widetilde{f(\tilde{x})}}\left(\widetilde{f_2(\tilde{x})} = 0, \dots, f_n(\tilde{x}) = 0?\,x|\mu_{\widetilde{f(\tilde{x})}}\left(\widetilde{f_n(\tilde{x})} = 0\right\}\right.\right.}{\underset{a}{\mu}}$$

or

$$\text{ffSprt}\overset{\left\{f_1(\tilde{x}) = 0|\mu_{\widetilde{f(\tilde{x})}}\left(\widetilde{f_1(\tilde{x})} = 0\right),\, f_2(\tilde{x}) = 0|\mu_{\widetilde{f(\tilde{x})}}\left(\widetilde{f_2(\tilde{x})} = 0, \dots, f_n(\tilde{x}) = 0|\mu_{\widetilde{f(\tilde{x})}}\left(\widetilde{f_n(\tilde{x})} = 0\right\}\right.\right.}{\underset{?\,\tilde{x}}{\mu}}$$

$\tilde{x}$ acquires more degree of liberty and in this is direct decision. Fself-equation for $\tilde{x}$ has its decision for $\tilde{x}$ in direct kind.

The same for ffSprt $\underset{?\tilde{x}}{\overset{\{tasks\tilde{x})\}}{\mu}}$.

Fself-task for x has its decision for x in direct kind. Fself-question has its answer for $\tilde{x}$ in direct kind. $St_{(\tilde{o},\tilde{x})}^{\{t\}}$, where $\{t\}$- time points set, $(\tilde{o},\tilde{x})$- object $\tilde{o}$ in point $\tilde{x}$ from space X, give to enter in necessary time moments. The same for $St_{\tilde{o}}^{\{t\}}$. $St_{\alpha}^{\{God-father,God-son,Holy\ Spirit\}}$is three-concept representation, where α is a point in the connectedness space. fSprt is also great for working with fuzzy structures, for example: 1) ffSprt $\underset{\tilde{B}}{\overset{\{\widetilde{strA}\}}{\mu}}$ - the fuzzy structure A that fuzzy fits into $\tilde{B}$, where $\tilde{B}$ can be any fuzzy capacity, another fuzzy structure etc. 2) ffSprt $\underset{\tilde{R}}{\overset{\{\widetilde{str_Q}\}}{\mu}}$ - fuzzy embedding fuzzy structure from Q into $\tilde{R}$. Similarly for fuzzy displacement: 1) $\underset{\widetilde{strA}}{\overset{\tilde{B}}{\mu}}$ ffSprt -displacement of fuzzy structure A from $\tilde{B}$, 2) $\underset{\widetilde{str_Q}}{\overset{\tilde{B}}{\mu}}$ ffSprt -displacement of the fuzzy structure Q from $\tilde{B}$. To work with fuzzy structures, you can introduce a special operator ffCprt: ffCprt $\underset{\tilde{B}}{\overset{\{\widetilde{strA}\}}{\mu}}$ - structures $\tilde{B}$ with the fuzzy structure A, ffCprt $\underset{\tilde{R}}{\overset{\{\widetilde{str_Q}\}}{\mu}}$ - fuzzy structures $\tilde{R}$ with the fuzzy structure from Q, $\underset{\widetilde{strA}}{\overset{\tilde{B}}{\mu}}$ ffCprt destructors $\tilde{B}$ from the fuzzy structure A, $\underset{\widetilde{str_Q}}{\overset{\tilde{B}}{\mu}}$ ffCprt destructors $\tilde{B}$ from the fuzzy structure that fuzzy structures Q.

Definition 1.5.1. A fuzzy structure with a second degree of freedom will be called fuzzy complete, i.e., "capable" of reversing itself concerning any of its elements explicitly, but not necessarily in known operators; it can form (create) new special foperators (in particular, special fuzzy functions).

In particular, ffCprt $\underset{\{\widetilde{strA}\}}{\overset{\{\widetilde{strA}\}}{\mu}}$ is such structure.

Similarly, for working with models, each is structured by its structure; for example, use ffSprt-groups, ffSprt-rings, ffSprt-fields, ffSprt-spaces, fself-fgroups, fself-frings, fself-ffields, and fself-fspaces. Like any task, this is also a fuzzy structure of the appropriate fuzzy capacity.

Fself-H (fself-hydrogen), like other fself-particles, does not exist in the ordinary, but all fself-molecules, fself-atoms, and fself-particles are elements of the fuzzy energy space.

Remark1.5.2. The concept of elements of physics fuzzy fSprt is introduced for energy space. The corresponding concept of elements of chemistry Sprt is introduced accordingly. Examples: 1) E^{g}_{ffsprt} = ffSprt $\overset{\{a_1 g, a_2\}}{\underset{x}{\mu}}$ the energy of instantaneous substitution a_1 by a_2, where a_1, and a_2 are chemical elements, g is instant replacement. Similarly,

ffSprt $\overset{\{chemical\ elements\ with\ "t}{}$one can consider for the node of chemical reactions ffSprt$\overset{arget\ w}{\underset{reaction}{\mu}}$

. The periodic table itself can also be thought of as the Srt – element:

$Srt^{\{list\ of\ chemical\ elements\}}_{Mendeleev\ table}$ The ideology of ffSprt elements allows us to go to the border of the world familiar to us, which allows us to act more effectively.

3. Fuzzy Dynamic Fuzzy Sprt – Elements

3.1 Fuzzy Dynamic Fuzzy Sprt – Elements

We considered stationary fuzzy Sprt – elements earlier. Here we consider fuzzy dynamic fuzzy Sprt – elements (designation - fdfSprt).

Definition 2.1.1. The process of fitting a fuzzy set of elements $\widetilde{x(t)}$=(x_1(t)|$\mu_{\widetilde{x(t)}}$(x_1(t)), x_2(t)|$\mu_{\tilde{x}(t)}$(x_2(t))|,...,x_n(t)|$\mu_{\widetilde{x(t)}}$(x_n(t))|). into one point q(t) of space X at time t will be called a fuzzy dynamic fSprt– element (fdfSprt). We will denote ffSprt$(t)\overset{\widetilde{x(t)}}{\underset{q(t)}{\mu(t)}}$.

Definition 2.1.2. Fuzzy fitting an ordered fuzzy set of elements into one point in space is called a fuzzy dynamic ordered fSprt–element.

It is allowed to sum fuzzy dynamic fSprt– elements:

$$\text{ffSprt}(t)\overset{\widetilde{a(t)}}{\underset{q(t)}{\mu(t)}} + \text{ffSprt}(t)\overset{\widetilde{b(t)}}{\underset{q(t)}{\mu(t)}} = \text{ffSprt}(t)\overset{\widetilde{a(t)}\cup\widetilde{b(t)}}{\underset{q(t)}{\mu(t)}}$$

3.2 Dynamic fuzzy containment of oneself

Definition 2.2.1. Fuzzy dynamic fuzzy capacity Q(t) is fuzzy fitting into Q(t).

Definition 2.2.2. Dynamic fSprt-capacity $ffSt(t)^{R(t)}_{Q(t)}$ is the process of fuzzy embedding R(t) into Q(t).

Definition 2.2.3. The dynamic fuzzy capacity A(t) fuzzy containing itself as an element of the first type is the process of fuzzy containing A(t) in A(t). Denote $ffS_1f(t)A(t)$.

Definition 2.2.4. Fuzzy dynamic fcapacity C(t) in itself of the second type is the process of fuzzy containing elements from which it can be generated. Let's denote $ffS_2f(t)C(t)$.

Definition 2.2.5. Fuzzy dynamic partial fuzzy capacity B(t) in itself of the third type is a process of partial fuzzy containment of B(t) in itself or elements from which it can be generated partially or both at the same time. Denote $ffS_3f(t)B(t)$.

All dynamic fuzzy capacities in themselves in a dynamic fself-space are, by definition, capacities in themselves. Dynamic fuzzy capacity itself can manifest itself as dynamic fSprt-capacity and ordinary dynamic fuzzy capacity. In these cases, the usual measures and methods of topology are used.

3.3 Connection of Fuzzy Dynamic fSprt– Elements with Dynamic Fuzzy Containment of Oneself

Consider third type of dynamic partial fuzzy containment of oneself. For example, based on

ffSprt$(t)\overset{\widetilde{x(t)}}{\underset{q(t)}{\mu(t)}}$, where $\widetilde{x(t)}$=($x_1(t)|\mu_{\widetilde{x(t)}}(x_1(t))$, $x_2(t)|\mu_{\tilde{x}(t)}(x_2(t))|$, ..., $x_n(t)|\mu_{\widetilde{x(t)}}(x_n(t))|$), i.e. n – elements at one point q(t), we can consider the dynamic fuzzy capacity in itself $ffS_3f(t)$ with m elements from $\widetilde{x(t)}$, m<n, which is process formed according to the form (1), that is, only m elements from $\widetilde{x(t)}$ are in the structure ffSprt$(t)\overset{\widetilde{x(t)}}{\underset{q(t)}{\mu(t)}}$.

Dynamic fuzzy containment of oneself of the third type can be formed for any other structure, not necessarily ffSprt, only through the obligatory reduction in the number of elements in the structure. In particular, using the forms (1.1) - (4), (1*) and analogs of forms (1.1) – (4) by type (1*). It is possible to introduce structures more complex than $fS_3f(t)$.

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1. The process of simultaneous fuzzy addition of a fuzzy set of elements $\widetilde{x(t)}$=($x_1(t)|\mu_{\widetilde{x(t)}}(x_1(t))$, $x_2(t)|\mu_{\widetilde{x(t)}}(x_2(t))|$,...,$x_n(t)|\mu_{\widetilde{x(t)}}(x_n(t))|$) realized by ffSprt$(t)\overset{\widetilde{x(t)}+}{\underset{w(t)}{\mu(t)}}$.

2. By analogy, for simultaneous multiplication: ffSprt$(t)\overset{\widetilde{x(t)}*}{\underset{w(t)}{\mu(t)}}$

3. Similarly for simultaneous execution of various operations: ffSprt$(t)\overset{\widetilde{x(t)}\widetilde{q(t)}}{\underset{w(t)}{\mu(t)}}$, where $\widetilde{q(t)}$=($q_1(t)|\mu_{\widetilde{q(t)}}(q_1(t))$, $q_2(t)|\mu_{\widetilde{q(t)}}(q_2(t))|$, ..., $q_n(t)|\mu_{\widetilde{q(t)}}(q_n(t))|$), $q_i(t)$-an operation, i = 1, …, n.

4. Similarly, for the simultaneous execution of various operators: ffSprt$(t)\overset{\widetilde{F(t)}\widetilde{x(t)}}{\underset{w(t)}{\mu(t)}}$ where $\widetilde{F(t)}$=($F_1(t)|\mu_{\widetilde{F(t)}}(F_1(t))$, $F_2(t)|\mu_{\widetilde{F(t)}}(F_2(t))|$,...,$F_n(t)|\mu_{\widetilde{F(t)}}(F_n(t))|$), $F_i(t)$ is an operator, i = 1,…,n.

5. Dynamic arithmetic fuzzy itself for containments of oneself will be similar: dynamic addition - $ffS_1f(t)\mu(t)\{\widetilde{x(t)}+\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{x(t)}+\}$ for the third type), dynamic multiplication $ffS_1f(t)\mu(t)\{\widetilde{x(t)}*\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{x(t)}*\}$

6. Similarly with different fuzzy operations: $ffS_1f(t)\mu(t)\{\widetilde{x(t)}\widetilde{q(t)}\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{x(t)}\widetilde{q(t)}\}$) and with different fuzzy operators: $ffS_1f(t)\mu(t)\{\widetilde{F(t)}\widetilde{x(t)}\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{F(t)}\widetilde{x(t)}\}$).

7. $\text{ffSprt}(t)\underset{\widetilde{B(t)}}{\overset{\widetilde{A(t)}}{\mu(t)}}$ gives the result

$$\text{ffSrt}(t)\underset{\widetilde{B(t)}}{\overset{\widetilde{A(t)}}{\mu(t)}} = \{\widetilde{A(t)} \cup \widetilde{B(t)} - \widetilde{A(t)} \cap \widetilde{B(t)}, D(t)\}$$ for fuzzy sets $\widetilde{A(t)}, \widetilde{B(t)}$, where $\widetilde{D(t)}$ is fself- (fuzzy set) for $\widetilde{A(t)} \cap \widetilde{B(t)}$. The same is true for structures if they are treated as fuzzy sets.

8. Similarly, for fuzzy dynamic fSit-derivatives, fuzzy dynamic fSit-integrals, fuzzy dynamic fSit-lim, dynamic fself- (fuzzy derivatives), dynamic fself- (fuzzy integrals)

9. Denote dynamic fself-(dynamic fself-Q(t)) through dynamic fself^2-Q(t) , fgS(t)(n,Q(t))= dynamic fself-(dynamic fself-(…(dynamic fself-Q(t)))) = dynamic fself^n-Q(t) for n-multiple dynamic fself.

Remark 2.4.1. The fuzzy dynamic fSprt-displacement of A(t) from B(t) will be denote by $\underset{A(t)}{\overset{B(t)}{\mu}}$ ffSprt(t) . Then the notation $\underset{D(t)}{\overset{C(t)}{\mu_2(t)}}\text{ffSprt(t)}\underset{B(t)}{\overset{A(t)}{\mu_1(t)}}$ is fuzzy dynamic fSprt-containment of A(t) in B(t) and fuzzy dynamic fSprt-displacement of D(t) from C(t) simultaneously. Denote $\underset{A(t)}{\overset{B(t)}{\mu_2(t)}}\text{ffSprt(t)}\underset{B(t)}{\overset{A(t)}{\mu_1(t)}}$ by $fTfS(t)_{B(t)}^{A(t)}$, $\underset{A(t)}{\overset{A(t)}{\mu_2(t)}}\text{ffSprt(t)}\underset{A(t)}{\overset{A(t)}{\mu_1(t)}} - through\ \ fTfS(t)_{A(t)}^{A(t)}$. We can consider the concept of fuzzy dynamic fSprt- element as $\text{ffSprt}(t)\underset{\widetilde{B(t)}}{\overset{\widetilde{A(t)}}{\mu(t)}}$, where $\widetilde{A(t)}$ fits in fuzzy dynamic fuzzy capacity $\widetilde{B(t)}$. Then $\text{ffSprt}(t)\underset{\widetilde{B(t)}}{\overset{\widetilde{B(t)}}{\mu(t)}}$ will mean $\text{ffS}_1\text{f(t)}\widetilde{B(t)}$. Denote $\text{ffSprt}(t)\underset{\widetilde{B(t)}}{\overset{\widetilde{B(t)}}{\mu(t)}}$ by ffL(t)(B(t)). $\underset{A(t)}{\overset{A(t)}{\mu}}$ ffSprt(t) denotes the fuzzy dynamic expelling fuzzy A(t) oneself out of oneself, $\underset{A(t)}{\overset{A(t)}{\mu_2(t)}}\text{ffSprt(t)}\underset{A(t)}{\overset{A(t)}{\mu_1(t)}}$ —simultaneous fuzzy dynamic containment fuzzy A(t) of oneself in oneself and fuzzy dynamic expelling fuzzy A(t) oneself out of oneself. $\underset{A(t)}{\overset{A(t)}{\mu}}$ ffSprt(t)will be called fuzzy dynamic anti- (fuzzy capacity) from oneself. For example, "white hole" in physics is such simple anti-(fuzzy capacity). The concepts of "white hole" and "black hole" were formulated by the physicists based on the subject of physics –the usual energies level. Mathematics allows you to deeply find and formulate the concept of singular points in the Universe based on the levels of more subtle energies. The experiments of the 2022 Nobel laureates Asle Ahlen, John Clauser, Anton Zeilinger correspond to the concept of the Universe as a capacity in itself. The energy of fself-containment in itself is closed on itself.

Hypothesis: the containment of the galaxy in oneself as a spiral curl and the expelling out of oneself defines its existence. A fself-capacity in itself as an element A is the god of A, the fself-capacity in itself as an element the globe—the god of the globe, the

fself-capacity in itself as an element man-- the god of the man, the fself-capacity in itself as an element of the universe-- the god of the universe, the containment of A into oneself is spirit of A, the containment of the Earth into oneself is is spirit of Earth, the containment of the man into oneself is spirit of the man (soul), the containment of the universe into oneself is spirit of the universe. We may consider the following axiom: any fuzzy capacity is the fuzzy capacity of oneself. This is for each energy fuzzy capacity.
Remark 2.4.2. With the help of fuzzy dynamic fSprt-elements, the concepts of fuzzy dynamic

fSprt- force, fuzzy dynamic fSprt– energy are introduced. For example ffE$(t)\,\mu(t)\begin{matrix}\tilde{g}\\ \\ prst\end{matrix} =$

$fSt(t)_{x(t)}$ ffSprt$(t)\begin{matrix}\{ffE_1(t)\tilde{g}, ffE_2(t)\}\\ \mu(t)\\ \widetilde{w(t)}\end{matrix}$. will mean the process of instantaneous replacement $\tilde{g}$

of energy ffE$_1$(t) by ffE$_2$(t) at time t. Similarly, using $ffS_if(t)\mu(t)$, the concepts of ffS$_i$f(t)$\mu(t)$-force, ffS$_i$f(t)$\mu(t)$-energy, i=1,2,3, and etc are introduced.

Remark 2.4.3. It is the fuzzy containment of oneself in oneself that can “give birth” to the fcapacities in itself – that is what fself-organization is.

Remark 2.4.4. ffSprt$(t)\begin{matrix}\text{ffSprt}(t)\,\mu(t)\begin{matrix}\widetilde{B(t)}\\ \\ \widetilde{B(t)}\end{matrix}\\ \mu(t)\\ \text{ffSprt}(t)\,\mu(t)\begin{matrix}\widetilde{B(t)}\\ \\ \widetilde{B(t)}\end{matrix}\end{matrix}$ can increase fself- level of $\widetilde{B(t)}$.

Remark 2.4.5. For example, the foperator itself is ffS$_1$f(t)$\mu(t)$.

Remark 2.4.6. May be considered the following derivatives: $\frac{d\,ff\text{Sprt}(t)\,\mu(t)\begin{matrix}\widetilde{A(t)}\\ \\ \widetilde{B(t)}\end{matrix}}{dt}$,

$\frac{d\ \mu\begin{matrix}B(t)\\ \\ A(t)\end{matrix}\ \text{ffSprt(t)}}{dt}$, $\frac{d\mu_2(t)\begin{matrix}C(t)\\ \\ D(t)\end{matrix}\text{ffSprt(t)}\mu_1(t)\begin{matrix}A(t)\\ \\ B(t)\end{matrix}}{dt}$, $\frac{\text{dffS}_i\text{f(t)}\mu(t)-}{dt}$, i=1,2,3.

Remark 2.4.7. It is the fuzzy containment of oneself in itself as an fuzzy element that can be interpreted as fuzzy dynamic fuzzy capacities in itself.

Remark 2.4.8. Not every fuzzy capacity fuzzy containing itself as an element will manifest itself as a sedentary fuzzy capacity or fuzzy capacity.

3.5 About Fuzzy Dynamic fSprt and ffS$_3$f(t) Programming

The ideology of fuzzy dynamic fSprt and ffS$_3$f(t) can be used for programming:

1. The process of simultaneous fuzzy assignment of the fuzzy expressions $\widetilde{p(t)}$=(p$_1$(t)|$\mu_{\widetilde{p(t)}}$(p$_1$(t)), p$_2$(t)|$\mu_{\widetilde{p(t)}}$(p$_2$(t))|,...,p$_n$(t)|$\mu_{\widetilde{p(t)}}$(p$_n$(t))|) to the fuzzy variables $\widetilde{x(t)}$=(x$_1$(t)|$\mu_{\widetilde{x(t)}}$(x$_1$(t)), x$_2$(t)|$\mu_{\tilde{x}(t)}$(x$_2$(t))|,...,x$_n$(t)|$\mu_{\widetilde{x(t)}}$(x$_n$(t))|). This is implemented via

ffSprt$(t)\begin{matrix}\left\{\widetilde{\{\widetilde{x(t)}\} \coloneqq \{\widetilde{p(t)}\}}\right\}\\ \mu(t)\\ \widetilde{w(t)}\end{matrix}$.

2. The process of simultaneous checking the fuzzy set of conditions $\widetilde{g(t)}$=(g1(t)|$\mu_{\widetilde{g(t)}}$(g1(t)), g2(t)|$\mu_{\widetilde{g(t)}}$(g2(t))|,...,gn(t)|$\mu_{\widetilde{g(t)}}$(gn(t))|) for the fuzzy set of expressions $\widetilde{B(t)}$=(B1(t)|$\mu_{\widetilde{B(t)}}$(B1(t)), B2(t)|$\mu_{\tilde{B}(t)}$(B2(t))|,...,Bn(t)|$\mu_{\widetilde{B(t)}}$(Bn(t))|). Implemented via $fSt(t)_{w(t)}$

$$\text{ffSprt}(t)\begin{matrix} IF\left\{\{\widetilde{B(t)}\}\{\widetilde{\tilde{g}(t)}\}\right\}\ then\ \widetilde{Q(t)} \\ \mu(t) \\ \widetilde{w(t)} \end{matrix}$$ where $\widetilde{Q(t)}$ can be anything.

3. Similarly for fuzzy loop operators and others.

$ffS_3f(t)\mu(t)$– fuzzy fsoftware operators will differ only just because aggregates $\widetilde{x(t)}, \widetilde{p(t)}, \widetilde{B(t)}, \widetilde{g(t)}$ will be formed from corresponding processes by ffSprt-program operators in form (1) for more complex operators in forms (1.1) - (4), (1*) and analogs of forms (1.1) - (4) by type (1*).

4. ffSprt – Elements for Continual Fuzzy Sets

4.1 ffSprt – Elements for Continual Fuzzy Sets

Earlier, we considered finite-dimensional discrete ffSprt-elements and fself- (fuzzy capacities) in itself as an element. Here we believe some continual ffSprt-elements and continual fself- (fuzzy capacities) in themselves as an element.

Definition 3.1.1. The fuzzy set of continual elements $\tilde{x}$=(x1|$\mu_{\tilde{x}}$(x1), x2|$\mu_{\tilde{x}}$(x2)|,...,xn|$\mu_{\tilde{x}}$(xn)) at one point w of space X with measure of fuzziness μ will be called continual ffSprt – element, and such a point in space will be called fuzzy fcapacity of the continual ffSprt – element. We will denote

$$\text{ffSprt}\begin{matrix}\tilde{x}\\ \mu\\ w\end{matrix}.$$

Definition 3.1.2

An ordered fuzzy set of continual elements at one point in space with measure of fuzziness μ is called an ordered continual ffSprt– element.

It's allowed to sum continual ffSprt – elements: $\text{ffSprt}\begin{matrix}\tilde{x}\\ \mu\\ w\end{matrix} + \text{ffSprt}\begin{matrix}\tilde{r}\\ \mu\\ w\end{matrix} = \text{ffSprt}\begin{matrix}\tilde{x}\cup\tilde{r}\\ \mu\\ w\end{matrix}$, where some or any elements may be ordered elements.

Definition 3.1.3

The continual fself- (fuzzy capacity) A in itself as an element of the first type is the fuzzy capacity containing itself as an element. Denote fS_1fA.

Definition 3.1.4

The ordered continual fself- (fuzzy capacity) A in itself as an element of the first type is the ordered fuzzy capacity containing itself as an element. Denote $ff\overrightarrow{S_1fA}\mu$.

For example, fS_∞^+=(sin∞|$\mu_{\widetilde{\sin\infty}}$(sin∞)) is of this type. It denotes continual ordered fself- (fuzzy capacities) in itself as an element of following type—the fuzzy range of simultaneous "activation" of fuzzy numbers from [-1,1] in mutual directions: ↑ I $\downarrow_{-1}^{1}$. Also consider the following elements: , fS_∞^-=(sin-∞|$\mu_{\widetilde{\sin-\infty}}$(sin-∞)) -↓ I $\uparrow_{-1}^{1}$, , fT_∞^+=(tg∞|$\mu_{\widetilde{tg\infty}}$(tg∞)) -↑ I $\downarrow_{-\infty}^{\infty}$, fT_∞^-=(tg-∞|$\mu_{\widetilde{tg-\infty}}$(tg-∞))

-↓ I $\uparrow_{-\infty}^{\infty}$, don't confuse with values of these functions. Such elements can be summarized. For example: afS_{∞}^{+}+bfS_{∞}^{-}=(a-b)$fS_{\infty}^{+} = (b-a)\ fS_{\infty}^{-}$, if fS_{∞}^{+} and fS_{∞}^{-} have the same fuzzy structure of the fuzzy range from [-1,1].

Definition 3.1.5

The continual fself-(fuzzy capacity) A in itself, as an element of the second type, is the fuzzy capacity containing fuzzy elements from which it can be generated. Let's denote $fS_2 fA\mu$.

An example of continual fself-capacity in itself as an element of the second type is a living organism since it contains the programs: DNA and RNA.

Definition 3.1.6

Partial continual fself- (fuzzy capacity) A in itself as an element of the third type is called continual (fself- fuzzy capacity) in itself as an element that partially contains itself or contains fuzzy elements from which it can be generated in part or both simultaneously. Denote $ffS_3 fA\mu$.

Also, may be considered operators for them. For example:

$$gS_{\infty}^{+}(t-t_0) = \begin{cases} fS_{\infty}^{+}, t = t_0 \\ 0, t \neq t_0 \end{cases}$$

You can set the fself- vector: ↑ $\begin{pmatrix} q \\ d \\ c \end{pmatrix}$ ↓

All continual capacities in fself-space are continual fself-capacities in itself as an element by definition. The continual fself-capacities in itself as an element may appear as continual Sit- capacities and usual continual capacities. In these cases, there are used typical measure and topology methods.

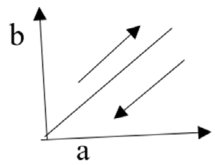

Figure 2. Self-vector $[(0,0), \overset{\rightarrow}{\underset{\leftarrow}{(a, b)}}]$

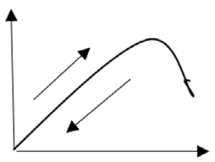

Figure 3. Self-ordered curve

4.2 The Connection Of Continual ffSprt – Elements with Continual fself- (Fuzzy Capacities) in Themselves as an Element

Consider a third type of continual fself- (fuzzy capacity) in itself as an element. For example, based on ffSprt$\mu_{w}^{\tilde{x}}$, where $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|,\ldots,x_n|\mu_{\tilde{x}}(x_n)$), i.e. x_i - continual elements at one point, i=1, 2, …, n. The continual fself- (fuzzy capacity) in itself as an element with m continual elements from $\tilde{x}$, at m<n, can be considered as ffS_3f, which is formed by the form (1), i.e., only m continual elements are located in the structure ffSprt$\mu_{w}^{\tilde{x}}$. Continual fself- (fuzzy capacities) in itself as an element of the third type can be formed for any other structure, not necessarily fuzzy fSprt, only by obligatory reducing the number of continual elements in the structure. In particular, using the forms (1.1) – (4). Structures more complex than ffS_3f can be introduced.

4.3 Mathematics Fuzzy itself for Continual ffSprt-Elements

1.Simultaneous addition of the continual elements of the fuzzy set $\tilde{x}$=(x$_1$|$\mu_{\tilde{x}}$(x$_1$), x$_2$|$\mu_{\tilde{x}}$(x$_2$)|,...,x$_n$|$\mu_{\tilde{x}}$(x$_n$)) is implemented using ffSprt $\underset{w}{\overset{\tilde{x}\cup}{\mu}}$.

2. By analogy, for simultaneous multiplication: ffSprt $\underset{w}{\overset{\tilde{x}\cap}{\mu}}$.

3. Similarly, for simultaneous execution of various operations: ffSprt $\underset{w}{\overset{\tilde{x}\tilde{q}}{\mu}}$, where $\tilde{q}$=(q$_1$|$\mu_{\tilde{q}}$(q$_1$), q$_2$|$\mu_{\tilde{q}}$(q$_2$)|, ..., q$_n$|$\mu_{\tilde{q}}$(q$_n$)), q$_i$ -an operation, i = 1, …, n.

4. Similarly, for the simultaneous execution of various operators: ffSprt $\underset{w}{\overset{\tilde{F}\tilde{x}}{\mu}}$, where $\tilde{F}$=(F$_1$|$\mu_{\tilde{F}}$(F$_1$), F$_2$|$\mu_{\tilde{F}}$(F$_2$)|, ..., F$_n$|$\mu_{\tilde{F}}$(F$_n$)),F$_i$ is an operator, i = 1, …, n.

5. For continual fself-fcapacities in themself as an element will be similar: addition - $ffS_1f\mu\{\tilde{x}+\}$, (or $ffS_3f\mu\{\tilde{x}+\}$ for the third type), multiplication $ffS_1f\mu\{\tilde{x}*\}$, (or $ffS_3f\mu\{\tilde{x}*\}$.

6. Similarly with different operations: $ffS_1f\mu\{\tilde{x}\tilde{q}\}$, $(ffS_3f\{\tilde{x}\tilde{q}\})$, and with different operators: $ffS_1f\mu\{\tilde{F}\tilde{x}\}$, $(ffS_3f\mu\{\tilde{F}\tilde{x}\})$.

7. ffSrt$\underset{B}{\overset{A}{\mu}}$ $-$ is the result of the fuzzy containment operator. For fuzzy sets A, B we have

ffSrt$\underset{B}{\overset{A}{\mu}}$ $=\{A\cup B-A\cap B\,,D\}$, where D is fself-(fuzzy set) for $A\cap B$. The same is true for structures if they are treated as fuzzy sets.

Remark 3.3.1. ffSprt-displacement of A from B with measure of fuzziness μ will be denoted by $\underset{A}{\overset{B}{\mu}}$ffSprt. Then the notation $\underset{D}{\overset{C}{\mu_2}}$ffSprt$\underset{B}{\overset{A}{\mu_1}}$ is fSprt-containment of A in B with measure of fuzziness μ_1, and fSprt-displacement of D from C with measure of fuzziness μ_2, simultaneously. Denote $\underset{A}{\overset{B}{\mu_2}}$ffSprt$\underset{B}{\overset{A}{\mu_1}}$ by $fTfS_B^A$, $\underset{A}{\overset{A}{\mu_2}}$ffSprt$\underset{A}{\overset{A}{\mu_1}}$ $-through$ $fTfS_A^A$. Three in one is $St_\propto^{\{\infty\ in\ itself, an\ element\ that\ is\ not\ anyone's\ element, 0\ out\ oneself\}}$, α- point space connectedness.

We can consider the concept of a continual fuzzy Sit - element as ffSprt$\underset{B}{\overset{A}{\mu}}$, where A fits with measure of fuzziness μ in continual fuzzy capacity B. Then ffSprt$\underset{B}{\overset{B}{\mu}}$ will mean ffS$_1$fμB.

These elements are used for ffSprt-coding, ffSprt-translation, fuzzy coding fself, and fuzzy translation fself for networks, which is suitable for electric current of ultrahigh frequency. More complex elements can be considered as continual sets of numbers with their " activation " in mutual directions. For example, ranges of function values, particularly those representing the shape of lightning. Differential geometry can be applied here. Also, n-dimensional elements can be considered. The space of such elements is Banach space if we introduce the usual norm for functions or vectors. We call this space - fSelb-space. Then we introduce the scalar product for functions or vectors and get the Hilbert space. We call this space fSelh-space. In particular, one can try to describe some processes with these elements by differential equations and use methods from [18]. You can also try to optimize and research some processes with these elements using the techniques from [19]. Let's introduce operators for transforming fuzzy capacity to fself-(fuzzy capacity) in itself as an element: fQ$_1$Sfμ(A) transforms A to ff$_1$SfμA, fQ$_0$S(A) transforms A to

μ_{A}^{A}ffSprt, fSOfμ(A) transforms A to$\uparrow ffA\downarrow$,$\uparrow ffA\downarrow$ -- ordered fself-fuzzy capacity in itself as an element of simultaneous "activation" of all elements of A in mutual directions. For example, fSOfμ([-1,1]) = $ff\mu S_{\infty}^{+}$, fSOfμ([1,-1]) = fS_{∞}^{-} , fSOfμ([-∞,∞])= fT_{∞}^{+}, fSOfμ([∞,-∞])= fT_{∞}^{-}. The operator (fQ$_1$Sfμ(A))^2 increases fself- (fuzzy level) for A: it transforms fself-fA= ff$_1$SfμA to fself^2-ffμA, (fQ$_1$Sfμ(A))^n → fself^n-ffμA, $e^{fQ_1 \mathrm{Sf}\mu(\mathrm{A})} \rightarrow e^{\mathrm{ff}\mu\mathrm{self}} - ff\mu A$. Let us introduce the following notations: $\mu_{(A,A)}^{A}$ ffSprt by 2fμoself-fA, $fSt_{A}^{(A,A)}$ ffSprt $\mu_{A}^{(A,A)}$ by 2fμself-fA, ffSprt $\mu_{(A,A)}^{A}$ by 1/2fμself-fA, ffSprt $\mu_{q(A)}^{A}$ by qfμself-fA, $\mu_{q(A)}^{A}$ ffSprt by q()fμoself-fA, q-any operator, $\mu_{(q_1,\dots,q_N))}^{A}$ ffSprt by Nfμoself-fA, q$_i$= A, i= 1, …, N; μ_{1A}^{A}ffSprtμ_{1A}^{A} by f$\mu_1$self-fA- f$\mu_1$oself-fA, $\mu_{1\,q_3(A)}^{q_2(A)}$ ffSprt $\mu_{1\,q_1(A)}^{A}$ by q$_1$f$\mu_1$self-fA- $\binom{q_3()}{q_2()}$f$\mu_1$oself-fA, $\mu_{(A,A)}^{A}$ ffCprt by 2Cfμoself-fA, ffCSprt $\mu_{A}^{(A,A)}$ by 2Cfμself-fA, ffCSprt $\mu_{(A,A)}^{A}$ by 1/2Cfμself-fA, $fCt_{q(A)}^{A}$ by qCfμself-fA, $\mu_{q(A)}^{A}$ ffCprt by q()Cfμoself-fA, q-any operator, $\mu_{(q_1,\dots,q_N))}^{A}$ ffCprt by NCfμoself-fA, q$_i$= A, i= 1, …, N; μ_{1A}^{A}ffCSprtμ_{1A}^{A} by Cf$\mu_1$self-fA- Cf$\mu_1$oself-fA, $\mu_{1\,q_3(A)}^{q_2(A)}$ ffCprt $\mu_{1\,q_1(A)}^{A}$ by q$_1$Cf$\mu_1$self-fA- $\binom{q_3()}{q_2()}$ $Cf\mu_1$oself-fA, ffS2prtμ_{A}^{A} = (fμself-fA, fμself-fA), ffSNprtμ_{A}^{A} = (q$_1$, …, q$_N$), q$_i$= fμself-fA, i= 1, …, N. fμself(ffSprtμ_{B}^{A})= ffSprt $\mu_{\mathrm{ffSprt}\mu_{B}^{A}}^{\mathrm{ffSprt}\mu_{B}^{A}}$. Can be considered Q(μ_{1A}^{A}ffSprtμ_{1A}^{A}), Q-any operator.

5. Fuzzy Dynamic Continual Fuzzy Sprt – Elements

5.1 Fuzzy Dynamic Continual Fuzzy Sprt – Elements

Definition 4.1.1. The process of fuzzy containing with measure of fuzziness μ in the fuzzy set of continual elements $\widetilde{x(t)}$=(x$_1$(t)|$\mu_{\widetilde{x(t)}}$(x$_1$(t)), x$_2$(t)|$\mu_{\tilde{x}(t)}$(x$_2$(t))|,…,x$_n$(t)|$\mu_{\widetilde{x(t)}}$(x$_n$(t))|) at one point w of the space X at time will be called the fuzzy dynamic continual fuzzy Sprt – element. We will denote

ffSprt$(t)\mu(t)_{q(t)}^{\widetilde{x(t)}}$.

Definition 4.1.2. The process of fuzzy containing with measure of fuzziness μ an ordered fuzzy set of continual elements at one point in space is called fuzzy dynamic continual ordered fuzzy Sit – element.
It is allowed to sum fuzzy dynamic continual fSprt– elements:

$$\text{ffSprt}(t)\begin{matrix}\widetilde{a(t)}\\ \mu(t)\\ q(t)\end{matrix} + \text{ffSprt}(t)\begin{matrix}\widetilde{b(t)}\\ \mu(t)\\ q(t)\end{matrix} = \text{ffSprt}(t)\begin{matrix}\widetilde{a(t)}\cup\widetilde{b(t)}\\ \mu(t)\\ q(t)\end{matrix}$$

5.2 Dynamic continual fuzzy containment of oneself in oneself as an element

Definition 4.2.1. The fuzzy dynamic continual fuzzy capacity Q(t) is called the process of fuzzy embedding in Q(t).

Definition 4.2.2. The fuzzy dynamic continual fSit-capacity $\text{ffSprt}(t)\begin{matrix}\widetilde{R(t)}\\ \mu(t)\\ Q(t)\end{matrix}\ fSt(t)_{Q(t)}^{R(t)}$ is called the process of fuzzy embedding $\widetilde{R(t)}$ in Q(t).

Definition 4.2.3. The dynamic fuzzy containment fuzzy continual A(t) of oneself of the first type is the process of fuzzy putting A(t) into A(t). Denote $fS_1f(t)\mu(t)A(t)$.

Definition 4.2.4. We will call a dynamic fuzzy embedding of a fuzzy continual C(t) into itself a dynamic fuzzy embedding of the second type if it contains fuzzy dynamic continual elements from which it can be generated. Denote $fS_2f(t)\mu(t)C(t)$.

5.3 The Connection of Fuzzy Dynamic Continual fSprt– Elements with Dynamic Fuzzy Containment of Oneself in Oneself as an Element

Let us consider the partial dynamic continual fuzzy containment of oneself in oneself as an element of the third type. For example, based on $\text{ffSprt}(t)\begin{matrix}\widetilde{x(t)}\\ \mu(t)\\ w(t)\end{matrix}$, where $\widetilde{x(t)}$=(x1(t)|$\mu_{\widetilde{x(t)}}$(x1(t)), x2(t)|$\mu_{\tilde{x}(t)}$(x2(t))|,...,xn(t)|$\mu_{\widetilde{x(t)}}$(xn(t))|), i.e. n - continual elements at one point x, one can consider the fuzzy dynamic containment $fS_3f(t)\mu(t)$ of oneself in oneself as an element with m continual elements from $\widetilde{x(t)}$, m<n, which is a process that is necessary form according to the form (1), i.e. only m continual elements from $\widetilde{x(t)}$ are located in the structure $\text{ffSprt}(t)\begin{matrix}\widetilde{x(t)}\\ \mu(t)\\ w(t)\end{matrix}$.

Dynamic continual fuzzy containments of oneself in oneself as an element of the third type can be formed for any other structure, not necessarily fSprt, only by necessarily reducing the number of continual elements in the structure. In particular, with the help of forms (1.1) – (4). It is possible to introduce structures more complex than $fS_3f(t)\mu(t)$.

5.4 Dynamic Fuzzy Continual Mathematics fself

1. The process of simultaneous fuzzy addition of the fuzzy set of continual elements $\widetilde{x(t)}$=(x1(t)|$\mu_{\widetilde{x(t)}}$(x1(t)), x2(t)|$\mu_{\tilde{x}(t)}$(x2(t))|, ..., xn(t)|$\mu_{\widetilde{x(t)}}$(xn(t))|) is realized by $\text{ffSprt}(t)\begin{matrix}\widetilde{x(t)}\cup\\ \mu(t)\\ w(t)\end{matrix}$.

2. By analogy, for simultaneous fuzzy multiplication: ffSprt(t) $\begin{matrix} \widetilde{x(t)} \cap \\ \mu(t) \\ w(t) \end{matrix}$.

3. Similarly for simultaneous execution of various operations:ffSprt(t) $\begin{matrix} \widetilde{x(t)}\widetilde{q(t)} \\ \mu(t) \\ w(t) \end{matrix}$, where

4. Similarly, for the simultaneous fuzzy execution of various operators: ffSprt(t) $\begin{matrix} \widetilde{F(t)}\widetilde{x(t)} \\ \mu(t) \\ w(t) \end{matrix}$,

where $\widetilde{F(t)}$=(F_1(t)|$\mu_{\widetilde{F(t)}}$(F_1(t)), F_2(t)|$\mu_{\widetilde{F(t)}}$(F_2(t))|,...,F_n(t)|$\mu_{\widetilde{F(t)}}$(F_n(t))|), F_i(t) is an operator, i = 1,…,n.

5. The dynamic arithmetic fself for the dynamic continual fuzzy containments of oneself will be similar: dynamic fuzzy addition - $ffS_1f(t)\mu(t)\{\widetilde{x(t)} \cup\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{x(t)} \cup\}$ for the third type), dynamic fuzzy multiplication $ffS_1f(t)\mu(t)\{\widetilde{x(t)} \cap\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{x(t)} \cap\}$.

6. Similarly with different fuzzy operations: $ffS_1f(t)\mu(t)\{\widetilde{x(t)}\widetilde{q(t)}\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{x(t)}\widetilde{q(t)}\}$) , and with different fuzzy operators: $ffS_1f(t)\mu(t)\{\widetilde{F(t)}\widetilde{x(t)}\}$, (or $ffS_3f(t)\mu(t)\{\widetilde{F(t)}\widetilde{x(t)}\}$).

7. ffSprt(t) $\begin{matrix} \widetilde{A(t)} \\ \mu(t) \\ \widetilde{B(t)} \end{matrix}$ gives the result

ffSrt(t) $\begin{matrix} \widetilde{A(t)} \\ \mu(t) \\ \widetilde{B(t)} \end{matrix}$ $= \{\widetilde{A(t)} \cup \widetilde{B(t)} - \widetilde{A(t)} \cap \widetilde{B(t)}, D(t)\}$ for fuzzy sets $\widetilde{A(t)}, \widetilde{B(t)}$, where $\widetilde{D(t)}$ is fself- (fuzzy continual set) for $\widetilde{A(t)} \cap \widetilde{B(t)}$. The same is true for structures if they are treated as fuzzy continual sets.

8. Similarly, for fuzzy dynamic fSprt-derivatives, fuzzy dynamic fSprt-integrals, fuzzy dynamic fSprt-lim, dynamic fself- (fuzzy derivatives), dynamic fself- (fuzzy integrals).

9. Denote dynamic continual fself-(dynamic continual fself-Q(t)) through dynamic continual fself^2-Q(t), fS(t)(n,Q(t))= dynamic continual fself-(dynamic continual fself-(…(dynamic continual fself-Q(t)))) = dynamic continual fself^n-Q(t) for n-multiple dynamic continual fself.

Remark 4.4.1. Fuzzy dynamic continual fSit-displacement of A(t) from B(t) with measure of fuzziness μ will be denote through $\begin{matrix} B(t) \\ \mu(t) \\ A(t) \end{matrix}$ ffSprt(t). Then the notation $\begin{matrix} C(t) \\ \mu_2(t) \\ D(t) \end{matrix}$ffSprt(t)$\begin{matrix} A(t) \\ \mu_1(t) \\ B(t) \end{matrix}$ is fuzzy dynamic continual fSit- embedding of A(t) in B(t) and fuzzy dynamic continual fSit-displacement of D(t) from C(t) simultaneously. Denote $\begin{matrix} B(t) \\ \mu_2(t) \\ A(t) \end{matrix}$ffSprt(t)$\begin{matrix} A(t) \\ \mu_1(t) \\ B(t) \end{matrix}$ by $fTf^{\mu_1(t)}_{\mu_2(t)}S(t)^{A(t)}_{B(t)}$.

We can consider the concept of fuzzy dynamic continual fSprt- element as ffSprt$(t)\,\mu(t)\frac{A(t)}{\widetilde{B(t)}}$, where $\widetilde{A(t)}$ fits in fuzzy dynamic continual fuzzy capacity $\widetilde{B(t)}$. Then ffSprt$(t)\,\mu(t)\frac{\widetilde{B(t)}}{\widetilde{B(t)}}$ it will mean $ffS_1f(t)\mu(t)B(t)$. $\mu(t)\frac{A(t)}{A(t)}$ffSprt(t) denotes the fuzzy dynamic continual displacement of fuzzy A(t) from itself with measure of fuzziness μ, $\mu_1(t)\frac{A(t)}{A(t)}$ffSprt(t)$\mu_1(t)\frac{A(t)}{A(t)}$—simultaneous fuzzy dynamic continual containment of oneself A(t) in oneself A(t) with measure of fuzziness μ_1 and dynamic continual expelling oneself A(t) out of oneself A(t) with measure of fuzziness μ_1. $\mu(t)\frac{A(t)}{A(t)}$ffSprt(t) will be called fuzzy dynamic continual anti fuzzy fcapacity from itself with measure of fuzziness μ.

5.5 Connection of Fuzzy Dynamic Continual fSprt– Elements with Target Weights with Dynamic Continual Fuzzy Containment of Oneself with Target Weights

Consider a third type of dynamic partial fuzzy containment of oneself with target weights $\widetilde{g(t)}$. For example, based on ffSprt$(t)\ \mu(t)\frac{\widetilde{x(t)}\widetilde{g(t)}}{\widetilde{w(t)}}$, where $\widetilde{x(t)}$=(x_1(t)|$\mu_{\widetilde{x(t)}}$(x))|, ..., x_n(t)|$\mu_{\widetilde{x(t)}}$1(t)), x_2(t)|$\mu_{\widetilde{x(t)}}$(x_2(t (x_n(t))|), i.e. n fuzzy continual elements with target weights $\widetilde{g(t)}$ at one point w, we can consider the dynamic fuzzy containment $fS_3f(t)x\widetilde{(t)\mu}(t)\widetilde{g(t)}$ of oneself with target weights with m fuzzy continual elements with target weights $\widetilde{g(t)}$ from $\widetilde{x(t)}$, m<n, which is the fuzzy process of formation according to the form (1), i.e., only m fuzzy continual elements with target weights $\widetilde{g(t)}$ from $\widetilde{x(t)}$ are located in the structure $fS_3f(t)x\widetilde{(t)\mu}(t)\widetilde{g(t)}$. Dynamic fuzzy containments of oneself with target weights of the third type can be formed for any other structure, not necessarily ffSprt, only by reducing the number of fuzzy continual elements with target weights in the structure. In particular, using the form (1.1) – (4). Structures more complex than $fS_3f(t)\widetilde{x(t)}\mu(t)\widetilde{g(t)}$ can be introduced.

Definition 4.5.1

The dynamic fuzzy embedding of fuzzy continual A(t) into itself with target weights $\widetilde{g(t)}$ of the first type is the process of fuzzy embedding A(t) into A(t) with target weights $\widetilde{g(t)}$. Denote $fS_1f(t)A(t)\mu(t)\widetilde{g(t)}$.

Definition 4.5.2

The dynamic fuzzy containment of fuzzy continual C(t) itself into itself with target weights $\widetilde{g(t)}$ of the second type is the process of fuzzy containment of the fuzzy continual elements from which it can be fuzzy generated. Let's denote $fS_2f(t)C(t)\mu(t)\widetilde{g(t)}$.

Definition 4.5.3. Partial fuzzy `dynamic containment of fuzzy continual B(t) itself into itself with target weights $\widetilde{g(t)}$ of the third type is the process of partial fuzzy containment of fuzzy continual B(t) into itself or fuzzy continual elements from which it can be fuzzy generated partially, or both at the same time. Denote $fS_3f(t)B(t)\mu(t)\widetilde{g(t)}$.

6. The Usage of ffSprt-Elements for Networks

A. Galushkin's comprehensive monograph [20] covers all aspects of networks, but traditional approaches go through classical mathematics, mainly through the usual correspondence operators. Here we consider a different approach - through a new mathematical process with fuzzy containment operators, which, although they can be interpreted as the result of some correspondence operators, are not themselves correspondence operators. Containment operators are more convenient for networks. Also, the main emphasis was placed on using processors operating using triodes, which are generally not used in ffSprt -networks. ffSprt-networks(ffSmnsprt) are a ffSprt -structure that can be built for the required weights. ffSprt -OS (ffSprtoperating system) uses ffSprt -coding and ffSprt -translation. In the first one, coding is carried out through a 2-dimensional matrix-row (a, b), where the fuzzy number b is the code of the action, and the fuzzy number a is the code of the object of this action. ffSprt -coding (or fself-(fuzzy coding)) is implemented through a fuzzy matrix consisting of 2 columns (in the continuous case, two intervals of fuzzy numbers). Here, the source encoding is used for all matrix rows simultaneously. ffSprt -translation is carried out by inversion. In this case, fself- (fuzzy coding) and fself- (fuzzy translation) will be more stable. The target weights $q_i(t)$ in ffSprt$(t)\begin{matrix}\widetilde{x(t)}\widetilde{q(t)}\\ \mu(t)\\ \widetilde{w(t)}\end{matrix}$ are chosen for necessary tasks. We will not touch on the issues of applications, or network optimization. They are described in detail by Galushkin [20]. We will touch on the difference of this only for hierarchical complex networks. The same simple executing programs are in the cores of simple artificial neurons of type ffSprt(designation - mnffSprt) for simple information processing. More complex executing programs are used for mnffSprt nodes. Threshold element ffSprt - $\begin{matrix}b\\ \mu_2\\ \{qy\}\end{matrix}$ ffSprt(t) $\begin{matrix}\{a\tilde{x}\}\\ \mu_1\\ b\end{matrix}$, b- artificial neurons of type ffSprt (designation - mnffSprt) , $\tilde{x}=(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2)|,\dots,x_n|\mu_{\tilde{x}}(x_n)|)$ is the fuzzy set of values of the initial signals, $a=(a_1,a_2,\dots,a_n)$ are the weights of Sit-synapses and $\tilde{y}=(y_1|\mu_{\tilde{y}}(y_1), y_2|\mu_{\tilde{y}}(y_2)|,\dots,y_n|\mu_{\tilde{y}}(y_n)|)$ is the fuzzy set of values of the output signals with weights $q=(q_1,q_2,\dots,q_n)$.. The first level of mnffSprt consists of simple mnffSprt. The second level of mnffSprt consists of $fSt_D^{\{mnSt\}}$ – Sit-node of mnffSprt in range D, D- fuzzy capacity for mnffSprt node. The third level of mnffSprt consists of $ffSprt_{\mu_{D}}^{mnffSprt}{}_{\mu_{D}}$ - $ffSprt^{2}$- node of mnffSprt in range D, thus D becomes fuzzy capacity of itself in itself as an element for mnffSprt. For our networks, it is sufficient to use $ffSprt^{2}$- nodes of mnffSprt, but fself-level is higher in living organisms, particularly $ffSprt^{n}$-, n≥3. The target structure or the corresponding program enters the target unit using alternating current. After that, all networks or parts of them are activated according to the indicative goal. It may appear that we are leaving the network ideology, but these networks are a complex hierarchy of different levels, like living organisms.

Remark 5.1. Traditional scientific approaches through classical mathematics make it possible to describe only at the usual energy level. Here we consider an approach that makes describing processes with finer energies possible. mnffSprt contains ffSprt $\mu_{mnffSprt}^{\{ffeprograms\}}$, $ffeprogram -$executing program in ffSprt - OS. ffSprt -OS (or Fself-OS) is based on ffSprt - assembly language (or ffself-assembly language), which is based on assembly language through Sit-approach in turn, if the base of elements of ffSprt -networks is sufficient. The ffeprograms are in fSit-programming environments (or fself- fuzzy programming environments), but this question and ffSprt -networks base will be considered in the following monographs. In particular, ffeprograms may contain Sit- programming operators. In mnffSprt cores, the constant memory fSprtwith correspondent ffeprograms depending on mnffSprt.

The OS (operating system) and the principles and modes of operation of the fSit-networks for this programming are interesting. But this is already the material for the next publications. Here is developed a helicopter model without a main and tail rotors based on ffSprt– physics and special neural networks with artificial neurons operating in normal and ffSprt -modes. Let's denote this model through ffSmnsprt. To do this, it's proposed to use mnffSprt of different levels; for example, for the usual mode, mnffSprt serves for the initial processing of signals and the transfer of information to the second level, etc., to the nodal center, then checked. In case of an anomaly - local ffSprt –mode with the desired "target weight" is realized in this section, etc., to the center. In the case of a monster during the test, ffSmnsprt is activated with the desired "target weight." Here are realized other tasks also. To reach the fself-energy level, the mode ffSprt $\mu_{ffSmnsprt}^{ffSmnsprt}$ is used. In normal mode, it's planned to carry out the movement of ffSmnsprt on jet propulsion by converting the energy of the emitted gases into a vortex to obtain additional thrust upwards. For this purpose, a spiral-shaped chute (with "pockets") is arranged at the bottom of the ffSmnsprt for the gases emitted by the jet engine, which first exit through a straight chute connected to the spiral one. There is drainage of exhaust gases outside the ffSmnsprt. ffSmnsprt is represented by a neural network that extends from the center of one of the main clusters of ffSprt- artificial neurons to the shell, turning into the body itself. Above the operator's cabin is the central core of the neural network and the target block, responsible for performing the "target weights" and auxiliary blocks, the functions and roles of which we will discuss further. Next is the space for the movement of the local vortex. The unit responsible for ffSmnsprt 's actions is below the operator's cab. In ffSprt–mode, the entire network or its sections are fSprt– activated to perform specific tasks, in particular, with "target weights." In the target, block used ffSprt -coding, ffSprt -translation for activation of all networks to "target weights" simultaneously, then –the reset of this Sit-coding after activation. Unfortunately, triodes are not suitable for Sit -neural networks. In the most primitive case, usual separators with corresponding resistances and cores for ffeprograms may be used instead triodes since there is no necessity to unbend the alternating current to direct. The ffSprt-operative memory belt is disposed around a central core of ffSmnsprt. There are ffSprt -coding, ffSprt -translation, and ffSprt-realize of feprograms and the programs from the archives without extraction, ffSprt-coding and ffSprt-translation may be used in high-intensity, ultra-short optical pulses laser of Nobel laureates 2018-year Gerard Mourou, Donna, Strickland. ffSprt– structure or an feprogram if one is present of needed «target weight» are taken in target block at ffSprt– activation of the networks. ffSprt $\underset{activation}{\overset{\text{ffSmnsprt}, g}{\mu}}$ derives ffSmnsprt to the fself-level boundary with target weight g.

It's used an alternating current of above high frequency and ultra-violet light, which can work with ffSprt– structures in ffSprt –modes by its nature to activate the networks or some of its parts in ffSprt –modes and locally using ffSprt –mode. Above high frequently alternating current go through mercury bearers. That's why overheating does not occur. The power of the alternating current above high frequently increases considerably for the target block. The activation of all networks is realized to indicate "target weights."

7. Variable Fuzzy Hierarchical Dynamic Fuzzy Structures (Models, Operators) for Dynamic, Singular, Hierarchical Fuzzy Sets

In contrast to the classical one-attribute fuzzy set theory [2], [3], where only its contents are taken as a set, we consider a two-attribute fuzzy set theory with a fuzzy set as a fuzzy capacity and separately with its contents. We simply use a convenient form to represent the singularity of a fuzzy set. Articles [4] - [16] use the following methodology for permanent structures:

1. Cancellation of the axiom of regularity.
2. 2 attributes for the fuzzy set: fuzzy capacity and its content.
3. Fuzzy compression of a fuzzy set, for example, to a point.
4. "turning out" from one another, particularly from a fuzzy capacity, we pull out another fuzzy capacity, for example, itself, as its element.
5. The simultaneity of one (fuzzy compression) and the other ("eversion").
6. Own fuzzy capacities.
7. Qualitatively new fuzzy programming and fuzzy Networks.

Here we will consider variable fuzzy structures (models), both discrete and continuous: a) with variable connections, b) with the

variable backbone for links, c) generalized version; in particular,
in variable fuzzy structures (models), for example,

$$\underset{D}{\overset{C}{\mu_{14}}}\text{ffSprt}(t)\underset{B}{\overset{A}{\mu_{13}}} = \begin{cases} (\underset{D}{\overset{C}{\mu_6}}\text{ffSprt}, q_2 \ge t \ge q_1)|\mu_1 \\ (\underset{D}{\overset{B}{\mu_8}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_7}}, q_3 \ge t > q_2)|\mu_2 \\ (\underset{D}{\overset{C}{\mu_{10}}}\text{ffSprt}\underset{B}{\overset{A}{\mu_9}}, q_4 \ge t > q_3)|\mu_3 \\ (\text{ffSprt}\underset{B}{\overset{A}{\mu_{11}}}, q_5 \ge t > q_4)|\mu_4 \\ (\underset{D}{\overset{\{\}}{\mu_{12}}}\text{ffSprt}, t > q_5)|\mu_5 \\ \dots \end{cases} \quad (*_{D.1}),$$

μ_i- measures of fuzziness, i = 1, ..., 14. In particular, $\underset{D}{\overset{B}{\mu_{10}}}\text{ffSprt}\underset{B}{\overset{A}{\mu_9}}$ can be interpreted as a fuzzy game: player 1 fuzzy with measures of fuzziness μ_9 fits fuzzy A into fuzzy B, and the other fuzzy with measures of fuzziness μ_{10} pushes fuzzy D out of fuzzy B at the same time.

In what follows, we will denote variable fuzzy structure (model) through ffVS(t), self-variable fuzzy structures (models) through SfFVS(t), and oself-variable fuzzy structures (models) through OSffVS(t). Singular fuzzy structures (models) are not confused with fuzzy structures (models) with singularities. $\underset{D}{\overset{B}{\mu_{10}}}\text{ffSprt}\underset{B}{\overset{A}{\mu_9}}$ -2-hierarchical fuzzy structure: 1-level - elements A, B, C, D; level 2 - connections between them. 2-

Examples: a) discrete variable fuzzy structure with μ_i- measures of fuzziness, i = 1, ..., 8.

$$\begin{matrix} a|\mu_1 & b|\mu_8 & g|\mu_7 \\ c|\mu_2 & ffVS(t) & w|\mu_6 \\ d|\mu_3 & q|\mu_4 & r|\mu_5 \end{matrix}$$

Fig.1

c) continuous variable fuzzy structure

ffVS(t)

Fig.2

Where a continuous fuzzy set represents the rim of the Fig.2.

We introduce the notation m_{fVS_N} ,where m – the number of elements, N - the number of connections between them in the discrete variable 2-hierarchical fuzzy structure ffVS(t). We introduce the notation q_{fVS_R} ,where q – any, R - connections in q in the variable 2-hierarchical fuzzy structure ffVS(t), in particular, q, R can be fuzzy sets both discrete and continuous and discrete-continuous. We consider the functional c(Q), which gives a numerical value for the fuzzy structurability of Q from the interval [0,1], where 0 corresponds to "no fuzzy structure"," and 1 corresponds to the value " fuzzy structure". Then for joint A, B: c(A+B)=c(A)+c(B)-c(A*B)+cS(D), D- self-(fuzzy structure) from A*B, cS(x)- the value of self-(fuzzy structure) for self-(fuzzy structure) x; for dependent fuzzy structures: c(A*B)=ca(A)*c(B/A)=c(B)*c(A/B), where c(B/A)- conditional fuzzy structurability of the fuzzy structure B at the fuzzy structure A, c(A/B)- conditional fuzzy structure of the fuzzy structure A at the fuzzy structure B. Adding inconsistent fuzzy structures: c(A+B) =c(A) + c(B). The formula of complete fuzzy structure: c(A)=$\sum_{k=1}^{n} c(B_k) * c(A/B_k)$, B_1, B_2,.., B_n-full group of fuzzy hypotheses- containments: $\sum_{k=1}^{n} c(B_k)$=1(“fuzzy structure”). Fuzzy Sprt- structure for fuzzy set of fuzzy structures $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$): ffSprt $\underset{w}{\overset{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n))}{\mu}}$ .ffSprt $\underset{w}{\overset{\{c(x_1)|\mu_{c(\tilde{x})}c(x_1)|\mu_{c(\tilde{x})}c(x_2), \dots, c(x_n)|\mu_{c(\tilde{x})}c(x_n)\}}{\mu}}$ - fuzzy Sprt- structurability for these fuzzy structures. It is possible to consider the self-(fuzzy structure) $ffS_3f\mu\tilde{x}$ with m structures and from $\tilde{x}$, at m<n, which is formed by the form (1), that is, only m statements from $\tilde{x}$ are located in the structure ffSprt $\underset{w}{\overset{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n))}{\mu}}$. The same for self-(fuzzy structurability) $f\ fS_3\{\ c(x_1)|\mu_{c(\tilde{x})}c(x_1), c(x_2)|\mu_{c(\tilde{x})}c(x_2), \dots, c(x_n)|\mu_{c(\tilde{x})}c(x_n)\}$.

Can be considered N-hierarchical fuzzy structure: 1-level - elements; level 2 - connections between them, level 3 - relationships between elements of level 2, etc. up to level N+1. N-hierarchical fuzzy structure: 1-level - A; 2-level -B, 3-level - C, etc. up to (N+1)- level, where A, B, C, … can be any in particular, by fuzzy actions, fuzzy sets, and others.

$$\underset{D}{\overset{C}{\mu_{14}}}\text{ffSprt(t)}\underset{B}{\overset{A}{\mu_{13}}} : \left\langle \begin{matrix} A \to B \\ A, B \end{matrix} \middle| \begin{matrix} D \leftarrow C \\ C, D \end{matrix} \right\rangle \to \left(\begin{matrix} fself(A \to B)\mu_{13} \\ A, B \end{matrix} \right)$$

$$\underset{D}{\overset{C}{\mu_{14}}}\text{ffSprt(t)}\underset{B}{\overset{A}{\mu_{13}}} : \left\langle \begin{matrix} A \to B \\ A, B \end{matrix} \middle| \begin{matrix} D \leftarrow C \\ C, D \end{matrix} \right\rangle \to \left(\begin{matrix} foself(D \leftarrow C)\mu_{14} \\ C, D \end{matrix} \right)$$

Can be considered discrete fuzzy hierarchical fuzzy structure, continuous fuzzy hierarchical fuzzy structure, and discrete-continuous hierarchical fuzzy structure, ffSprt $\underset{x}{\overset{\text{N − hierarchical fuzzy structure}}{\mu}}$.

The example

Let ffSprt $\underset{x}{\overset{\text{i}-\text{level of hierarchical structure}}{\mu}}$, then ffQHS=

$$\text{ffHSprt}\left[\!\left[\begin{array}{c} (\text{ffSprt}\underset{x}{\overset{\text{N}-\text{level of hierarchical structure}}{\mu}})\mu_N \\ \dots \\ (\text{ffSprt}\underset{x}{\overset{\text{i}-\text{level of hierarchical structure}}{\mu}})\mu_i \\ \dots \\ (\text{ffSprt}\underset{x}{\overset{1-\text{level of hierarchical structure}}{\mu}})\mu_1 \end{array}\right]\!\right]\underset{x}{\mu}$$

- fuzzy N-hierarchical fuzzy structure compression into point x, μ_i- measures of fuzziness, i = 1, ..., N.

Let fg(N, fQHS)= $ffQHS^{ffQHS^{ffQHS^{\dots^{ffQHS}}}}\Big\}$-N levels

It can be considered self- ffQHS, fg(y, fQHS) for any y, fg(ffQHS, ffQHS).

Compression fuzzy Hierarchy Examples:

1) $$\text{ffSprt}\underset{\begin{array}{c}()\\ \text{ffSprt}\,\mu + B\\ ()\end{array}}{\overset{\begin{array}{c}()\\ \text{ffSprt}\,\mu\\ ()\end{array}}{\mu}} = \left(\begin{array}{c} \text{ffSprt}\underset{\begin{array}{c}()\\ \text{ffSprt}\,\mu\\ ()\end{array}}{\overset{\begin{array}{c}()\\ \text{ffSprt}\,\mu\\ ()\end{array}}{\mu}} \\ \text{ffSprt}\underset{B}{\overset{\begin{array}{c}()\\ \text{ffSprt}\,\mu\\ ()\end{array}}{\mu}} \end{array}\right)$$

2) $$\underset{\begin{array}{c}()\quad()\\ D+\mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\overset{\begin{array}{c}()\quad()\\ C+\mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\mu_2}}\ \text{ffS}_1\text{prt}\ \underset{\begin{array}{c}()\quad()\\ B+\mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\overset{\begin{array}{c}()\quad()\\ A+\mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\mu_1}} = \left(\begin{array}{c} \underset{\begin{array}{c}()\quad()\\ \mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\overset{\begin{array}{c}()\quad()\\ \mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\mu_2}}\ \text{ffS}_1\text{prt}\ \underset{\begin{array}{c}()\quad()\\ \mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\overset{\begin{array}{c}()\quad()\\ \mu_2\text{ffS}_1\text{prt}\mu_1\\ ()\quad()\end{array}}{\mu_1}} \\ \overset{C\qquad A}{\underset{D\qquad B}{\mu_2\text{ffS}_1\text{prt}\mu_1}} \end{array}\right),$$

Where μ_i- measures of fuzziness, i = 1, 2.

Let's consider two versions: 1) fuzzy containment is interpreted through the concept of fuzzy containment, and 2) fuzzy capacity is interpreted through the concept of fuzzy containment as a rest point of fuzzy containment. Self-(fuzzy containment) is interpreted as a rest point of self-

(fuzzy containment). Let A self-(fuzzy compress) into B, D self-(fuzzy displace) from C in $\underset{D}{\overset{C}{\mu_2}}\text{ffVS}_1\text{prt}\underset{B}{\overset{A}{\mu_1}}$.

We consider the functional ca(Q), which gives a numerical value for the accommodation of fuzzy Q from the interval [0,1], where 0 corresponds to " fuzzy containment" and one corresponds to the value " fuzzy capacity". Then for joint fuzzy A, B: ca(A+B)=ca(A)+ca(B)-ca(A*B)+caS(D), D-self-(fuzzy containment) for A*B, caS(x)- the value of self-(fuzzy capacity) for self-(fuzzy containment) of x; for dependent fuzzy containments: ca(A*B)=ca(A)*ca(B/A)=ca(B)*ca(A/B), where ca(B/A)- conditional accommodation of the fuzzy containment B at the fuzzy containment A, ca(A/B)- conditional fuzzy capacity of the fuzzy containment A at the fuzzy containment B. Adding the fuzzy capacity values of inconsistent fuzzy containments: ca(A+B)=ca(A)+ca(B). The formula of complete fuzzy capacity: ca(A)=$\sum_{k=1}^{n} ca(B_k) * ca(A/B_k)$, $B_1, B_2,..,B_n$-full group of fuzzy hypotheses- containments: $\sum_{k=1}^{n} ca(B_k)$=1("fuzzy capacity"). Sprt-(fuzzy containment) for $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$): ffSprt $\underset{w}{\overset{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n))}{\mu}}$, $\tilde{x}$ - fuzzy set of fuzzy containments. ffSprt $\underset{w}{\overset{\{ ca(x_1)|\mu_{ca(\tilde{x})}ca(x_1)|\mu_{ca(\tilde{x})}ca(x_2), \dots, ca(x_n)|\mu_{ca(\tilde{x})}ca(x_n)\}}{\mu}}$ - ffSprt- accommodation for these fuzzy containments x_i, i = 1, ..., n. It is possible to consider the self-(fuzzy containment) $ffS_3f\mu\tilde{x}$ with m fuzzy containments from $\tilde{x}$, at m<n, which is formed by the form (1), that is, only m fuzzy containments from $\tilde{x}$ are located in the fuzzy containment ffSprt $\underset{w}{\overset{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n))}{\mu}}$. The same for self-(fuzzy accommodation) $ffS_3f\{ ca(x_1)|\mu_{ca(\tilde{x})}ca(x_1), ca(x_2)|\mu_{ca(\tilde{x})}ca(x_2), \dots, ca(x_n)|\mu_{ca(\tilde{x})}ca(x_n)\}$.

Consider a variable fuzzy hierarchy (we will denote it by ffVH).

The example of variable fuzzy hierarchy

$$ {}_{D}^{C}fSt(t)_{B}^{A} = \begin{cases} (\begin{Bmatrix} Q + {}_{D-D\cap C}^{\{\}}fSt \\ (C - D \cap C) \end{Bmatrix}, q_2 \geq t \geq q_1)|\mu_1 \\ ((\begin{matrix} fS^{1}{}_{0}^{e}fB * \\ {}_{Q-B}^{B}fS^1 t_B^{A-B} \end{matrix}), q_3 \geq t > q_2)|\mu_2 \\ ((\begin{matrix} fS_{01}^{et}fB \\ {}_{C-B}^{C-B}fS_1 t_B^{A-B} \\ {}_{D-C-B}^{C-B}fS_1 t_B^{A-B} \end{matrix}),, q_4 \geq t > q_3)|\mu_3 \\ (\begin{pmatrix} R \\ A \cup B - A \cap B \end{pmatrix}, q_5 \geq t > q_4)|\mu_4 \\ ({}_{D}^{\{\}}fSt, t > q_5)|\mu_5 \\ \dots \end{cases} \quad (*_{D.2}), $$

where Q is oself-(fuzzy set) for fuzzy $(D \cap C)$ [10], [15], R is self-(fuzzy set) for fuzzy $A \cap B$ [10] - [16], $fS_{01}^{et}fB$, ${}^{C-B}_{C-B}S_1t_B^{A-B}$, ${}_{D-C-B}^{C-B}fS_1t_B^{A-B}$ are considered in [6], [11], μ_i- measures of fuzziness, i = 1, ..., 5 . Variable compression (designation fVS) of fuzzy $\tilde{A}$ into $\tilde{x}$(t): $fSt_{\tilde{x}(t)}^{\tilde{A}}$, where $\tilde{x}$(t)- any dynamical fuzzy object at time t.

We consider the functional h(Q), which gives a numerical value for the hierarchization of fuzzy Q from the interval [0,1], where 0 corresponds to "no fuzzy hierarchy," and 1 corresponds to the value " fuzzy hierarchy. " Then for joint fuzzy hierarchies A, B: h(A+B)=h(A)+h(B)-h(A*B)+hS(D), D- self-(fuzzy hierarchy) from A*B, hS(x)- the value of self-(fuzzy hierarchy) for self-(fuzzy hierarchy) x; for dependent fuzzy hierarchies: h(A*B)=ha(A)*h(B/A)=h(B)*h(A/B), where h(B/A)- conditional hierarchization of the fuzzy hierarchy B at the fuzzy hierarchy A, h(A/B)- conditional fuzzy hierarchy of the fuzzy hierarchy A at the fuzzy hierarchy B. Adding the fuzzy hierarchy values of inconsistent fuzzy hierarchies: h(A+B)=h(A)+h(B). The formula of complete fuzzy hierarchy: h(A)=$\sum_{k=1}^{n} h(B_k) * h(A/B_k)$, B_1, B_2,..,B_n-full group of fuzzy hypotheses- hierarchies: $\sum_{k=1}^{n} h(B_k)$=1("fuzzy hierarchy").

ffSprt- structure for fuzzy set of hierarches $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$): ffSprt $\overset{(x_1|\mu_{\tilde{x}}(x_1), x_2|\mu_{\tilde{x}}(x_2), \dots, x_n|\mu_{\tilde{x}}(x_n))}{\underset{B}{\mu}}$.

ffSprt $\overset{\{ h(x_1)|\mu_{h(\tilde{x})}h(x_1)|\mu_{h(\tilde{x})}h(x_2), \dots, h(x_n)|\mu_{h(\tilde{x})}h(x_n)\}}{\underset{B}{\mu}}$ - ffSprt- hierarchization for these fuzzy hierarches. It is possible to consider the self-(fuzzy hierarchy) ffS_3A with m fuzzy hierarches from A, at m<n, which is formed by the form (1), that is, only m fuzzy hierarches from A are located in the fuzzy hierarchy ffSprt $\overset{A}{\underset{B}{\mu}}$. The same for self- hierarchization $fS_3\{ h(x_1)|\mu_{h(\tilde{x})}h(x_1), h(x_2)|\mu_{h(\tilde{x})}h(x_2), \dots, h(x_n)|\mu_{h(\tilde{x})}h(x_n)\}$. Can be considered ffSprt $\overset{\{ ca(x), c(x), h(x)\}}{\underset{B}{\mu}}$. Very interesting next fuzzy hierarchy type: $\overset{\text{fuzzy hierarchy } A}{\underset{\text{fuzzy hierarchy } A}{\mu}}$ ffSprt $\overset{\text{fuzzy hierarchy } A}{\underset{\text{fuzzy hierarchy } A}{\mu}}$. You can enter special operator ffCSprt to work with fuzzy structures:

$\overset{\text{fuzzy structure A}}{\underset{\text{fuzzy structure } D}{\mu_2}}$ ffCSprt $\overset{\text{fuzzy structure Q}}{\underset{\text{fuzzy structure R}}{\mu_1}}$ fuzzy structures R with the fuzzy structure from Q with measure of fuzziness μ_1 and unstructures fuzzy A by the fuzzy structure D with measure of fuzziness μ_2 simultaneously.

Very interesting next fuzzy structure type:

$\overset{\text{fuzzy structure A}}{\underset{\text{fuzzy structure } A}{\mu_2}}$ ffCSprt $\overset{\text{fuzzy structure A}}{\underset{\text{fuzzy structure A}}{\mu_1}}$, You can enter special operator ffHSprt to work with fuzzy hierarches: $\overset{\text{fuzzy hierarchy A}}{\underset{\text{fuzzy hierarchy } D}{\mu_2}}$ ffCSprt $\overset{\text{fuzzy hierarchy Q}}{\underset{\text{fuzzy hierarchy R}}{\mu_1}}$ fuzzy hierarchizes R with the fuzzy hierarchy from Q with measure of fuzziness μ_1 and unhierarchizes fuzzy A by the fuzzy hierarchy D with measure of fuzziness μ_2 simultaneously.

7. Fuzzy Program Operators ffSprt, fftprS, ffS¹epr, $ffSeprt_1$

Here it is supposed to use a symbiosis of parallel actions and conventional calculations through sequential actions. This must be done through ffSprt-Networks - fuzzy analogue of Sit-Networks [15] in one of the central departments of which a conventional computer system is located. The parallel processor is itself feprogram - fuzzy analogue of eprogram [15] with direct parallel computing not through serial computing.

Using conventional coding by a computer system, through a Target-block with a fuzzy fSprt - program operator - ffSprt $\overset{Ag}{\underset{activation}{\mu}}$ with measure of fuzziness μ, it will be possible to obtain the fuzzy execution with measure of fuzziness μ of a parallel fuzzy action A with the desired target weight g or the execution of a parallel action A with the desired fuzzy target weight g or both. Each code for a neural network from a conventional computer we "bind" (match) to the corresponding value of current (or voltage). For ffSprt-coding and ffSprt-translation may be use alternating current of ultrahigh frequency or high-intensity ultra-short optical pulses laser of Nobel laureates 2018 year Gerard Mourou, Donna Strickland, or a combination of them. For the desired action, for example, using the direct parallel fprogram of operator ffSprt $\overset{\{\text{UHF AC } := Q\}}{\underset{activation}{\mu}}$ with measure of fuzziness μ, we simultaneously enter the desired set of codes Q using a microwave current or high-intensity ultra-short optical pulses laser in Target-block.

In a conventional computer, the process of sequential calculation takes a certain time interval, in a directly parallel calculation by a neural network, the calculation is instantaneous, but it occupies a certain region of the space of calculation objects.

Consider the types of direct parallel fuzzy fprogram operators:

1) fuzzy fSprt-program operators (designation ffSprt-program operators)
2) fuzzy ftprS-program operators (designation fftprS-program operators)
3) fuzzy fS¹epr - program operators (designation ffS¹epr -program operators)
4) fuzzy $Seprt_1$- program operators (designation $ffSeprt_1$-program operators)

One example is pattern recognition: ffSprt $\overset{\text{if ffSprt } \overset{image\ archive}{\underset{B}{\mu}} \text{ э ffSprt} \overset{q}{\underset{B}{\mu}} \ then\ Name\ of\ q}{\underset{B}{\mu}}$.

The example of ffSprt-program is

$$\text{ffSprt}\left\{\text{ffSprt}\overset{\{\{p\}:=\{a(x)\}\}}{\underset{x}{\mu}}, \text{ffSprt}\overset{IF\{\{B\}\{f\}\}\ then\ Q}{\underset{x}{\mu}}, \text{ffSprt}\overset{Q}{\underset{Q}{\mu}}\right\}_{\underset{x}{\mu}}.$$

Consider a third type of fuzzy capacity in itself - fuzzy analogue of capacity in itself. For example, based on $\text{ffSprt}\overset{\tilde{x}}{\underset{q}{\mu}}$, where $\tilde{x}$ = ($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$), i.e. n - elements at one point, we can consider the capacity $ffS_3f\tilde{x}\overline{\mu}$ (in itself with m elements from $\tilde{x}$, m<n, which is formed according to the form (1),

that is, the structure $\text{ffSprt}\overset{\tilde{x}}{\underset{q}{\mu}}$ contains only m elements.

Here are some of the fuzzy fSprt-program operators.

1. Simultaneous fuzzy assignment with fuzziness μ of the expressions $\tilde{p}$=($p_1|\mu_{\tilde{p}}(p_1)$, $p_2|\mu_{\tilde{p}}(p_2)$, ..., $p_n|\mu_{\tilde{p}}(p_n)$) to the variables $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$). This is implemented via $\text{ffSprt}\overset{\{\{\tilde{x}\}:=\{p\}\}}{\underset{w}{\mu}}$.

2. Simultaneous fuzzy checking with fuzziness μ by the fuzzy set of conditions $\tilde{g}$=($g_1|\mu_{\tilde{g}}(g_1)$, $g_2|\mu_{\tilde{g}}(g_2)$, ..., $g_n|\mu_{\tilde{g}}(g_n)$) for the fuzzy set of expressions $\tilde{B}$=($B_1|\mu_{\tilde{B}}(B_1)$, $B_2|\mu_{\tilde{B}}(B_2)$, ..., $B_n|\mu_{\tilde{B}}(B_n)$)

Implemented via $\text{ffSprt}\overset{IF\left\{\{\tilde{B}\}\{\tilde{g}\}\right\}\ then\ \tilde{Q}}{\underset{w}{\mu}}$ where $\tilde{Q}$ can be anything.

3. Similarly for fuzzy loop operators and others.

ffS_3f – fuzzy software operators will differ only just because aggregates $\tilde{x}, \tilde{p}, \tilde{B}, \tilde{g}$ will be formed from corresponding ffSprt-program operators in form (1), for more complex operators in forms (1.1) - (4), (1*) and analogs of forms (1.1) - (4) by type (1*).

For example, $\text{ffSprt}\overset{\{R\}}{\underset{g\{R\}}{\mu}}$ is the fuzzy capacity with measure of fuzziness μ in itself of the second type if $g\{R\}$ is a ffprogram capable of fuzzy generating $\{R\}$ with measure of fuzziness μ.

The example of self-ffprogram of the first type is

$$\text{ffSprt}\left\{\text{ffSprt}\overset{\{\{p\}:=\{a(x)\}\}}{\underset{w}{\mu}}, \text{ffSprt}\overset{IF\{\{B\}\{f\}\}\ then\ Q}{\underset{w}{\mu}}, \text{ffSprt}\overset{Q}{\underset{Q}{\mu}}\right\}_{\underset{w}{\mu}}.$$

The example of ffSprt-program for ffSmnsprt:

$\text{ffSprt}\overset{q:=}{\underset{B}{\mu}}$ - fuzzy assigning fuzzy q to fuzzy B with measure of fuzziness μ.

$\text{ffSprt}\overset{tw:=}{\underset{g}{\mu}}$ - fuzzy assigning target weight tw to fuzzy g with measure of fuzziness μ.

ffSprt $\underset{f\text{fSmnsprt } activation}{\overset{\{q\}w}{\mu}}$ - ffSmnsprt $activation$ for fuzzy $\{q\}w$ with measure of fuzziness μ.

ffSprt-Coding

ffSprt-coding with measure of fuzziness μ: 1) fuzzy set A to fuzzy set B, 2) fuzzy set A to a point q, where the elements of the fuzzy sets A, B can be continuous. For example, $\text{ffSprt}\underset{B}{\overset{A}{\mu}}$.

There are ffSprt-coding, ffSprt-translation, ffSprt-realize of ffeprograms and of the ffprograms from the archives without extraction theirs

ffSelf-Coding

ffSelf-coding with measure of fuzziness μ: 1) fuzzy set A to set fuzzy A, i.e. fuzzy A on itself 2) fuzzy set A to a point q in form (1), where the elements of the fuzzy sets A, B can be continuous. For example, $\text{ffSprt}\underset{A}{\overset{A}{\mu}}$.

One of the central departments of the control system should be a computer system of the usual type of the desired level. In symbiosis with ffSprt-Networks, it will provide a holistic operation of the control system in three modes: conventional serial through a conventional type computer system, direct parallel through ffSprt-Networks and series-parallel. Codes from a conventional type computer system will be used via ffSprt -connectors in ffSprt - coding, for example: $\text{ffSprt}\underset{activation}{\overset{\{\text{UHF AC} := Q\}}{\mu}}$. UHF AC field activation is used.

Dynamic ffSprt and ffS3f(t) programming

The ideology of dynamic ffSprt and ffS3f(t) can be used for programming:

4. Simultaneous assignment of the expressions $\widetilde{p(t)}$=($p_1(t)|\mu_{\widetilde{p(t)}}(p_1(t))$, $p_2(t)|\mu_{\widetilde{p(t)}}(p_2(t))$, ..., $p_n(t)|\mu_{\widetilde{p(t)}}(p_n(t))$) to the variables $\widetilde{x(t)}$=($x_1(t)|\mu_{\widetilde{x(t)}}(x_1(t))$, $x_2(t)|\mu_{\tilde{x}(t)}(x_2(t))$, ..., $x_n(t)|\mu_{\widetilde{x(t)}}(x_n(t))$).

This is implemented via ffSprt(t) $\underset{w(t)}{\overset{\{\widetilde{x(t)}\} := \{p(t)\}}{\mu}}$.

5. Simultaneous checking the fuzzy set of conditions $\widetilde{g(t)}$=($g_1(t)|\mu_{\widetilde{g(t)}}(g_1(t))$, $g_2(t)|\mu_{\tilde{g}(t)}(g_2(t))$, ..., $g_n(t)|\mu_{\widetilde{g(t)}}(g_n(t))$) for the fuzzy set of expressions $\widetilde{B(t)}$=($B_1(t)|\mu_{\widetilde{B(t)}}(B_1(t))$, $B_2(t)|\mu_{\tilde{B}(t)}(B_2(t))$, ..., $B_n(t)|\mu_{\widetilde{B(t)}}(B_n(t))$). Implemented via ffSprt(t) $\underset{w(t)}{\overset{IF\left\{\{\widetilde{B(t)}\}\{\tilde{g}(t)\}\right\}\ then\ \widetilde{Q(t)}}{\mu}}$ where $\widetilde{Q(t)}$ can be anything.

6. Similarly for fuzzy loop operators and others.

$ffS_3f(t)$– fuzzy software operators will differ only just because aggregates $\widetilde{x(t)}, \widetilde{p(t)}, \widetilde{B(t)}, \widetilde{g(t)}$ will be formed from corresponding ffSprt-program operators in form (1) for more complex operators in forms (1.1) - (4), (1*) and analogs of forms (1.1) - (4) by type (1*).

fftprS-program operators

The ideology of fftprS and fft_{S_4f} - fuzzy analogues of tS and t_{S_4f} from [10] can be used for programming. Here are some of the ftS-program operators.

1. Simultaneous expelling assignment of the expressions $\tilde{p}$=($p_1|\mu_{\tilde{p}}(p_1)$, $p_2|\mu_{\tilde{p}}(p_2)$, ..., $p_n|\mu_{\tilde{p}}(p_n)$) from the variables $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)$, ..., $x_n|\mu_{\tilde{x}}(x_n)$). This is implemented via $\underset{=:\tilde{p}}{\overset{\tilde{x}}{\mu}}$ ffSprt.

2. Simultaneous expelling check the fuzzy set of conditions $\tilde{g}$=($g_1|\mu_{\tilde{g}}(g_1)$, $g_2|\mu_{\tilde{g}}(g_2)$, ..., $g_n|\mu_{\tilde{g}}(g_n)$) for the fuzzy set of expressions $\tilde{B}$=($B_1|\mu_{\tilde{B}}(B_1)$, $B_2|\mu_{\tilde{B}}(B_2)$, ..., $B_n|\mu_{\tilde{B}}(B_n)$). It's implemented through $\underset{IF\left\{\{\tilde{B}\}\{\tilde{g}\}\right\}\ then\ \tilde{Q}}{\overset{w}{\mu}}$ ffSprt where Q can be any.

3. Similarly for loop operators and others.

fft_{S_4f} – fuzzy software operators will differ only just because aggregates $\tilde{x}, \tilde{p}, \tilde{B}, \tilde{g}$ will be formed from corresponding fftprS program operators in form (1) for more complex operators in forms (1.1) - (4), (1*) and analogs of forms (1.1) - (4) by type (1*).

Consider hierarchical fftprS-program operator

$$\underset{A}{\overset{B}{\mu}}\text{ffSprt} = \begin{cases} D + \underset{\substack{A - A\cap B \\ (B - A\cap B)}}{\overset{\{\}}{\mu}} \text{ffSprt} \\ \end{cases},$$ where D is oself-(fuzzy set) for fuzzy $(A \cap B)$.

Dynamic fftprS and $fft(q)_{S_4f}$ programming at time q

The ideology of fftprS and fft_{S_4f} can be used for dynamic programming. Here are some of the fftprS()- dynamic programming operators.

1. The process of simultaneous expelling assignment of the expressions $\widetilde{p(t)}$=($p_1(t)|\mu_{\widetilde{p(t)}}(p_1(t))$, $p_2(t)|\mu_{\widetilde{p(t)}}(p_2(t))$, ..., $p_n(t)|\mu_{\widetilde{p(t)}}(p_n(t))$) from the variables $\widetilde{x(t)}$=($x_1(t)|\mu_{\widetilde{x(t)}}(x_1(t))$, $x_2(t)|\mu_{\tilde{x}(t)}(x_2(t))$, ..., $x_n(t)|\mu_{\widetilde{x(t)}}(x_n(t))$).is implemented through $\underset{=:\tilde{p}(t)}{\overset{\tilde{x}(t)}{\mu}}$ ffSprt(t).

2. The process of simultaneous expelling check the fuzzy set of conditions $\widetilde{g(t)}$=($g_1(t)|\mu_{\widetilde{g(t)}}(g_1(t))$, $g_2(t)|\mu_{\tilde{g}(t)}(g_2(t))$, ..., $g_n(t)|\mu_{\widetilde{g(t)}}(g_n(t))$) for the fuzzy set of expressions $\widetilde{B(t)}$=($B_1(t)|\mu_{\widetilde{B(t)}}(B_1(t))$, $B_2(t)|\mu_{\tilde{B}(t)}(B_2(t))$, ..., $B_n(t)|\mu_{\widetilde{B(t)}}(B_n(t))$) is implemented through $\underset{IF\left\{\{\tilde{B}(t)\}\{\tilde{g}(t)\}\right\}\ then\ \tilde{Q}(t)}{\overset{w(t)}{\mu}}$ ffSprt(t), where Q(t) can be any. 3.Similarly for loop operators and others.

fft_{S_4f} – fuzzy software operators will differ only just because aggregates $\widetilde{x(t)}, \widetilde{p(t)}, \widetilde{B(t)}, \widetilde{g(t)}$ will be formed from corresponding processes fftprS(t) for above mentioned programming operators through form (1) or form (1.1) - (4), (1*) and analogs of forms (1.1) - (4) by type (1*) for more complex operators.

Consider hierarchical dynamic fftprS-program operator:

$$\underset{A(q)}{\overset{B(q)}{\mu}}\text{ ffSprt(q)} = \left\{ fft(q)_{S_1 f(A(q)\cap B(q))} + \underset{(B(q)-A(q)\cap B(q))}{\underset{A(q)-A(q)\cap B(q)}{\overset{\{\}}{\mu}}}\text{ffSprt(q)} \right\},$$

ffS¹epr -program operators (form $\underset{D}{\overset{B}{\mu_2}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_1}}$ - fuzzy analogue of ${}_D^B S^1 t_B^A$ [6]))

For example, $\underset{\{=:\{p(t)\}\}}{\overset{\{a(t)\}}{\mu_2}}\text{ffS}^1\text{prt}\underset{\{a(t)\}}{\overset{IF\{\{B(t)\}\{f(t)\}\}\ then\ Q(t)}{\mu_1}}$.

Consider hierarchical dynamic ffS¹epr-program operator: (form $\underset{A}{\overset{B}{\mu_2}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_1}} * \underset{D-A}{\overset{B}{\mu_2}}\text{ffS}^1\text{prt}\underset{B}{\overset{A}{\mu_1}}$).

ffSeprt₁- program operators (form $\underset{D}{\overset{C}{\mu_2}}\text{ffS}_1\text{prt}\underset{B}{\overset{A}{\mu_1}}$ - fuzzy analogue of ${}_D^C S_1 t_B^A$ [11]))

${}_a^a f S_1 t_a^a$-- sample $\binom{self}{oself}$-fprogram structure example.

$fSt_{t_0}^{\left\{ {}^{q\left({}_a^a f S_1 t_a^a\right)}_{W_q} fSt_{q\left({}_a^a f S_1 t_a^a\right)}^{E_q}, fSt_{d_r}^{\{El^{d_r}\}} \right\}}$ can be interpreted as a fprogram operator.

${}_a^a f S_1 t_a^a$ can be interpreted as a $\binom{self}{oself}$-fprogram operator.

Consider structure examples hierarchical fuzzy Set₁-program operator

3. $\left({fS_{01}^{et} f B \atop {}_{Q-B}^{R-B} f S_1 t_B^{A-B}} \right),$

4. $\left({fS_{21}^{et} f_A^B \atop {}_{Q-A}^{R-A} f S_1 t_B^A} \right),$

5. $\text{ffSprt}\underset{t_0}{\mu}\left\{ {}^{q\left(\underset{a}{\overset{a}{\mu_1}}\text{ffS}_1\text{rt}\underset{a}{\overset{a}{\mu_1}}\right)}_{W_q} fSt_{q\left(\underset{a}{\overset{a}{\mu_1}}\text{ffS}_1\text{rt}\underset{a}{\overset{a}{\mu_1}}\right)}^{E_q}, fSt_{d_r}^{\{El^{d_r}\}} \right\}$ —fprogram structure example, where the assemblage point d_r is the cursor, it is quite complex self—fprogram.

6. $\text{ffSprt}\underset{t_0}{\mu}\left\{ {}^{q\left(\underset{a}{\overset{a}{\mu_1}}\text{ffS}_1\text{rt}\underset{a}{\overset{a}{\mu_1}}\right)}_{W_q} fSt_{q\left(\underset{a}{\overset{a}{\mu_1}}\text{ffS}_1\text{rt}\underset{a}{\overset{a}{\mu_1}}\right)}^{E_q}, fSt_{d_r}^{\{El^{d_r}\}} \right\}$ can be interpreted as a fprogram operator.

$\underset{a}{\overset{a}{\mu_1}}\text{ffS}_1\text{rt}\underset{a}{\overset{a}{\mu_1}}$ can be interpreted as a $\binom{s_1 elf}{os_1 elf}$-fprogram operator. $\underset{a}{\overset{a}{\mu_1}}\text{ffS}_1\text{rt}\underset{a}{\overset{a}{\mu_1}}$-- sample $\binom{s_1 elf}{os_1 elf}$-fprogram structure example.

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Appendix

We consider ffSprt-logic: consider the functional g(Q), which gives a fuzzy numerical value for the truth of the fuzzy statement Q from the interval [0,1], where 0 corresponds to "no," and one corresponds to the logical value "yes." Then for joint fuzzy statements A, B: g(A+B)=g(A)+g(B)-g(A*B)+gS(D), D- fself- (fuzzy statement) from A*B, gS(x)- the value of fself-truth for fself-(fuzzy statement) x; for dependent fuzzy statements: g(A*B)=g(A)*g(B/A)=g(B)*g(A/B), where g(B/A)- conditional truth of the fuzzy statement B at fuzzy statement A, g(A/B)- dependent truth of fuzzy statement A at the fuzzy statement B. Adding the truth values of inconsistent fuzzy propositions: g(A+B)=g(A)+g(B). The formula of complete truth: g(A)=$\sum_{k=1}^{n} g(B_k) * g(A/B_k)$, B_1, B_2, .., B_n-full group of hypotheses- (fuzzy statements): $\sum_{k=1}^{n} f(B_k)$=1(“yes”). Remark. A fuzzy statement can be interpreted as an fuzzy event, and its truth value as a probability.

ffSprt- statement for fuzzy set of statements $\tilde{x}$=($x_1|\mu_{\tilde{x}}(x_1)$, $x_2|\mu_{\tilde{x}}(x_2)|$,...,$x_n|\mu_{\tilde{x}}(x_n)|$): ffSprt $\underset{w}{\overset{(x1|\mu_{\tilde{x}}(x1), x2|\mu_{\tilde{x}}(x2)|, \dots, xn|\mu_{\tilde{x}}(xn)|)}{\mu}}$, ffSprt $\underset{w}{\overset{\{g(x_1), g(x_2), \dots, g(x_n)\}}{\mu}}$ - ffSprt- truth for these statements. It is possible to consider the fself-statement $ffS_3f\mu\tilde{x}$ with m statements from $\tilde{x}$, at m<n, which is formed by the form (1), that is, only m statements from $\tilde{x}$ are located in the structure ffSprt$\underset{w}{\overset{\tilde{x}}{\mu}}$. The same for fself- truth $fS_3f\mu\{g(x_1), g(x_2), \dots, g(x_n)\}$.

One can introduce the concepts of fSit-group: ffSrt$\underset{q}{\overset{\tilde{x}}{\mu}}$, $\tilde{x}$ is usual fuzzy group, ffSrt$\underset{B}{\overset{\tilde{x}}{\mu}}$, where $\tilde{x}$, B- usual fuzzy groups, fself-groups: $ffS_if\mu$, i=1,2,3 [2].

Definition 5.1. A structure with a second degree of freedom will be called complete, i.e., "capable" of reversing itself concerning any of its elements clearly, but not necessarily in known operators; it can form (create) new special operators (in particular, special functions). In particular, ffCSrt $\underset{strA}{\overset{strA}{\mu}}$ is such structure. Similarly, for working with models, each is structured by its structure; for example, use ffSprt-groups, ffSprt -rings, ffSprt -fields, ffSprt -spaces, fself-(fuzzy groups), fself- (fuzzy rings), fself- (fuzzy fields), and fself- (fuzzy spaces). Like any task, this is also a structure of the appropriate fuzzy capacity. Since the degree of freedom is double, it is clear that the form of the fself-equation contains a solution or structures the inversion of the fself- (fuzzy equation) concerning unknowns, i.e., the structure of the fself-equation is complete.

Remark. Energy of a living organism:

$$\text{ffg}(r, a(E_q)) = \text{ffSprt}\left(\begin{Bmatrix} {}^{q}\left(\begin{smallmatrix} a & & a \\ \mu_1 & \text{ffSrt} & \mu_1 \\ a & & a \end{smallmatrix}\right) W_q fSt_{q\left(\begin{smallmatrix} a & & a \\ \mu_1 & \text{ffSrt} & \mu_1 \\ a & & a \end{smallmatrix}\right)}^{E_q}, fSt_{d_r}^{\{El^{d_r}\}} \end{Bmatrix}\right)_{t_0}^{\mu}$$

$\begin{smallmatrix} a & & a \\ \mu_1 & \text{ffSrt} & \mu_1 \\ a & & a \end{smallmatrix}$ -internal energy of a living organism, q- a gap in the energy cocoon of a living organism, r-the position of the assemblage point d_r on the energy cocoon of a living organism, W_q- energy prominences from the gap in the cocoon of a living organism, E_q-external energy entering the gap in the cocoon of a living organism, El^{d_r} - a bundle of fibers of external energy self-capacities, collected at the point of assembly of the cocoon of a living organism.

Entire neural network as instantaneous simultaneous ffRAM in ffSprt-elements and fself-elements.$fself^{fself^{...fself}}$, $\text{ff}1 \downarrow \text{I} \uparrow_{-1}^{1}, ff_2{}^{\text{ff}1\downarrow\text{I}\uparrow_{-1}^{1} ff_2,^{...\text{ff}1\downarrow\text{I}\uparrow_{-1}^{1} ff_2,}}$, $fsin\infty^{fsin\infty^{...fsin\infty}}$.When activated in a neural network, the entire neural network becomes a working memory. Use of fself-energy as fuzzy activation or from outside. ffQ_0= $\text{ffSprt} \frac{\text{ffSprt}\, \frac{ffS_{mnSprt}}{activation}^{\mu}}{\text{ffSprt}\, \frac{ffS_{mnSprt}}{activation}^{\mu}}^{\mu} \rightarrow$ self-ffRAM,

ffQ_{00}= $\frac{\frac{ffS_{mnSprt}}{activation}^{\mu} \text{ffSprt}}{\frac{ffS_{mnSprt}}{activation}^{\mu} \text{ffSprt}}^{\mu} ffQ_0$prt, ffQ_{01}= $\frac{\text{ffSprt}\, \frac{ffS_{mnSprt}}{activation}^{\mu}}{\text{ffSprt}\, \frac{ffS_{mnSprt}}{activation}^{\mu}} ffQ_0$.$\text{ffQ}_0$,$\text{ffQ}_{00}$,$\text{ffQ}_{01}$-coding,translation,realization in ffeprograms, use ffQ_0,ffQ_{00},ffQ_{01}-ffS_{mnSprt},ffAssembler.