SOCIONICS BASED FUZZY EXPERT SYSTEM

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Abstract

This paper deals with problems of Socionics as an important means of expert systems in social communication systems. For the time of its development, a whole spectrum of new intellectual technologies similar to pedagogic, interpersonal relations in family and public, psychotherapy, personnel management, formation of effective workgroups stipulate development of artificial intelligence systems, and especially - expert systems. The socionic knowledge allows organizing management or production in all spheres of human activity more effectively. The proposed approach of computer-based Socionic technologies has the potential to add a new perspective to Socionics and multi-agent systems research in general.

Keywords: **Socionics.** Social technologies. Informational science. Artificial intelligence systems. Personnel management.

1. Introduction

The human civilization enters a new phase of its development, in which information technologies, such as Internet, are determining. Socionics, in turn, offers psycho-informational technologies, which allow human consciousness to be on the same level with achievements of information and electronic technologies. It is known that when human thinking is behind technical development of a society this result in huge quantity of social problems. Being an independent organization, the International Socionic institute is open for cooperation with state, public and private structures in training socionic technologies and their practical application. Existing and created socionic technologies stimulate, in turn, development of new information technologies, and this process goes with acceleration. It is obviously, that societies, countries, states fully using socionic methods and technologies, receive significant advantage against sociums and states not using them. The countries and societies, which could not or do not want to use socionic methods, can lose in due course their advantage. At the same time for the developing countries, for the countries experiencing the period of reforms, socionic technologies can become that real tool, which will help to make qualitative jump in all spheres of activity of the man. The practical consequences of socionics development consist in creation of socionic expert systems to address the following objectives [3,5]:

⇨ Interpersonal Relations and InterCompatibility in social communication systems;
⇨ Classification of personalities for Career-guidance or Attestation;
⇨ For leaders and business people;
⇨ Elective technologies, politology and ethnosocionics;
⇨ Knowledge of the human himself and his relations with other people;
⇨ For teachers and parents;
⇨ For inventors;
⇨ Socionics in medicine;
⇨ Formation of working groups for the given purposes, selection of the staff;
⇨ Analysis of information processes in management counters at the regulation of joint activities (collective behavior), etc.

2. Overview

Among numerous social technologies, Socionics has a special place. It is the first to suggest a correlation between personality types (in Socionics they are 16) and interpersonal relations. Socionics is the main contribution lies in the construction of appropriate communication systems (CS) for complex multiagent system (MAS). Socionics is a branch of psychology that is based on Carl Jung's work on *Psychological Types*, Freud's theory of the conscious and subconscious, and theory of information metabolism [1,2]. Socionics is based upon the idea that a person's character acts like a set of blocks called "psychological functions". Different ways of combining and chaining these functions result in different ways of accepting and producing information, which in turn results in different behavior patterns and thus different character types. Socionics also includes an intertype relations theory, based on the interaction of these functions between personalities. Carl Jung describes four basic psychological functions that are capable of becoming conscious:

Sensation - all perceptions by means of the sense organs
Intuition - perception by way of the unconscious, or perception of unconscious events
Thinking (Logic) - interpretation of information based on whether it is correct or incorrect
Feeling (Ethics) - interpretation of information based on its ethical aspects

Attitude of consciousness is basic direction of conscious interests and energies flow. Two possible directions of flow are *introversion* (inward to subjective, psychological experience) or *extroversion* (outward to the environment of objects, other people and collective norms). Opposite attitudes characterize unconsciousness. So the dominant function of consciousness can be introverted or extroverted. That gives as a result 8 different major psychological types. Mixed types includes also auxiliary function.

function	acronym	symbol	description
Extroverted Thinking	Te	■	Te is responsible for efficiency of actions, understanding of technological processes, the organization of work.
Extroverted Ethics (Feeling)	Fe	◣	Fe is responsible for perception of an emotional condition of the person, expression of emotions, management of an emotional condition of people.
Extroverted Intuition	Ne	▲	Ne is responsible for understanding of essence of the phenomena and processes, an estimation of potential opportunities of people and the phenomena, vision of variants of succession of events.
Extroverted Sensing	Se	●	Se is responsible for perception of space, appearance and the form of subjects, an estimation of an alignment of forces, strong-willed and power methods of achievement of the purpose.
Introverted Thinking	Ti	▢	Ti is responsible for understanding of logic communications and structures, classification, ordering, the analysis, logic explanations and proofs.
Introverted Ethics (Feeling)	Fi	◳	Fi is responsible for understanding of mutual relations between people, skill to build attitudes, a moral and moral estimation, aspiration to humanism.
Introverted Intuition	Ni	△	Ni is responsible for an estimation of time, timeliness of actions, understanding of a course of processes in time, forecasting.
Introverted Sensing	Si	○	Si is responsible for perception of physical sensations, questions of comfort and a cosiness, pleasure.

Classical socionics theory contains a total of 16 different psychological types. These types are described by their two strongest functions, where Jung's functions are used. While Jung restricted his types to only the character of the most dominant function of the psyche, Socionics, like the Meyers-Briggs Type Indicator, describes the different types as having a particular dominant function and, depending on the nature of the dominant function, one of two different secondary functions. The secondary function is always opposite the dominant function in extroversion and rationality. For example, if the dominant function is introverted thinking (a rational and introverted function), the secondary function must be irrational and extroverted, which means the only functions which could complement introverted thinking are extroverted sensing or extroverted intuition.

Nature of Functions

Function 1 - This function, also known as the program, primary, base, or dominant function, is the strongest conscious function, and the most utilized function of the psyche. A person's outlook and role in life is largely determined by the nature of this function. One is generally very confident in the use of this function, and may defend it when challenged.

Function 2 - This function, also known as the creative or secondary function, is second in influence only to the dominant function. It assists the dominant function in achieving its goal. One may be somewhat less confident with the use of this function than with his dominant function; as a result, the creative function is sometimes less instrumental when a person is challenged or threatened.

Function 3 - This function, known as the role function, is a weak but conscious function. One generally tries to be at least adequate in areas where use of the role function is necessary. However, generally one has very little control or confidence over the role function, and criticism is painfully acknowledged with respect to it. Tactful assistance is required from one's dual-seeking function to overcome the problems associated with the role function.

Function 4 - This function, known as the Place of Least Resistance (PoLR) or the painful function, is a weak and conscious function, in addition to being the weakest function of the psyche. One painfully perceives his complete inability to use this function, and reacts negatively to its imposition upon him. Tactful assistance is required from one's hidden agenda to overcome the problems associated with the PoLR.

Function 5 - This function, known as the dual-seeking, suggestive, or inspired function, is a weak and unconscious function which is largely lacked. One requires assistance from somebody confident in this function in order to overcome the difficulties it presents.

Function 6 - This function, known as the hidden agenda, estimative function, or actualization function, is a weak and unconscious function which one often understands poorly. Nonetheless, this function has a strong influence over one's activities, and one requires assistance from someone who uses it confidently in order to understand it.

Function 7 - This function, known as the observant function, the function of personal knowledge, or often merely the seventh function, is a strong but unconscious function. One generally has a good grasp of this function, but attempts to limit its use considerably. Arguments calling for restraint are often used to overlook this function.

Function 8 - This function, known as the demonstrative function, the function of concrete art, or often merely the eighth function, is the strongest of the unconscious functions. As a result, it is so deeply rooted into the psyche that one is usually not even aware of its existence or utilization.

The functions within the ego and super-ego blocks are said to be conscious functions, while those within the id and super-id blocks are said to be unconscious. Similarly, the functions presiding within the ego and id blocks are said to be strong functions which are expressed easily or naturally, while the functions of the super-ego and super-id blocks are weak and expressed with difficulty or support, or are not expressed at all.

An Intertype Relation is the relation between two psychological types, hence the name. There are 14 different Intertype Relations: Identical; Duality; Mirror; Activity; Comparative; Semi-duality; Look-a-like; Illusionary; Benefit; Supervision; Contrary; Super-ego; Quasi-identity; Conflicting [6]. Some Intertype Relations have better degree of compatibility between the types than other. Additionally, relations of benefit and supervision are asymmetrical relations; one is benefited by a

benefactor, and one benefits a beneficiary. However, one's benefactor and beneficiary are not the same types (in fact, they are super-ego types). Similarly, ones supervisor and supervisee are different types (also super-ego types).

Quadras

A Quadra is a group of four sociotypes in which mirror, activity, and dual relations are experienced by each member of the group. The unique feature of the quadra is that it offers the greatest degree of psychological comfort among all groups containing four types in which functional interaction is symmetrical. The feeling of comfort and harmony produced by the quadra is due to the fact that all types in the quadra are alike in that they seek the expression of the four information elements in their ego and super-id blocks and the repression of the information elements in their super-ego and id blocks.

3. Socionic Fuzzy Expert System

In general Socionic Fuzzy Expert System Architecture will be composed of following principal components [8]:
- *Base of knowledge* organized in the databases included the tables: relations of psychotypes from human characters, intertypes relations characters, aspects and functions, tests, interviews, emotions, motions, gesticulations, attitudes, actions, etc.
- *Databases of Personal Data* (human characters, tests, interviews, emotions, motions, gesticulations, attitudes, actions, etc);
- *Algorithm of Classification* based on the methods of Artificial Intelligence, especially on Shape Recognition methods and theories of Social Self-Organisation.

4. Conclusions

This paper introduced new approach of socio-psychological systems in social communication systems. The proposed approach of computer-based Socionic technologies has the potential to add a new perspective to Socionics and to multiagent systems research in general. Then, we examined the general socionic characters and functions by analysing its relationship to reasoning architecture of expert system as perspectives of its development using the methods fuzzy logic for decision making and shape recognition [4,7,8]. Finally, conception of socionic expert system for socially or multi-agent systems is formed based on theory of social informational metabolism, modern Information technology and the methods of Artificial Intelligence.

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სოციონიკაზე დაფუძნებული არამკაფიო ექსპერტული სისტემები

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რეზიუმე

მოცემული სტატია ეძღვნება სოციონიკის, როგორც სოციალური კომუნიკაციის სისტემებში ექსპერტული სისტემების მნიშვნელოვანი მეთოდის პრობლემებს. მისი განვითარების განმავლობაში, ახალი ინტელექტუალური ტექნოლოგიების მთელი სპექტრი, რომელიც მოიცავს პედაგოგიკას, ინტერპერსონალურ ურთიერთობებს ოჯახში თუ გარემოში, ფსიქოთერაპიას, პერსონალურ მენეჯმენტს, ეფექტური სამუშაო ჯგუფების ფორმირებას თუ სხვა, გულისხმობს ხელოვნური ინტელექტის სისტემების, განსაკუთრებით ექსპერტული სისტემების ჩართულობას. სოციონიკის ცოდნა ადამიანის საქმიანობის ყველა სფეროში მართვისა და წარმოების უფრო ეფექტიანად წარმართვის საშუალებას იძლევა. კომპიუტერზე დაფუძნებული სოციონიკური ტექნოლოგიების შექმნის მოცემული მიდგომა ინტელექტუალური მულტიაგენტური სისტემების, როგორც ორგანიზაციული მართვის თანამედროვე კონცეპციისა და საკუთრივ სოციონიკის კვლევის თვალსაზრისით ახალ პერსპექტივებს შეიცავს.

ОСНОВАННЫЕ НА СОЦИОНИКЕ НЕЧЕТКИЕ ЭКСПЕРТНЫЕ СИСТЕМЫ

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Резюме

Данная статья посвящается проблемам соционики, являющейся значительным методом экспертных систем в системах социальной коммуникации. На протяжении ее развития весь спектр новых интеллектуальных технологий, включая педагогику, интерперсональные отношения в семье и среде, психотерапию, персональный менеджмент, формирование эффектных рабочих групп и т.д., подразумевает использование систем искусственного интеллекта, в особенности, экспертных систем. Знание соционики дает возможность более эффективного управления и производства во всех сферах деятельности человека. Данный подход создания компьютерно-основанных соционических технологий с точки зрения исследования соционики и интеллектуальных мультиагентных систем, как современной концепции организационного управления, представляется весьма перспективным.