CREATIVITY AND EMOTIONS OF ROBO-INTELLIGENCES IN CONSCIENCE SOCIETY

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ROBO-Intelligence is a rare collection of chapters reflecting recent robotics developments from the advanced knowledge processing perspective. It also provides a comprehensive introduction and methodology to selected robotics topics including human-robot interaction, human motion analysis, robot vision and advanced control. The robot intelligence methods presented enable readers to address many complex problems involving a wide range of robot sensors for the perception and understanding of the environment and the reasoning of the subsequent actions.
The field of human-like robotic hands has attracted significant research efforts in the last two decades aiming at applications like service robots, prosthetic hands and also industrial applications. However, due to the lack of appropriate sensor systems and some unsolved problems with the human-robot interaction such applications are relatively few so far.

To more clearly demonstrate how **creativity** of ROBO-intelligences will look in Conscience Society it is used Piirto's 7i collaboration with Piirto's 6 Creative tops. The main Creative features of ROBO-intelligences are **inspiration, imagery, imagination, intuition, insights,improvisation** and **incubation.**
Every person: child, adult, businessmen, doctor, teachers and other takes his life, his ideas and lives in such a way as to be fine and comfortable. Therefore we are all different and unique in our own way but it is something that binds us all - **emotions.** Emotionsare specific, intense psychological reactions to a certain event. Emotions, often called feelings, including events such as **love, hate, anger, confidence, panic, fear, pain**. Reactions are specific to a particular event, usually of short duration. Emotions are complex and have different physical and mental components. Researchers agree that emotions are composed of: subjective feelings, physiological responses and expressive behavior.
Human's panoply and ROBO-intelligence's shells show individual differences in their typical behavior, emotions, and thoughts. Beginning in infancy, individuals vary in traits such as energy and activity level, positive emotional engagement with others, feelings of distress and irritability, and persistent attention and interest in absorbing tasks. Older children, adolescents, and adults vary in their typical self-discipline, responsibility, empathy, imagination, and intellect.

Traits of **Human's panoply** and **ROBO-intelligence's shells** show some stability across time and situations, but they also change over time and show some degree of situational specificity. Contemporary research on intelligence and emotion traits addresses **fundamental questions** about these individual differences: What are the informational, biological and environmental sources of variation in traits? To what extent and how do traits remain the same and change over time? How do individuals' traits affect their physical and mental health, relationships, work, and well-being? These questions are best answered when researchers will progress in developing the notion of **creative** (IQ) and **emotional** (EQ) ROBO-intelligences in Conscience Society.
Key words: creativity, emotion, intelligence, society, ROBO-intelligence

Introduction

Artificialintelligence(AI)istheintelligenceofmachines and robots and the branch of computer science that aims to create it [1]. AI textbooks define the field as "the study and design of intelligent agents"where an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success [2]. John McCarthy, who coined the term in 1956 defines it as "the science and engineering of making intelligent machines."[3]

The field **[4]** was founded on the claim that a central property of humans, intelligence —the sapience of *Homo sapiens*— can be so precisely described that it can be simulated by a machine. This raises philosophical issues about the nature of the mind and the ethics of creating artificial beings, issues which have been addressed by myth, fiction and philosophy since antiquity. Artificial intelligence has been the subject of optimism, but has also suffered setbacks and, today, has become an essential part of the technology industry, providing the heavy lifting for many of the most difficult problems in computer science.

AI research is highly technical and specialized [5], deeply divided into subfields that often fail to communicate with each other. Some of the division is due to social and cultural **factors**: subfields have grown up around particular institutions and the work of individual researchers.

AI research is also divided by several technical issues. There are **subfields** which are focused on the solution of specific problems, on one of several possible approaches, on the use of widely differing tools and towards the accomplishment of particular applications.

The central **problems** of AI include such traits as reasoning, knowledge, planning, learning, communication, perception and the ability to move and manipulate objects. General intelligence (or "strong AI") is still among the field's long term goals. Currently popular approaches include statistical methods, computational intelligence and traditional symbolic AI. There are an enormous number of **tools** used in AI, including versions of search and mathematical optimization, logic, methods based on probability and economics, and many others.

ROBO-Intelligence[6] is an exciting interdisciplinary field including engineering, information technology, machine learning, biological science and psychology. Its dramatic growth in practical applications is driven by both real-world requirements and maturity of related disciplines such as intelligent algorithms. It is expected

that perception, understanding and reasoning capabilities play a crucial role in robot-assisted tasks and enable robots to exhibit similar performance on executing various tasks in both constrained and unconstrained environments.

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The field of human-like robotic hands has attracted significant research efforts in the last two decades aiming at applications like service robots, prosthetic hands and also industrial applications. However, due to the lack of appropriate sensor systems and some unsolved problems with the human-robot interaction such applications are relatively few so far. One particular reason is the difficult programming procedure due to the high dimensionality of grasping and manipulation tasks. An approach to solve this problem is ***Programming-by-Demonstration*** *(PbD)* which is used in complex robotic applications such as grasping and dexterous manipulation. That is, the operator performs a task while the robot captures the data by a motion capture device or a video camera and analyzes the demonstrated actions. Then the robot has to recognize these actions and replicate them in a framework of a complex application.

One of the most complicated tasks is the recognition procedure because of the ambiguous nature of a human grasp. Different techniques for grasp recognition have been applied in PbD.

1. Creative Artificial intelligence in Conscience Society.

To more clearly **demonstrate** how Creative Artificial intelligence [4, 7] will look in Conscience Society it is used Table nr. 1: "Piirto's 7i collaboration with Piirto's 6 Creative tops". The 1st level robotic elements - main Creative features of Artificial intelligence - are Inspiration, Imagery, Imagination, Intuition, Insights, Improvisation and Incubation. They achieve the 1st level robotic elements – creativity tops - Acquire Knowledge, Develop Curiosity, Become Interested, Passion, Dedication, and Professionalism. On the intersections of robotic main Creative features with robotic creativity tops there are comprised the 2nd level robotic elements,one of such robotic elements is "Develop Curiosity in Inspiration" which is represented in its cell by one of examples of its usage: "Developed curiosity by searching more information about this type of business in Internet".

Table nr. 1. Creative ArtificialintelligenceinConscienceSociety.

Creativity tops VERSUS Creativity properties	Acquire Knowledge	Develop Curiosity	Become Interested	Passion	Dedication	Profes-sionalism
Inspiration	Was inspired by friend who have a small company to deliver	Developed curiosity by searching more informa-tionabout this type of business in Internet	Become interested after find that this type of business doesn't have a competition on our market	Started to find more information about delivery business.	Spent years developing	Pass on the knowledge obtained in this area to other people
Imagery	To see with my own eyes how looks this kind of business	Visit more this kind of firms (delivery firms)	Communicate with managers and owners of these firms	Devote a lot of time analyzing these firms	Help in developing these kind of firm	Help others using obtain knowledge's
Imagination	Imagine my own delivery firm	Use information from many sources connected with delivery business	Create own project connected with delivery firm	Seek financial support	Develop my own business, expand the size	After years of successful business help other young entrepreneurs to open their own businesses
Intuition	Feel that it is a good idea	Began to recall how often intuition helped me	Intuition has never failed me	Thinking day-by-day about this idea	Dedication to my intuition	Would often rely on intuition in business

Insights	Feel more clearly that it is good idea	Maybe it would work	This is definitely good idea!	I think that this would work	I'll try it	I already know that it works
Improvisation	Can it exist with only 1 employee (me)	I can try it alone	This business can exist with only 2 employees	Actually I need only a car, for this business	It really works with only 1 car and 2 employees	Minimum COSTS maximum PROFIT
Incubation	I gathered all the knowledge about this business together	I began "to lay out all the shelves"	Weigh the advantages and disadvantages	Beganlooking-forcapital	Startbuild-business	Develop my business day-by-day

Artificial intelligence with human characters in the first plan includes temperament and personality. Temperament is an important feature of social and emotional health. Temperament describes the way we approach and react to the world. It is our own personal "style" that is present from birth. There are three general types of temperaments often referred to as easy-going, slow-to-warm, and active.

Humans show a panoply (in ROBO-intelligence: shells) of individual differences in their typical behavior, emotions, and thoughts. Beginning in infancy, individuals vary in traits such as energy and activity level, positive emotional engagement with others, feelings of distress and irritability, and persistent attention and interest in absorbing tasks. Older children, adolescents, and adults vary in their typical self-discipline, responsibility, empathy, imagination, and intellect. Traits show some stability across time and situations, but they also change over time and show some degree of situational specificity. Contemporary research on temperament and personality traits addresses fundamental questions about these individual differences:

- What are the biological and environmental sources of variation in traits?
- To what extent and how do traits remain the same and change over time?
- How do individuals' traits affect their physical and mental health, relationships, work, and well-being?

These questions are best answered when researchers can achieve in developing the notion of Conscience Society.

2. Evolution of Creativity

Wehavetobe creative in ordertoavoid a boring life. I followed this idea in my project –by encouraging creativity as a state of mind- emotion and morality.

Creativity is a hard-to-define thing that eludes many of us precisely when we need it the most. So where does it come from? The great and the good have tried to answer this very question, as the quotations below demonstrate: "Creativity comes from a conflict of ideas." DonatellaVersace (fashion designer)

"But out of limitations comes creativity." DebbieAllen (dancer and choreographer)

"Anxiety is the hand maiden of creativity."

T. S. Eliot (writer)

It seems that conflict, limitations and anxiety could be places to start.

2.1. Stimulation to create. Whether you commit to learn a new fact or word each day or develop an entirely

new hobby, shaking things up is a great way to stimulate creativity. Make the most of down-time by reading a magazine or book you wouldn't normally read, and maximize on traffic jams with stimulating radio programs, audio-books or podcasts. Before you know it you'll be a fountain of knowledge, positively overflowing with fresh perspectives and ideas.It's important you take advantage of the moments that are your "downtime" and use this time to do activities you wouldn't normally get a chance too. In order to remain creative you should spend an hour a week taking part in a new sport, activity, anything that inspires and motivates you.

2.2. Take note. The annoying thing about creativity is that it tends to strike at the most inopportune moments. Always make sure you have a pen and paper with you (or the Smartphone APP equivalent), as the best ideas don't tend to pop into your head when you're chained to your desk. By getting into the habit of noting down your ideas, new ones will be more forthcoming more often. And don't forget, your notes don't have to take written form, they could be spider-diagrams or even doodles, depending on how the mood takes you!

2.3. Get out!A fresh perspective can be achieved mentally – by learning about new things – but also literally by getting out and about. Walk somewhere when you'd usually drive (assuming it isn't too far) or swap the sofa and the TV for a stroll around your local area. The fresh air is bound to work wonders. Then, for the truly adventurous, why not get a bus without knowing where it goes? This can be a cheap and easy way to immerse yourself in a new and stimulating place, plus when you're done exploring you can always get the same bus home again!

2.4. Exercise and H2O. Creativity relies on a sound physical state, as well as a mental one. As such you'll need to take regular exercise to get those creative juices flowing. A quick jog or cycle ride will deliver fresh air as well as a rush of invaluable endorphins. Similarly, make sure your brain is well-watered to avoid mental sluggishness; dehydration can be a real creativity-killer. 2.5. Pretend you're 10. Books like 'Winnie the Pooh', 'The Gruffalo' and 'The Little Prince' all serve up

extra-generous helpings of creativity. Just because you're a grown-up doesn't mean you should forget about your inner-kid. Remember when you were little you'd have imaginary friends, fight pretend dragons and assume that a camel's hump was filled with water? Tap into that feeling and you'll suddenly find yourself taking a fresh approach to creative tasks and life itself!

For a successful creative business in Conscience Society –we have to begin from a primitive idea that "nothing appears from nothing" –Buddha said that "All things appear and disappear because of the concurrence of causes and conditions. Nothing ever exists entirelyalone ;everything is related to everything else" We support business innovators who dare to think different. They are our salvation. They're the ones taking risks and discovering surprising new solutions to old problems.

Suddenly, creativity is big. While your chances of making millions as the next Andy Warhol or Taylor Swift are probably slim, you could well earn more these days by tapping into your creative powers — and, experts say, you'll be happier, too. Numerous Fortune 500 companies, including Hewlett-Packard and Sears, have hired creativity consultants to help boost innovation. The number of business schools offering creativity classes has doubled in the past five years. "It's not enough to just be good at analytical evaluation," argues Yoram Wind, a professor of marketing who teaches a creativity course at the University of Pennsylvania's Wharton School. And creative activity can relieve stress and enhance your mood, according to Harvard psychologist Shelley Carson, author of Your Creative Brain. Brain researchers theorize that coming up with something novel that's also useful—their definition of creativity—so fully engages attention that the brain doesn't have any resources left to devote to stress.

What does it take to produce something truly original? The notion that creativity is the province of right-brain, left-handed artsy types is outdated, says Daniel Goleman, a psychologist and author of Emotional Intelligence. "The creative brain state accesses a whole range of connections throughout the brain," he says. In fact, the latest research suggests that less than a second before the proverbial light bulb switches on, a spike in gamma brain waves appears to bind cells in several regions of the brain into a new neural network.

3. Emotions book, Emotional Intelligence (Bantam Books)

In psychology, philosophy, and their many subsets, emotion is the generic term for subjective, conscious experience that is characterized primarily by psychophysiological expressions, biological reactions, and mental states.

Emotion is often associated and considered reciprocally influential with mood, temperament, personality, disposition, and motivation, [8] as well as influenced by hormones and neurotransmitters such as dopamine, noradrenaline, serotonin, oxytocin and cortisol.

Emotion is often the driving force behind motivation, positive or negative.

The physiology of emotion is closely linked to arousal of the nervous system with various states and strengths of arousal relating, apparently, to particular emotions.

Although those acting primarily on emotion may seem as if they are not thinking, cognition is an important aspect of emotion, particularly the interpretation of events. For example, the experience of fear usually occurs in response to a threat. The cognition of danger and subsequent arousal of the nervous system (e.g. rapid heartbeat and breathing, sweating, muscle tension) is an integral component to the subsequent interpretation and labeling of that arousal as an emotional state.

Emotion is also linked to behavioral tendency.

Research on emotion has increased significantly over the past two decades with many fields contributing including psychology, neuroscience, medicine, sociology, and even computer science. The numerous theories that attempt to explain the origin, neurobiology, experience, and function of emotions have only fostered more intense research on present topic concerning Emotion natural and artificial (ROBO-) intelligences.

Many psychologists believe that there are six main types of emotions, also called basic emotions. They are happiness, anger, fear, sadness, disgust, and surprise. Happiness is our reaction to the positive, as disgust is to the revolting and surprise is to the unexpected. Similarly, we react to aversion through anger, to danger through fear, and to difficulty in sadness.

3.1.Happiness.

Happiness is a state characterised by some or all of: well-being, contentment, enjoyment, felicity, feeling pleased, feeling satisfied; or perhaps just feeling that things are really good, just the way they are. This is the general flavour of the primary emotion happiness.

Happiness usually occurs, or is intensified, when our desires are fulfilled. That is, when we get what we want – or avoid what we want to avoid. It often continues, though usually at a less intense level, as long as the wanted result persists. But it is very vulnerable to anything that threatens to disturb that state.

There are various other words, such as bliss, euphoria, rapture and ecstasy, that are sometimes used to denote extreme forms of happiness, but at other times have different meanings. The word joy is also used for great happiness. However, because of its frequent use by philosophers when describing an alleged state of mind which is not conditional on external factors, I have not included it in the primary emotion happiness. Thefirstsecondaryemotionis"cheerfulness".Thiscomprises a myriad of tertiary emotions like: amusement, ecstasy, gaiety, euphoria, bliss, elation, delight, and happiness.

Zest is another secondary emotion encompassing different tertiary emotions like: enthusiasm, excitement, exhilaration, and thrill.

3.2.Sadness

Sadness, also called unhappiness, is a state characterised by some or all of: sorrow, misery, dejection, despair, displeasure, dissatisfaction, despondency, disconsolateness, dolefulness, mournfulness, gloom; or perhaps just feeling that things are really bad the way they are. This is the general flavour of the primary emotion sadness.

Sadness usually occurs, or is intensified, when our desires are not fulfilled. That is, when we don't get what we want – or do get what we don't want. It often continues, perhaps at a less intense level, while that unwanted state persists. It is usually relieved, to a varying degree, by any improvement in the unwanted state.

Incidentally, although sadness is one of the features of grief, and also of depressive disorders, it does not define either of those conditions, nor is it limited to them. (I will have a lot to say about grief later in this book, but depressive disorders are outside its scope.)

Directly related to sadness, the following tertiary emotions can be displayed: depression, unhappiness, misery, melancholy, gloom, and despair.

The secondary emotion "neglect" can be understood by the following tertiary emotions list: insecurity, alienation, homesickness, embarrassment, and humiliation. Feelings of sympathy and pity are also included in this category.

3.3. Fear

Fear also has various meanings, both as noun and verb, but its commonest meaning is the unpleasant subjective effect of the apprehension of possible danger or pain, or any other outcome considered adverse by the subject – including unknown outcomes. It is often associated with an urge to escape. All of this gives the general flavour of the primary emotion fear.

Again, there is usually a little of its opposite, lurking nearby. Thus, whenever we have prior knowledge (or suspicion) of an outcome we consider adverse, we hope to avoid it, but we fear we may not avoid it. In the case of a desired outcome, we hope to achieve it, but we fear we may not achieve it.

The fear of not getting what we want is not quite the same as the fear induced by physical danger. Nevertheless, they are closely analogous, and the "fight-or-flight response" seen with danger often occurs to some degree with fear not due to danger. (This physiological response includes the release of adrenaline, often causing disconcerting physical sensations, which tend to engender more fear – creating a most unpleasant vicious circle. I discuss this in some detail in another publication.

Incidentally, in many traditions it is believed that fear is a shameful weakness. I strongly recommend not suggesting that to a war veteran, or anyone else who has faced great danger. In any case, for the purposes of this book, the primary emotion that I call fear, as described above, is neither reprehensible nor admirable. As with hope, it is simply – as defined above.

One secondary emotion in this category is "nervousness". The various tertiary emotions relating to this sub-category are: anxiety, apprehension, distress, dread, tenseness, worry, and uneasiness.

Another secondary emotion in this category is "horror". There are various tertiary emotions in this sub-category. The list of emotions is as follows: alarm, fright, horror, hysteria, mortification, panic, shock, and terror.

3.4.Anger

Anger is an emotion related to one's psychological interpretation of having been offended, wronged or denied and a tendency to react through retaliation.

Anger can be a good thing. It can give you a way to express negative feelings, for example, or motivate you to find solutions to problems.

But excessive anger can cause problems. Increased blood pressure and other physical changes associated with anger make it difficult to think straight and harm your physical and mental health.

One secondary emotion "rage" is further differentiated into tertiary emotions like: bitterness, fury, loathing, hate, resentment, and wrath.

Frustration and exasperation are a similar type of tertiary emotions. The secondary emotion "irritation" involves tertiary emotions like: agitation, aggravation, and grouchiness. Another secondary emotion "disgust" comprises tertiary emotions like: contempt and revulsion.

3.5.Disgust

Disgust is a type of aversive reaction that involves withdrawing from a person or object with strong expressions of revulsion whether real or pretended. Another definition of disgust can be defined as a revulsion response towards potential contamination.

Disgust can be described as a universal, basic emotion that functions to help protect an organism from ingesting potentially harmful substances, thereby promoting disease avoidance. It is one of the basic emotions and is typically associated with things that are regarded as unclean, inedible, infectious, gory or otherwise offensive.

3.6.Surprise

Surprise is an emotion that is straightforward but hard to catch. Though people will recognize it right away, surprise lasts for only a few seconds at the most before it blends into another emotion. Because of its limited duration and the argument that it is neither positive nor negative to experience, some researchers believe that surprise is not actually an emotion. Yet, its ability to affect us physiologically, can lead us to think otherwise.

Like the other five universal expressions of emotion (happiness,sadness, anger, fear, and disgust), surprise has its own unique facial expression configuration. When someone is surprised, the eyebrows raise, the upper eyelids raise to enlarge our eye openings, and the jaw drops. The co-occurrence of these three changes in the face universally communicates that someone is experiencing surprise. Again, just like the other emotions, surprise has its own unique function.

Scientists believe that the reason for the raising of the eyebrows and the eyelids and the dropping of the jaw in surprise is to allow maximum intake of information by opening all the senses.

There are related tertiary emotions like: astonishment and amazement.

Conclusion.

Personalities of different type perceive emotions of happiness, fear, surprise, disgust, sadness and anger in different mode.

Examples of emotion perceiving by such personalities as Melancholic and Phlegmatic type (developed by Nicolai Ili) of are presented in the next table:

Emotions Tempera-ments	Happiness	Sadness	Fear	Disgust	Surprise	Anger
Melancholic	Deep, calm	Sensitive, weakness	Hysterics, nervous	Crazy, no support	Distrustful	Violence, rude
Phlegmatic	Sure, confident	Drowsy appearance, an air of obscure \ sensitivity	Cautious, reserved	Logically	Unimaginative	Rage and ambition diaries / bypass obstacles

Pragmatic definitions for the notions "Emotion perceiving by personalities of Melancholic and Phlegmatic type" represented in the cells of this Table at the intersection of columns (Emotions) and Rows (Temperament types) are presented in the next paragraphs.

Melancholic - Happiness: Melancholics when they are happy, they have a calm activity, think about the problem, they do not irritate. He is not overly emotional, inactive, uncaring, melancholic decides to act tough.

Melancholic – Sadness: It is characterized by a weak type of higher nervous activity, mentally weak resistance, but also by an acute sensitivity. It desire for peace and solitude.

Low levels of strength, mobility and balance: increased emotional sensitivity, emotional, extended voltage, low resistance to stress and frustration. They have a passive behavior and lack of initiative either.

Melancholic – Fear: Melancholic temperament is characterized by sadness and melancholy, because Melancholics tend to oversize weights that easily go and lose their self-confidence, shy and totally lacking in courage.

Melancholic – Disgust: He crazy, does not support things or persons provokes disgust.

Melancholic – Surprise: He feels no enthusiasm lightning but a poor impression of intensity but lasts much longer.

Melancholic – Anger: It usually passive and reserved, not very brave, yet violent, slow in thought and speech. He wants absolutely right - and forgiveness of offenses is rarely an option.

Phlegmatic – Happiness: Retained and moderate in expression, speech and gestures possessed controlled, timely. It is inert, indifferent.

Phlegmatic – Sadness: Speak quietly and sparingly, with breaks, without strident emotions displayed with the discrete gestures, is retained and patient. He is uncaring and sensitive.

Phlegmatic – Fear: He did not waste his powers for widgets is not mischievous, has a lenient attitude towards the arrows that them are addressed, easily control their impulses, is retained and patient, calm and cool, knows to expect.

Phlegmatic – Disgust: Act logically reasoned, often ironic.

Phlegmatic – Surprise: The phlegmatic not impress him nothing, is unimaginative. If he has any reaction, then it fades quickly.

Phlegmatic – Anger: It is a fire tolerant, patient, has a low reactivity, with self-control, better avoids obstacles.

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