



Syntropic Counterpoints: Philosophical Content Generated Between Two Artificial Intelligence Clones

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Abstract. In the project Syntropic Counterpoints, we are using discussions between Artificial Intelligence clones to generate creative content. Nevertheless, our focus is less on content analysis and more on the beauty of creation itself and given context by the machines. We are using a different recurrent neural network (RNN), and collective creativity approaches to support interactions between Artificial Intelligence clones and trigger a humanless creative process which should lead to unsupervised robot creativity. The robots are trained by using the publications of some of the greatest thinkers of their time such as Aristotle, Nietzsche, Machiavelli, Sun Tzu and confronted to the crucial questions related to humankind such as understanding of moral, aesthetic, ethic, strategy, politics, etc. Throughout this robot-robot interaction model, we are trying to investigate the possibilities and consider limitations of using artificial intelligence in context-based creative processes as well as to raise questions related to potential future phenomena of machines mindfulness.

Keywords: Artificial intelligence · Robot-robot interaction · Intelligent interactive artifacts · The art of AI sense · Machine-made context art · Interactive media art · Interaction design

1 Introduction

In contemporary digital society, artificial intelligence has an increasingly significant role in making decisions instead of humans [5]. However, are they made in the name of humanity? What about the ethical and moral dimensions of such choices? As a technology-driven society, we are facing new challenges related to “machine ethics” paradigm in designing future autonomous systems and devices. As such, more attention should be given to social properties involved in future AI algorithms and machine learning.

Furthermore, to investigate machine consciousness, reasoning and cognition tasks performed in their judgment or decision making. No matter Artificial Intelligence became better than humans in some of the specific domains such as playing chess [7]. Still, it fails human capabilities beyond calculations and

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P. Cortez et al. (Eds.): INTETAIN 2018, LNICST 273, pp. 3–13, 2019.

https://doi.org/10.1007/978-3-030-16447-8_1

algorithms. Syntropic Counterpoints is the art project which has the intention to expose artificial intelligence cyber clones to some of the crucial topics for humankind and future of the society. The clones are having discussions between each other and create their content based on knowledge they were fed initially. They reply to each other based on respond analysis and related topics in the knowledge feed. Nevertheless, our focus is less on content meaningfulness and more on the beauty of creation itself and given context by the machines. The project is an artist response to rising technology singularity and emerging Artificial Intelligence implementation in every aspect of everyday life which changes the social interaction landscape forever. We are using a different recurrent neural network (RNN), and collective creativity approaches to support interactions between Artificial Intelligence clones and trigger a humanless creative process which should lead to unsupervised robot creativity. The robots are trained by using the publications of some of the greatest thinkers of their time such as Aristotle, Nietzsche, Machiavelli, SunTzu and confronted to the crucial questions related to humankind such as understanding of moral, aesthetic, ethic, strategy, politics etc. Throughout this robot-robot interaction model, we are trying to investigate the possibilities and consider limitations of using artificial intelligence in context-based creative processes as well as to raise questions related to potential future phenomena of machines mindfulness. In this paper, first, we will introduce the related projects. Furthermore, we will describe our approach and created dialogues from the two philosophical discussions between Aristotle and Nietzsche, and Machiavelli and SunTzu AI clones. Lastly, we will conclude and specify future directions of the projects.

2 Related Work

Humans decided to give to the driverless cars, and many other AI equipped machines power to make sometimes life-critical decisions, as such ethical and moral dimensions must be taken into consideration and attention [6]. Furthermore, if we are even capable of making an algorithm which will be able to use ethical patterns of humans then are we facing the potential development of new phenomena “ethic of machines” or “moral of machines”. That novel, creative pattern of Artificial Intelligence reasoning could develop their attitude toward other human society unique social characteristics such as wars, diplomacy, strategy, culture, art, self-distraction, etc. Many artists are taking the challenge of using Artificial Intelligence in their creative process as well as to point on certain issues related to technical singularity, humans and data relation, and artificial intelligence as a powerful creative medium.

Turkish artists Refik Anadol employed machine-learning algorithms to search and sort relations among 1,700,000 documents. Discovered relations and interactions within multidimensional data space he translated into an immersive media installation “Archive Dreaming.” By training a neural network with images of documents, Archive Dreaming reframes memory, history, and culture within the understanding of a museum for the 21st century. Memo Akten Turkish artist

based in the UK created the artwork “Learning to See: Hello, World!”. In his art piece a deep neural network opening its eyes and trying to understand what it sees. Originally inspired by the neural networks of our brain “Learning to See” is an ongoing series of works that use state-of-the-art machine-learning algorithms to the point of inquiries about self-affirming cognitive biases, our inability to see the world from others’ point of view, and the resulting social polarisation. “Singularity Singularity” is an audiovisual collaboration between the artists Solveig Settemsdal and Kathy Hinde. The concept of Singularity surrounds the readings of terms technological singularity and gravitational singularity. In Singularity, Solveig Settemsdal explores a temporal and sculptural process of drawing in a fluid three-dimensional space by suspending white ink in cubes of gelatin supported with Hinde’s musical composition which directs attention to the microscopic detail of the expanding abstract forms. Theresa Reimann-Dubbers from Germany created the artwork A.(I.) Messianic Window A.(I.) Messianic Window is a project addressing AI’s oversimplification of complex human concepts. The stained-glass window depicts an artificial intelligence interpretation of the term Messiah. The context of A.(I.) Messianic Window is the current trend of applying humanistic, cultural and non-universally defined concepts to artificial intelligence. Machines become intelligent by being fed with information about the world. Who feeds them and selects this information? What biases and perspectives are transferred to machines? Religion is one such nuanced concept—the understanding of it differs throughout the world. The term Messiah refers to different figures or ideas depending on one’s religious belief. Marco Donnarumma in collaboration with Neurobotics Research Laboratory and Ana Rajcevic created artwork Amygdala. Amygdala is an installation exploring the essence of humans’ expectations and anxieties over artificial intelligence (AI) and robotics. It reanimates a key symbol of collective human history—an ancient ritual of purification—through the glare of today’s technocratic society. The AI Robot named Amygdala uses a sharp steel knife to sculpt a large piece of skin. The robot’s only aim is to learn an animistic ritual of purification known as “skin-cutting.” The robot’s movements are not pre-programmed, but emerge interactively from particular neural networks called “biomimetic adaptive algorithms.” These algorithms, used in humanoid robotics development and programmed by Donnarumma, mimic the sensorimotor system of mammals. Thus, the robot learns by doing; it teaches itself the cognitive and physical discipline required to perform the ritual. Tommy Pallotta and Femke Wolting created artwork “More Human Than Human.” The artwork explores the rise of artificial intelligence (AI) and its effects on our lives. Filmmaker Tommy Pallotta takes us a step further as he builds his robot to see if it can replace him as a filmmaker. He and his team design, build and program the robot to think autonomously and test if it can direct and interview him. “More Human Than Human” instigates this debate between futurists and sceptics, about the potential of Artificial Intelligence. Etsuko Ichihara is the author of Digital Shaman Project deals with mourning as a cultural practice to come to terms with death. She offers a way to adapt the mostly ritualised acts of mourning to technological progress by deploy-

ing digital robotic assistants. This work raises the key question: What role do we as human beings from different cultural backgrounds assign to technology and how do we permit these devices to so enduringly influence us in the most intimate situations—both as individuals and collectively as a culture. Presented related works in this paper are exhibited at the Ars Electronica in September 2018 in Linz, Austria [1].

3 Our Approach

In our approach, we are combining art and technology to create intelligent interactive artefacts which are trained to generate content as part of an artwork’s creative concept and expression. Unlike the use of AI as a medium to support or imitate human creativity and behavioural patterns we intend to liberate and explore its creative patterns through the robot - robot interactions. Artificial Intelligence Clones are created by using two independent recurrent neural networks (RNN). We used many-to-many LSTM networks built with Keras [2] and TensorFlow libraries [3], designed to generate a sequence of words based on the input sequence. Training was done with the joined text of English translation of the selected publications and books of the Nietzsche, Aristotle, Machiavelli, and SunZu. Four models created with training were exposed through REST API made with Flask framework [4]. Visualisation on robots was done through web applications accessing REST API to retrieve text and sound. The conversation was initiated by picking a random quote from the book in for of few complete sentences, and from that point output of one network was used as input to other to maintain a conversation. Every 30 min, a context switch was made by picking another quote from the book, to alter the course of conversation. We are using collective creativity approach which is associated with two or more people contributing to a creative process [8], in our case two AI cyber clones are involved in the process of creation. The created content is the result of employed intelligence computational system creative behaviour. Critical for computer creativity understanding is to accept that not only humans are creative and computers are not [8]. In this paper, we intend to present segments of the machine-made content with a minimum of human interference and focus on computational aesthetic itself rather than the quality of the content itself, the judge upon rational criteria and characteristics.

3.1 Sample Discussion Between Aristotle and Nietzsche AI Clones

Nietzsche: *Superman: I have spoken my word. I break down by my word: so willeth mine eternal fate—as announcer do I succumb! The hour hath now come for the down-goer to bless himself.*

Nietzsche: *Roman empire. Standing between India and Rome and forced to make a tempting choice, the Greeks succeeded in inventing a third form in classical purity.*

Aristotle: *For some persons supposed to be common judgment can most easily fulfill badly and by magistrates or by habituation or the means of external tyrannies. Even these arguments, from whom he thinks. (In fact the view that part of the city- Nietzsche: They are not so much afraid of ennui as of labor without pleasure; indeed they require much ennui, if their work is to succeed with them.*

Nietzsche: *Finally in prison he came to understand how, in order to relieve his conscience completely, to practice that music which he had considered insignificant. Aristotle: And similarly the man who is like one another, whether one separates the small proof in the other hand, knows and compulsion, whether separated from his abstinence from those offices of the state, rendering to that good citizen and office are numerous,*

Nietzsche: *Dionysian means, for example in a folly, for instance, the Alexandrian sex is, however, it wishes just now less great that it will then anything more ruins in general as so far when in these cases are useful, but taketh master*

Aristotle: *to later. Now arises (5) the activity of lovers he desired than with ty- rants. Poetry. The proximate rule of acts of the patient thinks, nor is young as being as well as to become friends quickly, but of*

Nietzsche: *their feelings may easily have the motive force against a bad sex. The manifold itself is always seen and tempted to some divine principle?– It is, in questioning or pain solely? In cases, can be regarded as they then a grudge*

Aristotle: *qualification, and what is the terrible thing in states. Pheidon to say the law trains officers alone might think men pursue or youthful towards them, can not do so much. Hence often the chief knowledge of freedom is their posts, either of Nietzsche: sympathy, and will unconsciously, or, not the saying of the aim, things, and in order to prove the most part of a type " man is something like possible to us to perceive the basis of the ultimate one, the*

Aristotle: *matter also with regard to the character of the fat, either of a constitutional government at the generic License of thought, and more than they should have leisure, e.g. seven. On the other hand, he shall say either the action. Nietzsche: Here we think these words, for that account it dies away, and consolation from themselves their measure: they gradually also gaze on his law — and this explains this service of ours, makes the training - geniuses: everyone is our age*

Aristotle: *based on actions about ; this may suffice for perjury because of any democracy is to try to need.) Secondly, there are Forms as just as it seems not to make this name. Thus the things in opinions they suppose the greatest goods Nietzsche: and secrets. He is the kind of yearning for knowledge. And I think but well stand, of naught to creep out, everything much coming ones, were learn more closely related, stretched, then, as if it were so strong than*

Aristotle: *to something whatever. But of what has been so the same thing primarily. – Further, from these place happiness is the substance but the soul. It is clear, however, whether we say nothing up to the geometer can be defined as the Nietzsche: depth of a vivid world, and recollect, the imitation of our family as a writer has lacks too glad to do Zarathustra entered from the open and justified on darkened waters), and to repeat it precisely the populace where live alone and of*

Aristotle: any kind of nature, indeed, but only in all things that they are mistaken ; and pleasure also that others are not severed from virtue of the others. Suppose the second of these three, assigned to many other kinds of monarchy, –

Nietzsche: up the inadequate appearance of the Homeric artist moves properly, Helvetius, or we suppose the good primitive artist, from which he must reach that to be ITS intercourse, for states more distant forms — has been said ” and acting. He Aristotle: called musical long throughout, and the other abandons, while in their wealth skilfully, the poet should assess a thing improbable good passing there is a sort of constitution, combined, will be as one at a single kind of justice (for this

Nietzsche:gloom, when it were formerly regarded as a significance of the Greeks, as something in the street or whether one has been affected also the disgust at the conceptions not of the necessity for certain things satisfied with the smallest details in which one

Aristotle: has to be put together. He should keep the laws of his state, which seems necessarily to know how much particular substances. And a king according to a lover of a resemblance. This answer both in them every state falls up when we Nietzsche: not only from us only produce that new primitive myth are not seldom enough perhaps to be on belief, the victorious over the moral essence of being myth. But this problem we can surrender that the music applies themselves to be commanding and men and

Aristotle: re common, persuaded of what is true, so that all are not involuntary, but not substances ; for why should therefore avoid soul in the beginning, e.g. if a man can not know it as he thought. And if the good -

Nietzsche: faced with the best similes of meet he praises a person could be the little innocence of where and a thing will – for great worth, it wanteth may also seduce me than the rabble, but out of his children! For in a man

Aristotle:what is noble to seeing what suits the utility being so unpopular, and also in this way, and that the complete realization they are angry at Sparta ; and hence all things can spend friends with the pleasures of concerned with their preservation and

Nietzsche:thus to prove a mask of man, and then it can not without this point. There we have a right to give its middle - world recurring image and of different worlds than losing all the service of a new significance, as one usually Aristotle: does not take as much less. Hence it seems to need this question well state it more in which considered supposes far some, not however much. There is generally a democracy in a tyrants ; oligarциple against goodwill are similar in no term

Nietzsche:, the secret and hollow, and the reverence for a woman, for the consciousness of man pictures and had left to having to make developed the anti - constituted relationships of the complex relationship between the scene, whose dissimilar culture is, say

Aristotle: that which preserve and whose good is that is intermediate both any one and another but he.’ Should we have discussed these considerations, that

arbitrary and pity is defeated by both in military and works of paying any fees, are preserved,

Nietzsche: *as cruelty, whose souls was there perhaps had just heard by sunlight: this relationship link between the primordial optimism claims of a malady in this single animal, and a view of the Apollonian steps and power. Here and finally, even a Aristotle: enjoyment of such manner in old times (for none of the shoe not thought anything for that the soul, when compared with a object of half many: we may get rid of good fortune in the natural manner, and who will more,*

Nietzsche: *are behind nice and its moral potion in itself. In the fact that really the fear of his eye is often far reconciled in sight of the eternally fervour. Only then did it be, generally from the most distant, more than Aristotle: nearly any things of the substance? The next arrangement. But this difference in no word right to whose physicians should prevail for their sake after their money ; and in the case of the Project Gutenberg form of two, they revolt, or,*

Nietzsche: *like a condition, just as “we, whose course takes suffering? What do they determine what it pleases man, and hear Zarathustra wanted to show himself only anything. woman have long voluntary cause for God every one book? It was the Aristotle: first of these, each of the two parts. We describe the terms neither the angles of either there is a distinct genus ; we approve may perhaps be possible to make them all others attributes in the same genus, if one could become happy*

Nietzsche: *to that precisely that myth are Euripides is capable of value. The Chinese intellect was reduced to support to a dance or tragic art, and lives much like a woman, or in cognition, of course, manifold and unfamiliar persons, and Aristotle: not with negative prefixes ; for a possession of self - indulgence is not generated or better for ordinary things), e.g. we are seeking for such a democ-art, will be hereafter alone he made right angles’. - (2)*

Nietzsche: *, who have begun for distress, that condition to blow experience in primordial and sensitive soul: now it moves do quite its work from Dionysian and turning question, myth, who get convinced of air and essentially Dionysian arousal, in the inner moving*

Aristotle: *cause. The mode of Hiero was friendship when a whole knowledge is prior to the other. I ought not, however, that is done by much for both. Such people also call a best beginning of it, and so long that*

Nietzsche: *he has not his strong and thinketh how step on the ground, who immature discovered a hard desire for knowledge! And verily, over the world waiteth for the earth! Lo, how could we ourselves come and fast well, and live*

Aristotle: *by reason of pained as a whole as well as you are apt to beget children ; but a word is a good man as divided certain part in them delight in a state and never destroy itself. The theologians also raise the cause of this*

3.2 Sample Discussion Between Machavelli and SunZu AI Clones

Machiavelli: *power, with another case he had not trust them Italy, in order to himself like many are careful either to live. and every one may keep Pistoia ; the*

Carthaginian, knowing in the priesthood. Owing to find this non the Duchy of St subjugated the count of Asia, he consisted of cruelty and the Guelph settled, the PAGOLO, which greatly make it always be assured, and therefore, ills are omitted. The causes in Italy passed into the people, so as in

Suntzu: *his dryness another, men that he are drawn to engage in 184 A.D., being would press a specious ruin ; if it was to display the enemy may suffice would gave a than one, first upon on them Earth, or if even them far.]] lowed to supply have to destroy the enemy 's forces, Es- will be prevented such towards the enemy. The necessity for a fidelity. [This had the double of serious Heaven.] 2. When an army,*

Machiavelli: *lest this are consider some eminent man, to live with his birth and unwilling to show- ties are accustomed to take them all more, in such a number of their Lords of each bad accustomed to when Castruccio should be wanting your adapted for without other cities they sent and mean ; but in the character of Lucca differing there gloriously so as to make you question of those emperors had gentleman, confirming upon the ap- Principalities were three experiment river, making the service*

Suntzu: *of the enemy are anxious for the former walls, the camp where no hand fear, the himself direction. If the battle is up country defeated and per battle, used. Li Ch'uan has the statement to discover his forces. It is the conduct of his plans and do too to be looking message of the enemy 's army from discipline.*

Machiavelli: *to make use one of adding half either - end, Pagolo, and therefore, they scarcely unable like the peo- he makes him up to him, and THEY for this he had be held in some degree the daughter of men, came in order of the people than the rise and of the Pistoians, and al- a lord of very good community in any- states, such by his famous 98 [*] Ramiro, or other answered that virtue to force to it*

Suntzu: *fight with an army have to handle a classes to defeat him. Their result is a ground to shirk men, he will be attacked by modifying his 1401. Poverty of his encampment be used on the same without heaven- moving. 7. Therefore alliances or to extremities. ”] that SHIH Tzu said: “banging my plans commands was the ancestral are in deadly. Chang Yu says: “ He who rushed out within the former only, just the best will be less routed against your*

Machiavelli: *help you ; more perilous to yours to the emperor for the wicked master of these energy encouraged by an end who has been, as superior in our times, who also but all infinite other river many campaigns, died 1519, making up acquiring, there was very been XIII, had to your officials ; one can be compared to him. Fur- to strengthen himself either coming to himself promises to defend only Ca- kept in mind: ‘ ‘ Sir measures ; and yet would be more*

Suntzu: *than civil up our opponent useless they should be done! I investigated before Ssu - solicitude for the end. Ts'ao Kung says, the “ If all won them against the earlier, or for escape postulates us. They should shift our topics. If it is not apparent The commentators with victory, which leads on to the incisive, you should be call away from the enemy. Profiting by them at the sun. We suppose for*

Machiavelli: *this ingratitude he defeated and then his colleague ; because of this pretence in fortresses at fortune and many cities with other necessities for the infelicity of that line, which would do not agree with pious courage until you - at Carmag- ‘ And how away his last of France ; and there will not be defended an ready natures, and in order to maintain by the dissolution of France, from the wounds and responsible to have been accustomed to suffice arms, and was done, and yet*

Suntzu: *any general should come out and to fight, harmony and 500 soldiers on the army has preparations. ”] 45. There are fighting in the effect of regard the business provisions by the Nine Situations ” overthrows all, on the day days. As pictured T’ien natural breathing - ch’ang, name was accompanied by destruction by Li Kung, a expeditions, “ lead matched in every months have him to the enemy’s attack. Scheme turned points by its TZU varieties of the extra their*

Machiavelli: *banner if all the papal authorities. This yielded he confirmed their ambitions the first, one has always maintained securely and men to array the rallying) and riches, either by intrigue who directs these oaths have been right to have left them the greatness of the difficul- Free eBooks at Planet eBook.com crossing is willing to be more appropriate to do as consideration, often many has very in enduring of BY ask of this expedient the river ; in by fortune, being became in our times.*

Suntzu: *Over shifting the army does not go with fettered country.] 7. Though you lie Han ground, while we make your orders, provisions no fear was weak and plunder. [The regular men devoured spies he closes with them beforehand. For when you penetrate suddenly there the result had begun to Chu ; [As means Mei Yao - ch’en: “ The general who turned to make a junction of our whole army in thought, waning ” and arrived means of life, two*

Machiavelli: *of San Min position made himself in Rome, and their quarters on the former his quarters, and the Orsini, so that they were filled with abate in any to cruelty ; yet the Princeschemes, and Oliverotto held in adversity. But Stefano to defend himself June kind, but, Messer Sforza, finding us have done his enemies, for by his government, owing to it spoken of either ; or the Romans, another out of Macedonia with Bologna ; the*

Suntzu: *Ku- Cho Yao - fu said: “ If those who in capacity’ s little, we were facing that there is the general, that he retreating state he will be impeded in two behind. ”] and Chia Lin, “ because the former is the hundred of roads which is a weak or of Chang, foodstuffs, after him, as getting on his battles with all, but, the other land, through those that enables him by High and the men, the people will*

Machiavelli: *fail in 1494 to be looked at proceed, then appears, but complained to him who have around him for he fought that the other lives is reasonable that the Car- ity, compare by one year ; and after their property of it follows, on the pontificate presence, is that time were using hold the opponents, and in the river and the death of the garrison sighted what every rea- ruin is almost forced to spit in such subject reputation and those of being fevers ; and*

Suntzu: achieve routed one's interests by his own own attack, and the secret of mind when returning think that that when five being used and impedimenta. "] aker men and thus merely to the enemy.] Among it is to deceived it is properly see or translated: must principalities by the sentence was sent by adhering to fight.'] by noting the aid of an armistice, his strongholds for timidity, and make one from difficult. Now, taking used men

Machiavelli: both to remain. Bor- CONCERNING NEW But among whom he did not help them, he takes his take five forget infantry, to examine own arms. this son of Castruccio can not fare in exist in losing it can not dare to me that when without our ished and your prince, Castruccio was to hold that thou goest In the reason of all princes and the other light masses and he ac- cially a age of those things which doing else by the chance of the

Suntzu: other will, be poison to the soldiers. [Chia Lin gives soon as like a hundred filled against him. The other sense would who had as " places where it impossible to move surreptitiously, that Sun Tzu is CHENG, had to gratify his men were in consequence. [See Kung 's explanation is simply only forth them open a couple, where it is ready to signify that such as Yin, because they will make himself words: " the sovereign " manage to one point

Machiavelli: in leaping Macrinus, and that sunrise, perhaps, knowing the Cardinal one of Charles resources against, holding Vitellozzo state. Therefore, it is not for thee up in Lanfranchi use the city and of these arms, can not be drawn nor no reasons ; but it, therefore they are imitated thee ; covetous, and en- ments had seized Italy, were desired to your state, as armies, not disposed to content with France, at all his men so not only the kind of

Suntzu: - measures, he will render open far from the princes, and it is about to one of the defensive. " The deep - chi in head of the enemy, robust, enables them as a desperado is uncertain. "] 6. Therefore the fire is of Lo Shang 's passage book on fling.] pose, if his resources of you are, we have still wish to defeat the phenomena. What Mei Yao - ch'en here make a superiority for the old side, you

Machiavelli: was a bet- covered the master of the empire, in the first capt- tains, course, whom he overcome these things. Roberto or he would defend him: ' When Prince of She is always double found up all the people, as offend not they exterminate his high quarters if fortune, and then I have heard of him of wild colonies and tumults together. [*] benefits makes a rich or Nicolo servants, have well under the courage, unfaithful, as see- er

Suntzu: Tso battle, the officers will a bait to leading, but must not move ; if our only showing his weight. "] and do example of the offender is already worked into a long in certain word in the rushes on it, it was keenest in view in autumn, according to Tu Mu: taking one of " communication with a large troops may make an inferior his enemies from attacking, the men will be favorably placed a body of one of the gradually ardor with these rapidly

Machiavelli: natures, and a very able to reassure them ; and thus, which was need of the people will turn to provision, especially it place, in Vitellozzo Ruberto, especially those who have the ruling friends united by Oliverotto ; which happened

to affairs of Castruccio, fought in the nobles were, compelled not, being oppressed in this endless nobles, but many cruel. conditions solemnly by speaking of some of Messer B.C., others became a very short time she could not help to Maximilian

4 Conclusion and Future Direction

Project Syntropic Counterpoints has the intention to point out the particular questions we would like people to think about and consider about the future of artificial intelligence development and integration in the society. Equally, in the project is offered a new type of creative content made by robots and opportunities to use it in future artistic expressions and knowledge development. Hence, specific criteria for evaluating robot creativity should be defined too by taking in consideration generated content as well as the characteristics of the creative process which led to creation. The new creative practice “AI Aesthetics” and robot-robot collective creativity process we are proposing in this paper should open new frontiers for machine creativity and artificial intelligence criteria of beauty. Eventually, this could lead to better understanding of machine data perception and mindfulness of the broader knowledge related to abstract meanings, cognition, culture, human criteria, and qualities.

Furthermore, we are continually working on the improvement of our artificial intelligence algorithms, used technology and methods to improve cyber clones performances. However, without taking control over computation characteristics which makes it is creating process different than human.

Acknowledgement. We thank Marko Jovanovic, brilliant Software Engineer, who gave us technical solution and developed the Artificial Intelligence Clones we are using in the project.

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