Artificial Intelligence Oriented Adventages For The Social Life

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The Advantages of Artificial Intelligence

Thesis: If artificial intelligence is sufficiently used and integrated in social life, it certainly

provides beneficial opportunities by promoting the quality of education, medicine,

military and security.

I. Education

A. Providing superior educational tools

1. Interactive class system

2. Smart search engines

B. Creating new learning method

1. Fuzzy logic

2. Intelligent tutoring software programmes

II. Medicine

A. Faster diagnosis

1. Limiting number of hypotheses

2. Assisting clinicians with tasks

B. Better treatment

1. Providing permanent treatment

2. Making therapy recommendations

III. Military

    A. New technology war vehicles

        1. Unmanned aerial war vehicles

        2. Autonomous underwater vehicles

    B. Defence systems

        1. Radar systems

        2. Fingerprints systems

IV. Security

    A. Advanced security systems for vehicles

        1. In cars

        2. In trains

    B. Intelligent buildings

        1. Alarm systems

        2. Home appliances

Throughout the history, human beings witnessed that the only thing which does not change is alteration. Surely, the continuity of human life depends on awareness of the alteration and struggling for innovation and development. Artificial intelligence is one of the most striking approaches that shows up with these changing conditions. Especially in the last century which was the information era, the improving life standards were associated with the concept of artificial intelligence. Artificial intelligence technology consists of the sytems and algorithms that are capable of thinking and making decision just like the humans and creating many solutions in several cases. All these features of artificial intelligence encourage the mankind to carry out the investigations about artificial intelligence and its applications. Indeed, if artificial intelligence is sufficiently used and integrated in social life, it certainly provides beneficial opportunities by promoting the quality of education, medicine, military and security.

Firstly, in social life, one of the most significant areas in which artificial intelligence and its applications are used so as to ensure innovation and beneficial opportunities is education. Actually, making life easier as well as improving the level of education requires the integration of artificial intelligence in educational environment. To begin with, artificial intelligence offers superior educational tools that can be more suitable and beneficial by providing both advanced functions and mechanisms. Interactive class system is one of the most striking examples of artificial intelligence. These systems also make the teachers and students more relaxed and active by encouraging them to be well motivated during the lessons. Schachter indicates that computer applications with new artificial intelligence based tools are capable of acting as an assistant by ensuring a variety of support during the lessons. These products also could learn thinking just like the humans. Therefore,

the new artificial intelligence based tools have great popularity among the teachers (2003, p. 20). This is why the products supported by artificial intelligence make educational activities more effective by not only providing more interaction for each student, but also decreasing teacher's responsibility, and this means; the more artificial intelligence applications are used in education, the more achievement is provided. Moreover, another useful contribution of artificial intelligence is smart search engine which plays an effective role in educational environment by assisting the researchers to obtain more related data for their assignment in a short time. Modi, Bhandari, Desai and Shah state that a smart meta search engine with exclusive mechanism that includes some query processing techniques and classification methods makes users' life easier by helping the user to be well informed about the topic s/he is willing to find out more (2011, para. 1). It is obvious that using a smart search engine is the best and fastest way while conducting detailed investigations requiring a lot of information. Actually researchers may have to scan hundreds of books without smart search engine. Surely this unbearable situation discourages the learners. If all these researches are taken into account, the approach of artificial intelligence inspired benefits for educational tools can be accepted definitely.

Aside from superior educational tools as the contribution of artificial intelligence, new learning methods also stand out by means of artificial intelligence. Especially productive educational algorithms have great importance for the educational process by running solution oriented against the difficulties related to time, information, direction and study. For instance, as an artificial intelligence based algorithm, fuzzy logic is necessary to detect relevant and general information from extensive database. Actually, fuzzy logic system can be seen as a search engine at first glance, but its complex structure and word processing mechanisms make

it more distinctive and more appropriate for academic researches. Yılmaz, Ayan and Adak claim that unlike the other techniques, fuzzy logic structure prevents time waste by working fast as well as reaching comprehensive results by using a few evaluation (n.d., para. 25). Hence, the fuzzy logic structures that are able to access wide knowledge while running fast increase the willingness of researchers and make the learning process more productive. In addition, intelligent tutoring software programmes are other effective usage types of artificial intelligence in educational area. Especially many features related to the students and their performance are determined and commented by these programmes, which means intelligent tutoring software programmes detect the problems blocking the learner success and fix them just like the check-up applied for the patients. Phobun, Vicheanpanya illustrate that as a training software, intelligent tutoring systems combined with advanced structures analyze the students and create many solutions in several cases like the states of learner, individual directive, suitable learning and teaching methods online education systems (2010, p. 4064). There is no doubt that all professional institutions present guidance in order to obtain the best results. Accordingly if the teachers expect to get higher performance from the students, they should take all states of students into consideration by using intelligent tutoring software. Consequently, it would be logical to say that, new learning methods that are created by using artificial intelligence ensure a variety of opportunities in case of both effective research and accurate training style. That is why, these learning processes help rising the level of education as well as increasing the achievement rate of the students.

There are numerous areas where artifical intelligence is used efficiently.Another of these areas is medicine.Faster diagnosis and better treatment are two of the more significant advantages of AIM researches. First of all, artificial intelligence in medicine (AIM) can

ensure faster diagnosis with flow of information.For example, AIM researches provide limiting number of hypoteses about the diagnosis.As Horn asserts, "The enormous amount of information available in our networked world and the enormous amount of data collected daily with our modern medical equipment leads us to new tasks to cope with the information overload" (2001,p. 6). This suggests that artificial intelligence researches ensure limiting a wide range of unnecessary information. Moreover, they make clinicians' jobs easier.Secondly,artifical intelligence researches in medicine collect lots of information and this provide assisting clicinians durig tasks. According to Horn's research the most significant aim of artificial intelligence in medicine is gathering numerous and various knowledge in computer systems and obtaining perfect decision (2001, p. 2). This research points out that AIM researches assist clinicians with more important knowledge about the status of patients and therefore they facilitate to establish diagnosis. In conclusion, artificial intelligence researches in medicine offer more effective and useful information. Furthermore, they facilitate making the right decision so they accelerate the diagnosis.

Apart from their advantages for diagnosis , AIM researchessimplify the application methods of treatment to provide better treatment for some patients. For instance, these systems identify potentially effective drug combinations and they provide permanent treatment for HIV patients. As Montaner asserts, " Today's results hold out the possibility of being able to reverse the process of treatment failure for such patients, using artifical intelligence to help us identify the best possible drug combination for the individual " (As cited in "CABO" 2003, p. 1). This indicates that the usage of artifical intelligence in medicine offer more effective and better treatment to lots of patients by offering the best solutions to the individual problems. On the other hand, artifical intelligence systems researches in

medicine make therapy recommendations to clinicians. Patel et al. indicate that one of the main purposes of artifical intelligence researches in medicine is organizing a methodological radius from the most essential opinions can be obtained (2008, p. 2). This suggests that AIM researchers intend to bring new approaches to scientists and clinicians by using applications which give therapy advice.Thus, there are many benefits of artifical intelligence researches in medicine. Their systems facilitate establishing diagnose and furthetmore, they make numerous therapy recommendations.

Thirdly, as an indispensable part of human life, the militay serviceis another area in which artificial intelligence is used effectively. New technology war vehicles and defence systems have major benefits for developing the military. To start with, artificial intelligence is commonly used for producing new technology war vehicles. Unmanned aerial vehicles (UAV) provide safe and affordable vehicles. Tristam asserts that in contrast to jet aircrafts, unmanned aerial vehicles are more affordable and furthermore these vehicles enable a safe environment for the pilot (n.d., para. 5). This shows that these vehicles provide safer and cheaper flight than manned aerial vehicles because of their artifical intellingence systems. These vehicles are controlled by virtual brains so they are controlled without pilots. Therefore, when they crash nobody will die. Also they do not need to train pilots so they spend less money. For example, autonomous underwater vehicle (AUV) ensuressafe and preferable vehicles. As Bovio (2008) indicates, "Of particular interest is the capability to ship overnight small AUV anywhere a crisis might ocur and to place the appropriate sensors (sonar, optical, magnetic) in close proximity of mines wihout risking human lives" (p. 123). This shows that these are controlled by virtual brains so they can be used for challenging missions such as requiring detection of mines. They also prevent death even if the

operation results in failure. In conclusion, benefits of artificial intelligence for military offer effective and useful developments and in addition, new technology vehiclesprotect human life against any accidents.

Other than the advantages of new technology war vehicles, artificial intelligence is commonly used for improving defence systems. To illustrate, radar systems are one of the essential parts of defence systems in which artificial intelligence is integrated. The more advanced radar systems are, the more effective defence systems will be. Using artificial intelligence has extremely important position for improving the radar systems. According to Allen's research (2006), new radar systems include higher flying height, higher pulse rate, installation on multiple platforms, tighter integration of cameras and higher resolution, inertial measurements units smaller and lighter systems (p. 24). Artificial intelligence develops radar systems. These are controlled by vitual brain and they detect foreign objects and alert. These radars radar field are wider than older radars and also their camera systems are so improved that they have high definition and wider range. What is more, they have smaller and lighter systems and a result theyrequire less power. Fingerprint system is one of the important parts of defence systems which is developed by artificial intelligence. Fingerprints systems work with fingerprint database and correct fingerprints are determined by artificial intelligence.As Baltavis asserts,"Individuals inducted into military and those applying for a position with government or a government contractor have been required to submit finger prints for comparison with criminal records on file at the Federal Bureau of Investigation (FBI)" (p.165). Artificial intelligence provides easier investigation. Virtual brain detects a lot of fingerprint by spending less time so the investigation processes become shorter. As a result, advantages of artificial intelligence for military offer advanced and effective security

system. Besides, the authorities who are responsible for security can solve their problem easily by using virtual brain systems.

Finally, security which is supported by various improved systems, is an extensive usage area of artificial intelligence. It provides more efficient databases that can establish a foundation for assuring people's safety. Therefore, artificial intelligence that is one of the supporters of technology in security systems is used with various systems.To begin with, artificial intelligence is commonly used for vehicles' security systems to develop them and ensure safety. For example, security is provided with advanced safety apparatus which is improved by using artificial intelligence in cars. Ogino and Sato explain that following open or closed position of an automobil gate, a cowling or a detector for specifying the pulse of the auto is ensured with sensors which improve car safety apparatus. If an unnatural situation takes place, car safety apparatus is on and the alarm starts (2000, p. 92) . This makes it clear that, artificial intelligence is one essential issue for car safety because sensors that run the alarm systems can be activated by using artificial intelligence. Thus, alarm systems protect people who are inside the car from fires and crashes. Furthermore, new and advanced systems which are improved with artificial intelligence are also used in the safety system of trains. Burns indicates that modern signal systems are used instead of classical systems in trains'safety control systems. Digital communications and distributed processings are utilized by these modern systems which provide safer and more effective operations (1989, p. 33) . Clearly, security is a requisite in trains, so modern systems have to be produced which are safer than conventional systems. Thus, creating new systems requires using artificial intelligence. Therefore, it can be safely that byusing artificial intelligence, perfect safety

systems in vehicles that protect people from fires, crashes and other dangers can be developed.

Moreover, people's homes and work places where people spend most of their time, is made more secure with various systems and methods by using artificial intelligence. First of all, alarm systems are improved by BOSS, a recently developed system, ensuring safety in all buildings. As emphasized by LONIX, gathering trends from defined points, sending alarms from the system and providing the management of user rights are BOSS' s duties. Also, it has facility to send alarms to mobile phones, native alert printers or to service center (n.d., p. 7). It is clear that BOSS is a security system that is used to improve data transportation. Also, instead of native systems, BOSS is used as an alternative system. Furthermore, developing intelligent home appliance which assures people's security in their home is possible with artificial intelligence. As Angulo and Tellez state, " In the home of the future, groups of devices should have enough collective awareness to function autonomously based on sensor data. Collective intelligence technology will be essential to analyze data from these distributed sensor "(n.d., para. 4). Smart and self-governing appliances will be the major part of security at home and they can be improved by using artificial intelligence. Sensors which are created with artificial intelligence provide safety at home. All in all, people's lives are valuable and various ways that are advanced by utilizing artificial intelligence are used to develop the security systems in buildings.

To summarize, many areas in social life which are education, medicine, military and security benefit from artificial intelligence extremely and become more superior thanks to its applications. It is possible to say that each artificial intelligence inspired study contributes to reconstruction of the society. Accordingly, over the last fifty years, a lot of investigations

have been conducted about artificial intelligence. Especially, the integration of artificial intelligence in the significant parts of human life which are education, medicine, military and security not only make the society more improved but also make the countries more developed. Therefore, artificial intelligence ought to be considered as the backbone of the social life and many more researches related to artificial intelligence should be carried out for the new generations.

References

Allen, R., Sankar, P., & Prabhakar, S.(n.d.).*Fingerprint identification technology*. Retrieved

October 22, 2011, from http://www.springerlink.com/content/u2072872g702278w/

Angulo, C.,& Tellez, R. (n.d.). *Distributed intelligence for smart home appliances.* Retrieved

October 20, 2011,from Technical University of Catalonia, Engineering & Research in

Computational Intelligence Web site: http://www.ouroboros.org/papers/distributed/pdf

Artifical intelligence identifies effective drugs for HIV patients whose treatment is failing.

(2003). Retrieved October 25, 2011, from http://www.hivrdi.org/press_rel_4.htm

Baltsavias, E.P. (1999).*Airborne laser scanning: Existing systems and firms and other*

resources. Retrieved October 23, 2011, from

http://www.sciencedirect.com/science/article/pii/S0924271699000167

Bovio, E., Cecchi, D., & Baralli F. (2006).*Autonomous underwater vehicles for scientific and*

naval operations. Retrieved October 27, 2011, from

http://www.sciencedirect.com/science/article/pii/S136757880600054X

Burns, R.D. (1989). *Safety and productivity improvement of railroad operations by advanced*

train control system. Paper presented at the IEEE/ASME Joint 1989. Retrieved

October 10, 2011, from

http://www.ieeexplore.ieee.org/xpls/abs_all.jsparnumber=772788tag=1

Horn, W. (2001) *AI in medicine on its way from knowledge-intensive to data-intensive*

systems. Retrived October 25, 2011, from University of Vienna, Web site:

http://www.sciencedirect.com/science/article/pii/S093336570100072

LONIX. (n.d.). *Integrated building management and security system,* from http://www.lonix.

com/specifications/IBMS_specification.pdf

Modi, A., Bhandari, A., Desai, K.,& Shah, N. (2011). *Smart search engine using artificial intelligence*. Paper presented at International Conference and Workshop on Emerging Trends in Technology 2011. Retrieved October, 17, 2011, from http://dl.acm.org/citation.cfm?id=1980174&dl=ACM&preflayout=flat

Ogino, T., & Sato, T. (1997). *Car security apparatus and car security system* (Report No: 6100792). Retrieved October 20, 2011, from http://www.google.com.tr/patents/US6100792dq

Patel, V., Shortliffe, E., Stefanelli, M., Szolovits, P., Berthold, M., Bellazzi, R.,& Abu-Hanna, A. (2008) *The coming of age of artifical intelligence in medicine.* Paper presented at the biennial conference on Artifical Intelligence in Medicine, Amsterdam, The Netherlands, July 2007. Retrived October 25, 2011, from http://www.sciencedirect.com/science/article/pii/093335

Phobun, P., & Vicheanpanya, J. (2010). *Adaptive intelligent tutoring systems for e-learning systems.* Retrieved November, 02, 2009 from http://www.sciencedirect.com/science/article/pii/S1877042810006816

Tristar, P. (n.d.).*Predator drones and other unmanned aerial vehicles (UAVs).* Retrieved October 24, 2011, from http://middleeast.about.com/od/usmideastpolicy/a/predator-uavs-weaponry.htm

Schachter, R. (2003). *A.I. something to build on: it's always hard to predict the future, but who would have through that artificial intelligence's big contribution to education would be help the teacher.*Retrieved October 11, 2011, from http://www.districtadministration.com/article/ai-something-build/page/0/1

Yılmaz, A., Ayan, K., & Adak, E. (n.d.). *Different methods supporting educational softwares:*

Contribution of fuzzy logic model to educational softwares. Retrieved October 16,

2011, from http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=05752013