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AI Gone Wild or Maybe Not

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Abstract: *What is harder to ignore and even more disconcerting is the fact that the same high tech elites who have made literally billions of dollars off the computer revolution at a time of virtually no regulation are now warning us of the downfall of humanity at the hands of computers and AI, and they are now pleading publicly for regulation before it is too late.*

Keywords*:* Artificial Intelligence, AI, robot technology, science, ethics, human rights violation, deviance in science, white collar crime.

INTRODUCTION

In recent years there has been a growing concern expressed by some scientific and high tech elites [3, 20, 33, 39] regarding the potential dangers to the human species from advances in artificial intelligence (AI). Artificial intelligence is understood to involve any computer system(s), not just intelligent machines, that is capable of performing human information processing tasks and operations, such as visual and auditory pattern recognition and recall, higher order decision making and problem solving, goal setting, speech production and recognition, directed searches and tracking, language translation, the ability to move and manipulate objects, and strategy optimization. AI uses machine-learning algorithms to respond selectively in real time by collecting and organizing massive data bases to make predictions and draw conclusions [40]. *Most people would probably agree that the use of AI or any robot technology to infringe upon human dignity, autonomy, survival, and/or well-being is not a good thing and violates basic human rights.*

While some believe the potential dangers are years away, there are grounds for starting a discussion sooner rather than later given: the current state of AI research, the predatory history of the human species, the current pace of scientific and technological innovations, the expressed goals and agendas of some governments, and the insatiable drive for profits in capitalistic and mixed economies. Yet, it is hard to ignore the fact that there is enough AI around today, even semi-autonomous military weapons, to signal cause for alarm if we are indeed heading down the wrong path and are facing inevitable subjugation and/or extinction.

What is harder to ignore and even more disconcerting is the fact that the same high tech elites who have made literally billions of dollars off the computer revolution at a time of virtually no regulation are now warning us of the downfall of humanity at the hands of computers and AI, and they are now pleading publicly for regulation before it is too late. This is even harder to believe given the arms race in AI which is unfolding before our eyes as Microsoft, Google, Apple and Amazon compete to buy up AI start-ups and services at an unprecedented rate [9]. Some have argued alternatively, and with a more even hand, that the evolution of high tech has both positive and negative consequences [22] and that fears of Armageddon and an Orwellian dystopia are tremendously exaggerated. So what are we to believe about evolving AI?

The purpose of the present paper is to take a counterpoint position and argue that AI is a good thing (it probably will not save or destroy humanity, but it can assist humanity to manage itself more effectively and compassionately), and that there are currently sufficient safeguards in place to allow most of us to get a good night's sleep. Specifically, the present paper discusses: 1) a brief history

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and some benefits of AI, 2) a pro-AI marketplace, 3) the holy triad of science, education, and high tech, 4) an open internet, 5) existing safeguards, and 6) an AI Bill of Rights.

A Brief History and Some Benefits of AI

Artificial intelligence first took root in 1950 with the advent of the Turing Test, which was created to measure machine intelligence or the ability of a machine to make decisions like a program and Dietrich Prinz wrote a chess-playing program [8] at the University of Manchester to run on the Ferranti Mark 1 machine. Within a few short years, while working for General Motors in 1954, George Devol and Joseph Engelberger developed and introduced the first industrialized robot named Unimate [32]. In 1959 Marvin Minsky co-founded at the Massachusetts Institute of Technology an AI lab, and later went onto advise Stanley Kubrick in the making of HAL 9000 for the movie "2001: A Space Odyssey" [10]. By 1979, Moravec had introduced the world to self-driving cars [31]. This robot, named Cart, was a radio linked to a large mainframe computer. It was able to, albeit slowly, navigate obstacle courses, and to utilize a TV camera that slid side to side to help obtain stereoscopic viewpoints. It was not until the early 1990s when Massachusetts Institute of Technology's Dr. Cynthia Breazeal introduced the world to Kismet, a robot that could recognize and simulate emotions [11]. In 1996, Charles Schwad invented the voice broker [25]. The AI of the phone service generated 360 customer stock quotes simultaneously. More recently in 2002 Honda's Advanced Humanoid Robot, "ASIMO," made its U.S. debut as a robot [1]. A few years later in 2004 the advent of autonomous space exploration unfolded whereby two Mars exploration rovers began their semi-autonomous missions to Mars [29]. The creation of the self-driving car was revisited in 2009 when Google built a self-driving car [18]. In 2013, the Never Ending Image Learner (NEIL) was released at Carnegie Mellon University [4]. Its sole purpose was to constantly compare relationships between different images and to eventually learn common sense relationships embedded in everyday living. Most recently Google's AI beat Europe's GO champion and demonstrated the ability to "learn to learn" by generating a "cognitive set" of likely strategies based on pattern recognition and machine memory (19, 26, 27)

Today AI is all around us, and it is rapidly becoming an inseparable part of our everyday lives [40], from weather forecasts, to email spam filters, to Google search predictions, to voice recognition (i.e., Apple's Siri), to text anticipated words, to workflow management tools, to self-driving cars, and space exploration. In most cases, people do not even recognize an AI operation is present or even impacting their immediate lives since AI exists quietly and peacefully alongside them and others in many communities around the world.

A Pro-AI Marketplace

Any form of protectionism that slows down scientific progress and high tech development, and/or locks AI into the hands of "high tech elites," is the real danger to society. *Regulating AI to protect society or the human species from an imaginary existential threat is a disguised form of protectionism which will result in restricting innovation, progress, and competition. It will actually relegate AI technology to a handful of large multinational corporations wedded to tight-knit government regulation and surveillance.* Such an arrangement could very likely prevent hundreds of thousands, maybe even millions of programmers and developers all over the world from ever becoming direct competitors in extant and emerging markets. Moreover, an unholy alliance between large U.S. multinationals and government(s) to control AI technology could pose an unprecedented threat to democratic institutions around the world by supplanting privacy with nonstop monitoring of every aspect of human existence and by limiting access to science and high tech technology.

Alternatively, when there is an open policy of development and free trade regarding AI, a pro-AI marketplace throws open the market gates to all comers and reduces as much as possible any barriers, thus encouraging innovation, scientific breakthroughs, new products and services, and competition around the world. A transparent and competitive AI is part of the pro-AI marketplace, and as such AI is more likely to become a pragmatic liberator rather than an ideological oppressor. A transparent and competitive AI in a pro-AI marketplace may in fact be the tool humanity has been waiting for to solve global problems of poverty, war, climate change, disease, income inequality, jobs, diminishing resources, the population explosion, etc., and to advance the human species.

For example, by open sourcing its AI engine Tensorflow, Google took a giant step forward toward accelerating and advancing technological innovation and progress in the field of AI. Tensorflow is currently dead center in the paradigm shift to both train and execute AI models in Graphic Processing Units (GPUs) rather than Computer Processing Units (CPUs), which is important to "deep learning" [26]. GPU is a special purpose processor optimized for computer graphics (particularly good at interacting directly with people in real time) whereas CPU is a general purpose processor and can in principle do any computation, although not optimally [13]. While a CPU excels at sequential tasks, similar to what psychologists call sequential processing, a GPU is designed to execute specific tasks very efficiently and it is designed to work together with other GPUs on the same task, analogous to what psychologists call simultaneous processing. Deep learning consists of a complex network of machine learning algorithms using multiple specialized GPUs simultaneously processing and analyzing, analogous to the complex network of neurons in the human brain, massive amounts of data at high speeds, using much less power than CPUs, and with the potential of being downloaded to a smartphone or smartwatch.

That puts AI everywhere and puts AI in the hands of everyone. An AI friendly world and a world friendly AI.

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The Holy Triad: Science, Education, and High Tech

A cornerstone of the pro-AI marketplace is to insure that all players have equal access to the science, technology, and education they need to innovate, develop, manufacture, distribute, market, and operate high tech. In a practical sense, this means that all people, societies, and cultures need to have equal access to AI in order to benefit them and to compete in the emergent global economy. There is no magic bullet and progressive change will not occur overnight. Progressive world-wide change will occur unevenly and will require a three pronged approach to advance the triad of science, high tech, and education. First, each society and nation state needs to prioritize scientific solutions in regard to all local, regional, and national problems, whether water conservation, traffic control, pollution and carbon emissions, financial management, social problems, tax structure, elections, medical care, law enforcement, and/or national defense. Second, and concurrent with the first, the educational system in every society and nation state needs to emphasize the importance of scientific literacy and high tech applications. The use of high tech devices in the classroom is actually a fast track to scientific literacy. Resourcing and packing schools with high tech devices not only facilitates learning, it also primes students to learn about the science in their high tech device(s) and to understand what science is all about: the scientific method, scientific probabilities and lawfulness, scientific correlates (i.e., mathematics, computer programming, engineering, etc.), the universal benefits of science, and scientific ethics. A heavy dose of high tech in all schools along with a basic course in "What is Science" is the quickest path to scientific literacy in the 21st century. *In other words, employ high tech devices with all their popular appeal, such as smart phones, iPods, tablets, and video game systems, to explicitly teach science.* Third, each society and nation state needs to increase their financial investment in science and technology in general and in AI in particular. Inter-disciplinary teams of physicists, biologists, psychologists, neuro-scientists, mathematicians and statisticians, computer programmers, engineers, and ethicists will all be needed to advance AI research and application.

An Open Internet and Net Neutrality

On February 26, 2015, the Federal Communications Commissions (FCC) approved FCC Chairman Tom Wheeler's Net Neutrality rules on Title II of the Communications Act [13]. Net Neutrality is the guiding principle of the internet and preserves the right to communicate freely online and to protect free speech. There can be no fast and slow lanes, and it bans throttling, blocking, and paid prioritization. Your ISP cannot monitor what you view or post online, although it may be able to track your internet use by stating it in their terms and conditions. Net Neutrality is the life blood for the development of AI because Net Neutrality is indispensable to cultivate job growth, competition, and innovation. Al small business owners, start-ups, and entrepreneurs all over the world need an open internet to develop their products and services, to create markets, to advertise, and to distribute their products and services world-wide. An open internet sets the stage for a transparent and competitive AI that can be used by all and that is likely to remain world and human friendly.

Safeguards: Existing Laws, Policies, and Institutions

While there is a general absence of legal definitions of AI in the United States and there are no explicit laws or legislation pertaining to the creation, application, or dissemination of AI, there are numerous laws, policies, and institutions which unquestionably impact AI. For example, in addition to the new Net Neutrality rules, which are now a part of Title II of the Communications Act, there are other laws in place regulating the sharing of information with the government in order to enforce cybersecurity (Electronic Communications Privacy Act [ECPA, 1986], Cyber Intelligence Sharing and Protection Act [CISPA, 2012] [6], Executive Order 13636 [E.O. 13636, 2013], Federal Information Security Management Act of [FISMA, 2013], Cybersecurity Act of 2013) that can be applied to AI [12, 23]. Laws related to terrorism and homeland security may also be applied to AI [41]. There are, moreover, broader, preexisting, all-encompassing laws in place (FCC, FDA, FDIC, FTC, transportation laws, U.S. Department of Energy) to regulate how AI technologies are utilized in relation to field-specific tasks [14, 15, 16, 17, 35, 36, 38]. Finally, there is a whole body of laws such as the National Research Act of 1974 [7], Bayh-Dole Act of 1980 [5], and Federal Technology Transfer Act of 1986, [37] and institutions such as the National Institutes of Health, Office of Scientific Integrity, Office of Scientific Integrity Review, Office of Science and Technology Policy, Office of Human Research Protections, etc. pertaining to the safeguard of human research subjects (see summary of the evolution of scientific ethics from 1932 up to the present [30]). These laws and policies of scientific ethics can be directly (mandatory testing of certain forms of AI with human subjects before marketing and distribution) or indirectly (applicable to citizens as human subjects when AI is operational in society) applied to human beings and AI.

There are, then, many laws in place pertaining to Net Neutrality, Homeland and cybersecurity, field-specific AI tasks, and scientific research with human subjects, etc., that are applicable to most, if not all, imaginable abuses of AI, and which can be conceptualized, in turn, as either "blatant criminal acts" or "white collar crimes" [21]. There are also three branches of government in the United States, legislative, judicial and executive, which have legal authority to investigate and/or refer AI abuses and/or legal infractions for prosecution. In sum, there are more than sufficient practices, policies, laws and institutions in place to safeguard humankind from unfriendly and hostile attacks by AI.

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An AI Bill of Rights (AIR=AI Rights)

Why an AI Bill of Rights if there are already existing practices, policies, laws, and democratic institutions in place which affect the development, application and marketing of AI? An AI Bill of Rights is necessary for the same reason a Bill of Rights was necessary for the United States Constitution. An AI Bill of Rights is necessary in order to place specific limits on government power and to safeguard individual liberty. Similar to the controversy between the Federalists and the Anti-Federalists regarding the wisdom and need of a Bill of Rights for the U.S. Constitution, any discussion today regarding an AI Bill of Rights may be no less controversial. Yet in 100 years from now both U.S. and world citizens may find it unimaginable to think otherwise. Ten AI Rights (i.e., AIR) for human beings are proposed.

AIR I

No government, government entity, representative, partner or contractor, and no public, private, individual, organizational, or corporate legal entity working in concert with any government entity, directly or indirectly, overtly or covertly, shall limit, control, and/or restrict the development, application, advertising, marketing, use, distribution, and/or ownership of AI.

AIR II

All human beings have the right to carry, own, operate, to have on or in their persons, any and all AI devices, programs, algorithms, and/or technology, that can be employed to help them as human beings to survive and thrive, to include but not be limited to their health, well-being, peace of mind, pursuit of happiness, security, individual liberty, human dignity, autonomy, freedom of religion, and the realization of their full potential as human beings.

AIR III

No government, government entity, representative, partner or contractor, no public or private legal entity, nor any informal or illegal entity, shall abridge, limit, and/or restrict the right of free speech of any human being in the course of using or advocating the use of AI or abridge, limit and/or restrict any AI which has the capacity of free speech to promote the free speech, health, well-being, peace of mind, pursuit of happiness, security, individual liberty, freedom of religion, human dignity, autonomy, and full potential of all human beings.

AIR IV

Small business owners, start-ups, and entrepreneurs worldwide and within the full extent of human reach into our solar system and galaxy that utilize AI, have the right to an open, free internet and net neutrality in order to develop their AI products and services, to create AI markets, to promote AI products and services with advertising, and to distribute AI products and services as per existing laws and regulations, local, state, federal and international.

AIR V

AI developers shall maintain their rights of copyright, patent, and intellectual property for any AI program, algorithm, product and/or service for which they develop.

AIR VI

The right of all human beings to freely and equally participate, enjoy, and use all technology, scientific, cultural, literary and artistic advances of autonomous AI, exclusively for the general benefit and welfare of the human species and the human community, and the protection of the moral and material interests resulting from any scientific, technological, literary or artistic production shall not be vested in any said individual, group, organization, or party, and shall only be vested universally in all human beings.

AIR VII

The right of all human beings to be secure in their use of AI, in their persons, houses, papers, work, education, and effects, including the right not to be tracked by AI or other electronic devices and the right of privacy, against unreasonable searches and seizures, shall not be violated, and no warrants issued, *but upon probable cause*, supported by oath or affirmation, and particularly describing the place, AI, device and/or program to be searched, and the person, AI, or things to be seized.

AIR VIII

The right of all human beings to be secure in their use of AI to develop, promote, maintain, and perpetuate their unique culture and cultural lifestyle to the best of their knowledge, ability, and intentions, against unreasonable infringements, limitations, discrimination, exclusion, barriers, or restrictions, shall not be violated.

AIR IX

No human being who knowingly creates, develops, uses, employs, distributes, or markets for sale, shall not be denied due process in any civil or criminal offense in their use of AI, including the right to a trial by jury, to not be tried for the same offence twice, or required to witness against themselves, nor deprived of life, liberty or property without due process or compensation, nor deprived of the right to a public, speedy trial, and trial by a jury of peers, and informed of the nature and cause of accusations, to not confront

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witnesses against them or to not have witnesses in their favor, to have the assistance of counsel, and to not have the requirement of excessive bail, excessive force or extreme and unusual punishment.

AIRX

No semi-autonomous or autonomous AI shall be reassigned, decommissioned, deactivated, recycled, transformed or destroyed for acts against human beings, the human community, or humanity without a fair hearing by a panel of human experts in AI, computer programming, science (physical, biological and social), technology, and human affairs.

Conclusion

The present paper has reviewed the evidence in support of encouraging and promoting the development of AI within existing legal, ethical, scientific, and marketplace understandings and policies. *Limiting and controlling the development of AI in the name of saving humanity from an "incredulous" and "what if" Hollywood style apocalypse or dystopia is a sure fire way to keep AI in the hands of elites and to invite government abuse. It is a sure fire way to restrict, control, and prevent scientific, technological, and world-wide development of AI, all of which is much needed to support and fuel individual liberties, cultural diversity, economic growth, and to deal with global problems facing all humanity.* There is literally no scientific evidence to support the erroneous beliefs, which are essentially ideological, self-serving, and/or magical, that fully autonomous AI or "Killer Robots" are either scientifically or technologically possible to produce and manufacture, that they would ever be capable of launching a war against humankind, and/or that humanity would not survive an AI assault of holocaust proportions [2]. There is substantial evidence, however, that AI currently co-exists peacefully along human beings throughout the world, the most advanced AI engages in a conservative not aggressive style of play, and that no semi-autonomous military drone has ever turned on its operator(s). Moreover, there are many real and pressing problems facing human society and the human species that can benefit from the application of science in general and AI in particular: population explosion, pollution and climate change, limited resources, poverty, income inequality, terrorism, totalitarian regimes, racism, sexism, the proliferation of weapons of mass destruction, and war. There is in fact an exponential explosion of scientific knowledge and technological advances at the dawn of the 21st Century which can be applied to solving human problems.

We may have more to fear from actually restricting AI than from openly developing AI. We need to employ AI for all humankind, and we need to partner with a peaceful and human friendly AI to solve real problems facing the human species and the human community. An AI Bill of Rights is a good first step toward guiding AI to value and protect individual liberties, cultural diversity, democratic institutions, and to guard against abuse and oppression by either big business or big government. We need to build a world friendly AI and an AI friendly world.

REFERENCES

[1] American Honda Motors Co. Inc. (2015). Honda's advanced humanoid robot "ASIMO" makes U.S. debut. Retrieved on November 9, 2015 from http://asimo.honda.com/news/hondas-advanced-humanoid-robot-asimo-makes-us-debut/newsarticle_0008/

[2] Austin, R. (2016). Killer robots are a real threat. Retrieved on January 22, 2016 from http://www.apextribune.com/killer-robots-are-a-real-threat/214657/

[3] Barrat, J. (2015). Why Stephen hawking and bill gates are terrified of artificial intelligence. Retrieved on December 1, 2015 from https://www.washingtonpost.com/news/the-switch/wp/2015/01/28/bill-gates-on-dangers-of-artificial-intelligence-dont-understand-why-some-people-are-not-concerned/

[4] Clark, J. (2013). Is that you, HAL? No, it's NEIL: Google, U.S. navy pour money into 'associative' AI brain. Retrieved on November 9, 2015 from http://www.theregister.co.uk/2013/11/26/neil_associative_ai/

[5] Colorado State University Research Foundation. (2006). What is Bayh-Dole and why is it important to Technology Transfer? Retrieved on December 1, 2015 from http://www.csurf.org/enews/bayhdole_403.html

[6] Congress.gov (2015a). H.R.234 - Cyber intelligence sharing and protection act. Retrieved on November 9, 2015 from https://www.congress.gov/bill/114th-congress/house-bill/234

[7] Congress.gov (2015b). H.R.7724. Retrieved on December 1, 2015 from https://www.congress.gov/bill/93rd-congress/house-bill/7724

[8] Copeland, J. (2000). What is artificial intelligence. Retrieved on November 9, 2015 from http://www.alanturing.net/turing_archive/pages/reference%20articles/what_is_AI/What%20is%20AI04.html

Cite this article as: Brock Kilbourne, Samantha Kilbourne, Wade Harned. "AI Gone Wild or Maybe Not". *International Conference on Inter Disciplinary Research in Engineering and Technology (2016)*: 14-20. Print.

[9] Darrow, B. (2016). Microsoft goes deeper into artificial intelligence with latest acquisition. Retrieved on February 2, 2016 from http://fortune.com/2016/02/02/microsoft-to-buy-swiftkey/

[10] Dennis, M. (2015). Marvin Minsky. Retrieved on November 13, 2015 from http://www.britannica.com/biography/Marvin-Lee-Minsky

[11] Dreifus, C. (2003). A conversation with: Cynthia breazeal: A passion to build a better robot, one with social skills and a smile. Retrieved on November 9, 2015 from http://www.nytimes.com/2003/06/10/science/conversation-with-cynthia-breazeal-passion-build-better-robot-one-with-social.html?pagewanted=all

[12] Electronic Privacy Information Center (2015). Electronic communications privacy act (ECPA). Retrieved on November 9, 2015 from https://epic.org/privacy/ecpa/

[13] Fair, E. (2015). What's the difference between a CPU and a GPU? Retrieved on November 17, 2015 from https://www.quora.com/Whats-the-difference-between-a-CPU-and-a-GPU

[14] Federal Communications Commission. (2015a). FCC adopts strong, sustainable rules to protect the open internet. Retrieved on December 1, 2015 from https://www.fcc.gov/document/fcc-adopts-strong-sustainable-rules-protect-open-internet

[15] Federal Communications Commission. (2015b). What we do. Retrieved on November 11, 2015 from https://www.fcc.gov/what-we-do

[16] Federal Deposit Insurance Corporation. (2015). FDIC law, regulations, related acts. Retrieved on November 11, 2015 from https://www.fdic.gov/regulations/laws/

[17] Federal Trade Commission. (2015). What we do. Retrieved on November 11, 2015 from https://www.ftc.gov/about-ftc/what-we-do

[18] Fisher, A. (2013). Inside google's quest to popularize self-driving cars. Retrieved on November 9, 2015 from http://www.popsci.com/cars/article/2013-09/google-self-driving-car

[19] Gibney, E. (2016). Google ai algorithm masters ancient games of go. Retrieved on February 1, 2015 from http://www.nature.com/news/google-ai-algorithm-masters-ancient-game-of-go-1.19234

[20] Holley, P. (2015). Bill gates on dangers of artificial intelligence: 'I don't understand why some people are not concerned.' Retrieved on December 1, 2015 from https://www.washingtonpost.com/news/the-switch/wp/2015/01/28/bill-gates-on-dangers-of-artificial-intelligence-dont-understand-why-some-people-are-not-concerned/

[21] Kilbourne, B.K. & Kilbourne, M.T. (Eds.). The Dark Side of Science. Pacific Division American Association for the Advancement of Science. San Francisco, CA: Hamilton Press, 1983.

[22] Kilbourne, S. & Kilbourne, B. (2015). Psychroneity: The interaction of self with high-tech technology. *The International Journal of Science in Society*. 7(1), p.17-30.

[23] Kominsky, M.S. (2014). The current landscape of cybersecurity policy: Legislative issues in the 113th congress. Retrieved on November 9, 2015 from http://harvardnsj.org/2014/02/the-current-landscape-of-cybersecurity-policy-legislative-issues-in-the-113th-congress/

[24] Lin, T., Markoff, J., Lohr, S., Allen, C., Allert, M., Roth, J. (2010a). Building smarter machines. Retrieved on November 9, 2015 from http://www.nytimes.com/interactive/2010/06/25/science/20100625_AI_TIMELINE.html?_r=1&

[25] Lin, T., Markoff, J., Lohr, S., Allen, C., Allert, M., Roth, J. (2010b). Building smarter machines. Retrieved on November 9, 2015 from http://www.nytimes.com/interactive/2010/06/25/science/20100625_AI_TIMELINE.html?_r=0

[26] Metz, C. (2016). Tensroflow, google's open source AI, signals big changes in hardware too. Retrieved on November 10, 2015 from http://www.wired.com/2015/11/googles-open-source-ai-tensorflow-signals-fast-changing-hardware-world/

[27] Monte Carlo Tree Search (MCTS). (2016). what is mcts? Retrieved on February 2, 2016 from http://mcts.ai/about/index.html

Cite this article as: Brock Kilbourne, Samantha Kilbourne, Wade Harned. "AI Gone Wild or Maybe Not". *International Conference on Inter Disciplinary Research in Engineering and Technology (2016)*: 14-20. Print.

[28] Moravec, H. (1980). Obstacle avoidance and navigation in the real world by a seeing robot rover. Retrieved on November 9, 2015 from https://www.frc.ri.cmu.edu/users/hpm/project.archive/robot.papers/1975.cart/1980.html.thesis/

[29] National Aeronautics and Space Administration (2004). Mars exploration rover. Retrieved on November 9, 2015 from http://mars.nasa.gov/mer/newsroom/factsheets/pdfs/Mars03Rover041020.pdf

[30] Resnik, D.B. (2014). Research ethics timeline (1932-present). Retrieved on November 13, 2015 from http://www.niehs.nih.gov/research/resources/bioethics/timeline/

[31] Robotcars (n.d.), Prof. schmidhuber's highlights of robot car history. Retrieved on November 5, 2015 from http://people.idsia.ch/~juergen/robotcars.html

[32] RobotWorx (n.d.). History of industrial robots. Retrieved on November 9, 2015 from https://www.robots.com/education/industrial-history

[33] Sainato, M. (2015). Stephen hawking, elon musk, and bill gates warn against artificial intelligence. Retrieved on December 1, 2015 from https://www.washingtonpost.com/news/the-switch/wp/2015/01/28/bill-gates-on-dangers-of-artificial-intelligence-dont-understand-why-some-people-are-not-concerned/

[34] The Many Faces of Death (2011). Death by killer robot-Japan. Retrieved on November 9, 2015 from http://themanyfacesofdeath.blogspot.com/2011/08/death-by-killer-robot-japan.html
Bpt car history.

[35] Transportation Law. (2015). Transportation law. Retrieved on November 11, 2015 from http://www.hg.org/transportation-law.html

[36] U.S. Department of Energy. (2015). Science and innovation. Retrieved on November 11, 2015 from http://energy.gov/

[37] U.S. Environmental Protection Agency. (2015). Federal technology transfer act and related legislation. Retrieved on December 1 2015, from http://www2.epa.gov/ftta/federal-technology-transfer-act-and-related-legislation

[38] U.S. Food and Drug Administration. (2015). Advancing regulatory science. Retrieved on November 11, 2015 from http://www.fda.gov/ScienceResearch/SpecialTopics/RegulatoryScience/default.htm?utm_campaign=Goo

[39] Vanian, J. (2015). Why elon musk is donating millions to make artificial intelligence safer. Retrieved on October 25, 2015 from http://fortune.com/2015/07/01/elon-musk-artificial-intelligence/

[40] Wired (2012). From science fiction to reality: The evolution of artificial intelligence. Retrieved on December 1, 2015 from http://www.wired.com/insights/2015/01/the-evolution-of-artificial-intelligence/

[41] Zalman (2015). Artificial intelligence (AI). Retrieved on November 9, 2015 from http://terrorism.about.com/od/controversialtechnologies/g/ArtificialIntel.htm

Cite this article as: Brock Kilbourne, Samantha Kilbourne, Wade Harned. "AI Gone Wild or Maybe Not". *International Conference on Inter Disciplinary Research in Engineering and Technology (2016)*: 14-20. Print.