The Future of BOTS
by Dr. Vijayan K. Pillai

EFFICIENCY, A KEY MODERN VALUE

BOTS are internet software applications. They can also be called Web Robots because they reside in the internet and use its environment to perform functions through web resources. The idea of bots was popularized more than half a century ago by the science fiction author, Issac Asimov. The idea took shape and BOTS were born soon after the invention of the internet. Bots were initially used to mine data and alter as agents who performed tasks and reported back. Bots typically carry out repetitive tasks that are simple in nature. Within a fraction of a second, they perform hundreds of tasks, improving human efficiency, while creating opportunities for outreach and self-fulfillment.

Efficiency is perhaps one of the most important criteria for success in the information world at the macro-level. The three divisions of the quaternary sector made up of telecommunication broadband, media and information technology, drive the US economy and account for nearly $910 billion yearly while expanding at a rate greater than thrice the growth rate of the US economy. At the micro level, information is often channeled to motivate, initiate and execute activities to meet our needs and desires. An important component in the realization of human desires and wants involves the processing of information that undertakes several simple yet repetitive tasks in tandem. At times a mind boggling number of pieces of information has to be streamlined and coordinated to yield desired outcome. Bots have the capacity to handle and dispense enormous amount of information to meet human needs and wants. They have slowly evolved to place every person in command of a slice of software technology, demystifying it and bringing about opportunities for the growth of new communities. The chatbot, for example, is a computer program that existed to simulate and facilitate intelligent conversations with people promoting the development of new social networks.

THE COMING OF THE BOTS: The first successful attempt at the large-scale use of bots, socially, began only recently at the very beginning of the 21st century. Conversation-based programs were distributed through instant messaging platforms. They quickly attracted the fascination of a very large community of 'instant messengers'. As recently as four years ago a few of these instant messaging communities grew to be several millions in size. Many of these are now extinct because of new technologies. Bots with innovative and inviting features encourage the birth of new communities only to be replaced or re-organized by newer technologies. Many who were members of these virtual communities have fond memories of their life in these communities. They describe their responses from bots with attributes such as 'heartfelt' and 'compassionate'.

With the development of artificial intelligence bots have become smarter and versatile in communicating with humans. The existence of social media such as Facebook is heavily contingent on the dutiful and diligent performance of bots which crawl the web of information,

and provide potential links for communication and interaction. As bots interact with virtual community members they become more and more intelligent. Their efficiency and predictability are likely to foster trustful relationship and to increase communication. The popularity of social media attests to its usefulness in communication horizontally.

There is yet another where bots are crafting new networks of not people, but of physical entities (things) such as cities and buildings. Bots are getting smarter to better serve the increasing size of social media communities. With the emergence of the 'internet of things' bots can not only track friends but also control appliances at home as well. The physical and the digital world is fast converging enabling people to gain an understanding of themselves across social, physical and time dimensions. A large number of bots are already talking to bots relaying and processing information for current and future use by individuals and communities. Bots are talking to bots in this new world of Aldous Huxley. Participants in this emerging world of a people-machine nexus will be able to analyze and understand their real world using their digital reflections.

SUSTAINABILITY, A KEY CONCERN: The ability to coordinate and integrate socio-environmental information is critically important in an era when the world is confronted with crises such as global warming and depleting natural resources. With about 5 percent more power grid efficiency in the United States it is estimated that a reduction equivalent to greenhouse gas emissions (see List 1) from 53 million cars could be achieved. When people

List 1 : List of Green House Gases: 1. Water vapor 2. Carbon Dioxide 3. Methane 4. Nitrous Oxide 5. Ozone 6. Chlorofluro Carbons

are offered the capacity to control energy use, they are likely to make rational decisions with huge salutary consequences for the environment. Even the minutest of behavioral changes to conserve energy and save costs furthers the cause of sustainability through environmental protection. Bots can contribute to solving many of our environmental problems if they have the ability to gather and deliver information at will from a variety of devices that provide us comfort and contribute to our well-being. The sharing of such information perhaps selectively through social media further propagates the gains to environmental quality.

It is well known that machine to machine communication existed before the emergence of social media such as Facebook. The technological developments in M to M communication were immensely useful in conceptualizing the platform for social media. In a similar vein, innovators of smart systems in a variety of industrial sectors such as energy and construction, continue to contribute to the development platform for social media. A few world leaders in automation solutions such as Pacific Controls in Dubai for example, have developed smart systems that remotely monitor energy use and equipment health.

Real estate business has already discovered the use of embedded intelligence in a variety of new technologies including the M to M structures constituting smart systems. These systems provide 'peace of mind' to hundreds of clients including estate developers, building contractors, suppliers of public services, and social service providers. The provision of innovative managed services calls for integrating people, information and technologies. This approach marshals various human and machine activities to improve efficiency at all levels, enhance security and ultimately

improve human well-being. A component of this approach involves integration of human behavior data with information on behavior of the physical environment. This requires attending to dynamic human-physical system interactions in a given environment, accomplished by development of smart system capabilities. In this regard, they have developed an extensive infrastructure to manage and provide for human well-being in built and otherwise monitored environments. The scope of their services can be extended further given the current development of social media technologies which also attempt to connect people with technology and information.

SOCIAL MEDIA: Social media are composed of a variety of tools for communication which provides a platform for a variety of expressions via the web, emails, blogs etc. The best known example of social media is Facebook. Recent estimates suggest that Facebook already has a membership of about 500 million people. It is, according to Kilpatrick, the author of 'Facebook effect' adding at least a million members annually. The number of times You Tube is viewed per day now slightly exceeds 2 billion times per day.

Extending the world of social media: Social media is a space where people may share their emotions, thought, feeling, and opinions without fear of reprisal. The fundamental characteristic of social media is that it is a setting where people gather to share and build relationships. Social media is all about relationships. The number of marriages in the United States resulting from relationships formed through Facebook now exceeds the number of marriages among people who meet in traditional meeting places such as church, universities, and places of recreation. In the US, teenagers who participate in social media more intensively than the rest of the population segment share art, photo and video. The Pew Research Center has found that American girls contribute to blogs more frequently than American Boys.

Social media is a place where people communicate with peers and seek social validation of their behaviors, attitudes and aspirations. It offers all a platform for communicating not only at the local level but also at the global. More importantly, exchanges take place among equals in a medium where individual's human rights are respected. Several oppressed groups who did not have the right to be heard were not only heard but also were able to draw international attention to their cause. Within two days of recent earthquakes in Haiti, the American Red Cross raised as much as 5 million US dollars through social media.

For many, social media offers a digital version of a world they live in, but far less restrictive with opportunities even for rehearsing role plays for the real world. Social media offers a vast number of opportunities to build relationships. Army recruiters build relationships with potential soldiers, businesses with potential consumers and even the government with its citizens in a trusting and mostly transparent environment.

Has social media fully revolutionized the way we communicate? Has social media reached its potential? Are social media participants and nothing else? Herber Mead, a well-known sociologist and philosopher who taught at the University of Chicago during the first three decades of the last century characterizes human communication as symbolic interactions. He argues that human communication is possible because of the presence of two personal characteristics, I and Me. Herbert Blumer, one of Mead's disciples, describes 'I' as the perception

of self in terms of others 'attitudes and 'me' represents the organized set of perceived attitudes of others understood by the individual. 'I' is self as subject and 'me' is self as object.

Mead sees human cognition as the interaction between 'I' and 'me'. In social media, one is continually organizing the 'I'. Social interactions in social media are likely to generate personal needs and wants necessary for molding the self as objects. Personal and individualistic expectations and desires have to be met as well. This demands a considerable amount of time and material resources to undertake myriads of activities at the individual level outside social media. The exploding need for efficiency, security and stability is not immediately met within the confines of social media. However, bots are immensely useful in improving efficiency at the individual level.

What if everyone was able to socially interact while s/he attends to any number of personal tasks away, if necessary, from the public gaze of social media? What if, all were able to digitally but securely create a self that continually learned to proactively update information you need and want. What is it also assisted you to go farther in almost all spheres of life. Fortunately, the technology for achieving these goals is already available owing to the convergence of M2M, GIS and Automated Position Technologies with the internet.

Through the potentials of convergence in communication and monitoring technologies have not yet been realized, a few examples of innovative applications exist. A number of real estate corporations now offer a large number of services that are coordinated and delivered through control systems. They have massive capacity to provide personal services through a variety of bots that can interact with people. The bots will be able to host large population of individuals digitally, each of whom will be able to command and secure a variety of personal services through an illusory ownership of the bots themselves.

BOTS: STRETCHING THE LIMITS OF SOCIAL MEDIA: The ability to participate in a social network of friends, acquaintances, strangers, and businesses, with the capacity to obtain personal services using bots offers a new world of social media. It is a world where one maintains communication while in command of personal services obtained through safe, secure, and environmentally friendly bots. Through the two, social media and personal services, shall not be immediately integrated, the possibility certainly exists.

Bots are emerging as new tools to add to human security. Ulrich Beck, who coined the term 'Risk Society', asserts that modern societies manufacture risk as a by-product of scientific and technological innovations necessary to meet the demands of modern life. Thus, risks to life and property are ubiquitous. Solutions to risk mitigation involve development of vast communication networks through social media, and retrieval, management and utilization of personal information for security through bots. Thus bots are likely to be pivotal to the development of risk mitigation infrastructure.

Bots offer links to a variety of recreational opportunities. In the long run, they learn more about your favorite games and modes of recreation. Bots, proactively offer you favorite recreational choices at the very outset, facilitating the investment of your time, more for fun and recreation than for searching for fun games and activities.

Bots will be your companions. It is said that a large percent, more than 50, feel sad at least once a month. Many cry, many seek solace in social media. Bots as companions slowly learn about your moods and know about your friends and acquaintances who helped you. They will help you connect to more reliable friends among those who helped you. Bots are reliable when you need support.

Bots can be secure repositories of personal information. In a busy world, people very often misplace information. Information that cannot be retrieved at the time of need is information wasted. Bots can not only organize information but also deliver it in a swift manner when needed. Thus bots, like personal computers and lap tops, may become essential assistants in the work place.

Bots have already emerged as the next link in our striving for a sustainable world. Energy expenditures are to be monitored and controlled dynamically to achieve desired levels of reduction in carbon emissions. The determination of the amount of Carbon Dioxide emitted calls for information on a number of energy consumption related parameters all of which are secured, organized and analyzed to wield a measure of carbon footprint at the individual and social levels. Often, even the supporters of the sustainability movement do not achieve carbon foot print targets because of lack of immediate availability and access to required data. Bots can access the information you need and deliver it in specified formats. Large reductions in the carbon foot print can be achieved through small but significant behavior modifications among a large number of users. In general, bots can play a significant role in solving many of our environmental problems as they have the ability to assemble and deliver information at will, from a variety of devices that provide us with comfort and contribute to our well-being.

In the end, the use of bots is a personal and social affair. At the personal level, they bring about efficiency, predictability and stability in day to day lives. Bots are likely to significantly enhance the quality of participation in social media as well. Bots make human ability to extend our reach on information and participation in the life of communities at levels of individual comfort and benefit. At the social level, they enrich the quality of social life and augment our social well-being.

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Dr. Vijayan K. Pillai is a Professor of Social Work at the University of Texas at Arlington. He contributes in general to the field of reproductive rights and reproductive health. This article was initially written to provide my students in the Introduction to Social Work basic information about the social media and bots.

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