2012

A Futurist's Perspective on Consciousness and The Information Economy

Joseph A. Santiago
University of Rhode Island, balanceheart@mail.uri.edu

A Futurist's Perspective on Consciousness and The Information Economy

Keywords: Blended Environments; Personal Learning Environments (PLE); Informational Contact Zone; Cultural Contact Zone; Cognitive Computing; Augmented Reality; Tracking personal data; Open Source Data Collection; Community Learning Networks (CLN); Behavioral Modeling; Behavioral Profiling, knowledge management systems, balanceheart@hotmail.com,

Executive Summary

A warning to those people who feel that personal privacy is increasingly absent in our lives, as this article is going to confirm that feeling. Not only is the idea of being off the grid something that is now honestly only viable in spy thrillers and blockbuster movies, it has also become a theoretical concept for most people. I know that protection, collection, tracking, and production of digital information has become a trillion dollar business that the majority of people today are unaware of or only know what their local news reports on the topic. Companies today are seeking to tie data into everything from hiring and firing decisions, to strategic planning, to market positioning Information Technology (IT) policies, and they are monitoring the feedback to those actions. What I will discuss here is technology; how we use it to learn about the world and how it supports and answers our needs now and in the future. I will also comment on how I see technology evolving with the demands of society, education, and innovation. What I will not get into is intellectual property from movies, books, white papers, news, and music, which is the general digital information that people consume on a daily basis from the information economy. I also will not discuss how indexes from the stock markets have had monitoring technology directly wired into these financial systems in order to predict and make decisions about stock price data in a few nanoseconds in order to buy and sell billions at any given second around the globe. These expert systems shutdown the stock market in 2012 and new regulations were put into place.

Collecting Data about You in Everyday Life

Presently, global companies are pulling together their customer information when partnering with other companies who have large stores of data to combine face to face interactions with your online content and communications profile. When they combine face to face interactions, surveys, and in-store purchase data, and make all your information into a customer profile, they have a product. These customer profiles are merged with data about your online profiles (for a fee) and the company utilizes that data to improve online advertisements (for another fee), search engine results (for another fee), and targeted mailings (for another fee), in order to prime you with items that will catch your eye whether you're paying attention to them directly or not. The company doesn't mind if you buy it online or in store as long as you buy one of the products from a retailer that you were primed on. Add smartphones into this picture and now location is tracked, speed, web content viewed, what times during the day or night are specific interactions taking place, and even what words a person uses when

describing an object, event, person, and attitudes along any topical line. Many people add apps to their phones and online accounts that help them track their assets and/or information and this improves the accuracy of this digital personal profile for all parties. I can't completely blame companies who state terms of use in an agreement designed to appear for a customer to read and then that customer doesn't read it. How many times does the average person read those agreements? I have no facts on that since most people click to the end of an agreement and click accept thinking it only relates to the software itself. That information collected is what is really paying for the convenience of the free product or service in many cases.

Our digital profiles are important because every person has their own personal economy and footprint that is relationally attached to a geographic area and community. This idea of tracking a person right out of their community started with social security numbers. The Social Security website can share more about this and common myths about social security numbers if interested. (http://www.ssa.gov/history/ssn/geocard.html). Your digital information, such as cookies on your computer, may be read or collected by a retailer, a future employer, a bill collector, etc., and can be used to predict a good deal about what you might do next based on what you have already done to get where you are today. If you're investigating a product, this data can assist the retailer with the most likely time you, and other people who fit a similar profile, may buy a product so they can raise or lower the price. Your digital information ties you into a global economy and describes your life through the relational data of interactions and circumstances that happen to us all every day.

Behavioral Modeling

Questions are often posed about a person's behavior from an assumption that the individual is an isolated thinker instead of a connected social agent. Knowing is not an act that happens magically; it is an activity that people do as an active agent in their lives and develop certain practices and routines to investigate and experience what they are thinking about. If knowledge and discovery of our world through our behavior is an everyday activity, then the ideas and patterns developed are situated somewhere in our cultural, historic, or social contact zones and are ordinarily explored and investigated in some way before being acted upon. The act of knowing need not be methodical or an all-encompassing activity. It need only be localized and situated in such a way that intention of action can be recognized by others through their routine.

I am interested in creating a model of human behavior through collecting the criteria and the everyday activities of people around the world. Not surprising that I would first like to start in my own backyard. While everyone can see the myriad of personal and social information posted on the internet, there are whole industries based on extracting and predicting information that people felt was important enough to post/publish online. Every piece of data shared had a purpose for the individual. It is an expression of intentional interests and much can be learned from it. Data mining on internet sites or through software programs has the goal of recording and gathering information to find and identify patterns then to organize the pieces like a puzzle. By using text mining techniques, researchers can uncover patterns in communication that would allow them to assist people in making better choices in their lives. Since researchers would have an enormous amount of data on a topic, they could apply a solution that speaks to people in a way that they can easily understand.

Ethnographic methods seek to describe a group of people and their way of life by recording the daily events and practices of people and assembling the pieces into a larger picture. Ethnography looks at the behavior in which social position and identity is shaped and expressed based on how people live and experience their lives. It identifies objective patterns in the lives of people by collecting many subjective experiences. Data mining and ethnographic research create the perfect partnership to discover the subtle patterns and themes that resonate with individuals across generations and distance. I propose that culture and actions across the globe are approximately comparable when contrasted across settings, context, environment, and events, and could be set into a relational database. An autoethnographic study would identify the observable sociocultural interactions through collecting daily events from individuals that would be mapped with the events' criteria. The collection of data will allow a pattern to emerge and flush out the interactions of behavior, culture, obligations, and more. This pattern could be flushed out to create a web effect to track an individual(s) across a variety of circumstances in times of war or to identify criminals as they plan their actions. Currently I see this personal information being shared in companies and government agencies, but there is no meaningful effort by these agencies to educate people on what can be learned from this data. I will inevitably develop this data web around myself and my own personal data in order to make better choices in my personal and professional life.

Surveys and Tracking Data

People are being rewarded more for allowing companies access to their personal data. Sometimes that compensation is with gift certificates from retailers and other times it is promises of better service or cash. Digital privacy laws and regulations on how personal data can be utilized by companies are far behind where the technology is today. Society today has fallen in love with the reality TV concept and is sharing far more information freely than anyone would have guessed just a decade ago. The future on personal data seems bright when it comes to offering use of that data to a perceived third party that appears neutral. For example, ask most people to put a GPS in their car and have the data reflect how much they should pay their insurance (Progressive Insurance has a device that connects to the OBDC connector in the vehicle), and the majority of people won't even consider it. Ask people to have a monitoring program on their cell phone by a third party that will give them something for that access and most people will say yes or maybe. This example demonstrates that people take their cell phones with them in the car and it would capture much of the same data that the GPS from the insurance company would. One major difference is that the insurance company would have to pay much more for that data off your cell phone and get permissions from many parties with full disclosure of their information use policies. The majority of people feel safer when there appears to be some degree of anonymity from the third party interested in our personal data, and there appears to be no agenda for that third party to be seeking actions or pattern in the data that the company may not like.

Cell Phones, Power Consumption, Devices Becoming Open Source

What do you think consumes the most battery power from your phone during everyday use? The answer would be your cell connectivity and then the screen on your device. Cell phones do not have to be so large. They could be the size of one of those bluetooth receivers that fit into your USB port on your computer to control a mouse. By changing the device to something with a design that would fit into a USB port, a cell phone could be attached to multiple devices. This idea is not new as personal area networks (PAN) have been around for some time and improving but the miniaturization of the cell phone has been slowed from the idea of human interaction principles. Cell phones have kept to the idea that they should be big enough to read text on and operate the device from a single unit. Tablets such as Microsoft's Surface and various smartphones are demonstrating that add-ons can be acceptable in a consumer's marketplace and may help further this concept. Cell phones could serve as IDs and connect equipment in ways that depend on Wi-Fi primarily now. Establishing a standard for cell phones in this sort of design or further developing Blue-Tooth, would pull cell phone companies into the data managing business more than they ever have been before.

I believe the first company to come out with open access data networking for voice and data for the consumer market will control the lion's share of data out there. Google, it seems, has also come to this conclusion as they have begun to develop Google Voice which gets them poised to compete with various alternatives to hold onto informational and cultural dominance that they have earned for their efforts. The open source model that Google operates under allowed it to become a global company more rapidly than most companies. Being open source is how Google utilized Google Docs to compete with Microsoft Office, and Google Maps to overtake the mapping industry. The strength of the open source model is in educating and offering the information and access to those that want it. Even this structure collects and monetizes personal information through everyday interaction from the average person. I believe open access allows for better opportunities to educate people and is our best shot at minimizing harm to people through bad laws and unscrupulous business practices as we continue to innovate.

Cognitive Computing and the Social Sciences

Have you started to notice voice commands and more human-like responses from your technology? Having these personified traits encourages people to emotionally bond with their technology and make the experience a bit more intimate. The experience at its best is designed to make technology feel like a companion to us in our lives. The results of this practice have us relating to our technology under the guise of companionship, but removes the expectation of give and take that come with the demands of friendship. Researchers have used this principle with robots expected to interact with humans since they were first envisioned. It is no accident that our technology has many featured points that make it a fun experience to relate with so we might more readily utilize it to answer the needs and questions of our lives. The programs in our smartphones are tied to data bases in the cloud that allow them to listen to what we say and create profiles that improve voice to text accuracy. They can talk back to us and accomplish small tasks. They can do all this with a bit of humor and a personality that is optimistically neutral no matter how we may get frustrated with the inferior accuracy when writing our text messages. From text messages, emails, web surfing, and digital content, word frequency tables can be produced

that would allow researchers to get an idea about the major themes in your life. As technology is advancing it brings with it the skills of the social sciences to understand and contrast life and create relational databases. Relational databases are collected and associated variables of data that may have a relationship together and could be correlated with particular events.

A good example of this would be to search for a 'joey' using a search engine. You will find many handsome pictures and admittedly some not so good. All these pictures are results displayed to you after being compared and recognized by a certain percentage of accuracy after being identified as a joey. The words chosen to describe what you seek changes the percentage of accuracy and results as words have multiple meanings. Search engines weigh those results by accuracy and then weigh them by the percentage of chance that you would be searching for one meaning over another. A bubble algorithm in your search engine would ensure that localized results were displayed first in the list. This is how software can present information that you want in a way that seems predictive and accurate. It is with these seemly intelligent acts that programs can also appear to be thinking. In a similar way that a search engine works, an adaptive program can learn and profile patterns from everyday life by identifying the correlated and predictive statistics for a behavioral action under consideration at that moment. An example of this is your smartphone listening to what is said as you go about your day. Imagine the cell phone's camera has captured the surroundings and has identified all the discrete objects within the space. A sound in the room creaks and the correlation to what that creak could mean registers as the bedsprings and not a voice command from the relational database. You let out an "Aarrghhh" and again the probability of what the noise is relates to the pattern of instances that this sound may be used. The database will hit on soccer grunts, zombie moans, toe stubbing, yawns, and so much more. The program knows that it will pair and weigh the sounds against other sounds that have the highest probability within the space that the cell phone is in. The alarm goes off and you shut it off with another grunt. A voice from your phone may offer to announce traffic conditions, the weather, or the news. Cell phones can sense light, sound, motion, location, nearby networks and devices, and more, making it a perfect data collector right out of the box.

All of these advances in technology will create ways for human beings to relate to the world by making it more intelligent. By making the world more intelligent through computer technology we are also changing how we as a society and species live our lives. Changing how we live our lives and how informed we are changes the ways that we will learn. While a computer may follow programing to do probable actions there will be a need for social scientists to check results and reroute and connect new pathways for the programing to follow. This touches on how I believe people will learn.

Personal Learning Environments and Augmented Reality

I hope you have accepted the premise that a computer can map a room and create a database of the items in that room. If so, have you thought what that would mean for our own personal learning? Situational and scenario based learning environments would be our everyday interactions that would be practiced before we were in real life situations where our actions would matter and contribute to others. A wonderful example of this is deductive scrutiny and scenario based learning. These can be

translated into everyday skills and concepts, practiced while participating in a story. A Sherlock Holmes story with virtual characters and scenarios taken right from the detective cases teach concepts of deductive logic and metacognitive thinking that could be applied to everyday life. Learning to see the variables in any environment that could make the difference to solving Sherlock's case and preparing with him for what may come next from what has already happened or been learned, could support learning to use variables in your own life, using the same methodology as Holmes. Taking the logic of observation and deduction gleaned from a Sherlock Holmes story into your own home and testing it against what is present in the environment to see if it works, is setting up situational based learnings. This is higher order thinking that would support passive learning in entertainment and education.

Once all those experiences are in the relational database it will keep improving the predictive and suggested actions. This is called an expert system. Examples of what worked and what didn't can be equally useful knowledge. Because the experience is being tracked through the software, the data will improve results and suggest actions for the future. Skills are then transferred onto other topics and subjects and the environment is personalized to the individuals learning speed and understanding by their devices. Community learning networks (CLN) would begin right when we step outside our door and companies such as Google already have augmented reality games that mirror these technologies. As the technology progresses, classrooms will be for the best and brightest content strategists and we will be able to connect with them wherever we are. Classrooms will become field courses in most cases as theory and practical knowledge can more easily be bundled together with augmented reality. Field courses will put industry subject matter experts to work and people taking courses will quickly know they can improve their lives in ways that they can comfortably control.

As an example, if you want to learn how to build a table, you could start with augmented glasses and follow the computer-aided instructions of someone building the same thing. While you work, the camera on your augmented reality glasses could give you feedback based on what it is tracking and comparing those results to what it has in its relational database of where you should be at any particular step. Cameras are used on these systems to identify the environmental variables and give continuity of feedback across the layers of interaction. While there will still be reasons to get together face to face, online communication will also supplement any face to face interactions as a person can be right with you through a augmented reality video call. This would make a rapid transfer of skills possible to learners who have a variety of interests. I have seen advances in haptic technology where there could now be the sensation of touch involved in video calls and simulations. Knowledge and capacity to hold and utilize information will determine what happens to universities, colleges, and libraries, but E-learning will become increasingly more of an everyday event. The informational and cultural contact zones that surround us will represent a new republic that will involve us in multiple layers of life and challenge that we have yet to imagine. To me, all of this is exciting because it leads me on both an internal and external journey for myself and I appreciate my evolving sense of nature and humanity. This phenomenon and progression is viewed by some as removing the humanity from our lives. I disagree with that, and when the internet first was launched, critics said no one would talk with each other again face to face if the internet was widely embraced. I seek to realize this future to open the doors for greater lifelong learning and bridging the many divides of race, social class, and opportunity.

Discussion

I started writing this article to share my thoughts about a future that I'm both nervous and excited to be a part of. I believe that the information economy has already become a global race and an industry that is rarely understood or talked about today in America for the general populous. I believe the future holds many opportunities for open source projects. Within ten to twenty years individuals will search through their environment in a manner similar to how they search via the web today. Cognitive computing will rapidly advance how we utilize our technology and situational and scenario based field trainings will become a regular part of entertainment and educational opportunities. There will be a boom for subject matter experts and social scientists as they create ethnography, situational assessments, and greater collaboration between industries and disciplines which will make relating to devices and each other a better experience. I believe that as we enter into a global environment and an increasingly connected society, strategic planning will be needed to advance in an increasingly competitive environment. Educational institutions and corporations have underestimated the value of E-learning and we can already see the offerings in E-learning skyrocket globally. I predict that within the next five years there will be an even more significant shift in how this area performs. Community Learning Networks are progressively being relied upon and, as technology advances, community groups will become a more significant part of our lives as advocators for knowledge and cultural community competencies.

You may have noticed that I did not touch on 3-D printing in this article. The advancements in this area will cause rapid change and challenge many long standing institutional systems that are unprepared for the coming advancements. This is a topic that will need its own article to truly do it justice. Perhaps this stated omission makes you curious enough to learn more for yourself?

I hope you enjoyed reading this as much as I did writing it. I am presently seeking opportunities in these multiple areas to further my knowledge and experiences working with this very large field of interest. I did my Master's thesis on Distance Education and Community Learning Networks linked by a Library of Culture and built a system at the University of Rhode Island that could function as an informational and cultural contact zone capable of supporting CLNs and partnering universities and individuals in a variety of roles to encourage their interactions for collaboration. I am a subject matter expert on knowledge management systems for cross channel operational processes, training, and the establishment of informational and cultural contact zones. I received an MS in General Psychology and I am presently all but dissertation (A.B.D.) in Industrial and Organizational Psychology. I am currently enrolled in a Doctoral program for management and global leadership at Colorado Technical University (CTU). When I finish, I intend to finish my dissertation at Walden University utilizing the research methods I am currently learning at CTU. If you would like to see my print and web publications check out my LinkedIn profile and scroll down to the publications section.

www.linkedin.com/in/josephs

Thank you for your interest.

Joseph A Santiago