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INTERPRETING THE FUTURE OF HEALTHCARE

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BEYOND DIGITAL TO COGNITIVE

Pretty much everything that can or should be made digital has been digitized now, even if some areas, such as Electronic Medical Records,[1] are moving a bit more slowly than expected. The challenge now is to make intelligent use of all the digital data that's accumulating fast: databases, email, documents, spreadsheets, presentations, videos, images, audio files, and web pages. Digging into this mostly unstructured data is the job of cognitive computing, which is a lot smarter than the information technology that most people use. The clue is in the word "cognitive," which is about thinking (eg, Cognitive Behavioral Therapy, Cognitive Psychology).[2,3]

Most of the computing that the majority of people use looks smart and may even appear to act smart, but that's an illusion. It's fundamentally dumb. It doesn't think; it just runs rules specified in programs. They're complex programs that take many millions of lines of code, but they deliver predictable outcomes. The only time they do something novel or unexpected is when they have a bug. By contrast, cognitive computing systems are designed to be smart in ways that people are smart. Like humans, they learn from experience. Like humans, they interpret words, both written and spoken, and sensory data, such as images. Like humans, cognitive computing systems weigh probabilities. They don't instantly come up with pre-determined results. Rather, like humans—or at least like smart humans—they generate hypotheses that they test out and modify on the basis of new information.

Although these are extraordinary new abilities that are truly impressive, don't expect to hear many people having casual conversations about cognitive computing for at least another few years. This is because to the uninitiated, "cognitive computing" sounds like one of those much-hyped "out there" ideas such as Quantum Computing[4] and DNA Computing.[5] No matter. Whether or not ordinary people know anything about cognitive computing won't make much difference for the moment, even though IBM for one seems to think otherwise. The company dramatized the capability of its Watson cognitive computing system in 2011 when it beat two strong human contestants to win the TV quiz show Jeopardy.[6] More recently, IBM has started to run some clever TV ads to raise public awareness of Watson. One ad featuring Bob Dylan[7] highlights Watson's language analysis abilities, with a call to action to "outthink," IBM's tag for Watson's cognitive capabilities.

Regardless of whether the general public takes an active interest in cognitive computing, we're all going to use it anyway. In 2014, IDC forecast that by 2018[8] "half of all consumers will interact with services based on cognitive computing on a regular basis." We will see in due course whether that prediction is yet more hype, but what we can say with certainty is that healthcare itself, along with healthcare marketers, are going to be harnessing cognitive systems well before 2018.

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7 bit.ly/1SebSeU
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COGNITIVE COMPUTING IN HEALTHCARE

Watson's Jeopardy triumph understandably prompted some people to imagine scary scenarios of machines taking over from human beings, like HAL in 2001: A Space Odyssey[9] or the robots in Terminator.[10] Less spectacular and more scary, there's a lot of concern about increasingly intelligent machines taking over whole categories of work, with up to 47 percent of today's jobs being automated, according to one widely-cited study.[11] Even luminaries such as Elon Musk and Stephen Hawking have sounded warning notes[12] about machines taking over. Who knows? For the moment, my experience of cognitive computing has been that it complements human capacities rather than replaces them. This is a boon in industries where there's intensive use of human brain power, such as medicine and healthcare marketing.

To get just how useful cognitive computing will be, it's important to get beyond the idea that there is usually "a right answer" for problems in any field outside math and quiz shows. People tend to think more or less consciously that doctoring is like a TV mystery or a Sudoku puzzle in which the expert deploys his/her genius to deduce "the right answer." There may even be a lot of people in healthcare who wish this were the case, but the reality is usually a lot fuzzier. Textbook cases with textbook answers are not the norm because there is infinite variety among patients and the presentation and progress of their conditions. Healthcare involves a lot more intuition than is generally admitted by systems that are predicated on maximizing certainty. With the ever-present risk of litigation, physicians hedge their intuitive skills by ordering extra tests. According to one authoritative report,[13] the vast majority of American physicians surveyed say they practice defensive medicine, leading to spending that equals between 26 and 34 percent of annual healthcare costs.

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Cognitive computing can help physicians build stronger cases by providing extensively researched and argued factual support for their treatment decisions. In other words, it provides not just facts, but reasoning based on those facts. This enables physicians to deploy the uniquely human skills that they have honed with time and experience: tuning in to patients, picking up clues and cues, and deepening the patient-physician relationship. Physicians already use online medical references to build their cases, but cognitive computing takes this practice up several levels and opens it to new sources of information. Rather than doing a text string search —in effect, eye-balling at warp speed— cognitive computing handles natural language (ie, spoken) queries, seeks relevant information and assembles it into possible answers. Unlike search, cognitive computing systems learn from experience and have to be trained. One typical approach is an iterative learning process to get the cognitive system up to speed in a particular domain: provide the system with a whole lot of information from that domain, ask a question, then let it guess what "right" looks like and correct it if it's wrong so that it can modify its algorithms. Once it is trained, it can take information about a specific patient and set about comparing it with available patient records as well as published literature and medical meetings. The system then offers the doctor a choice of treatment plans with degrees of confidence and supporting evidence. In other words, it acts like an extremely fast researcher.

In a field where bodies of complex information are growing too fast to keep up with, cognitive systems are going to provide healthcare professionals with an expert selection of relevant information to support their decisions. Early healthcare applications have been in chronic care diseases such as cancer, diabetes, cardiology and mental health. Another application is clinical trial matching.[14] For patients and their doctors, it can identify trials that may be relevant to a patient's condition, as well as show how the condition might be modified to make it eligible for the trial. For researchers running clinical trials, it can help increase trial recruitment and fulfillment.

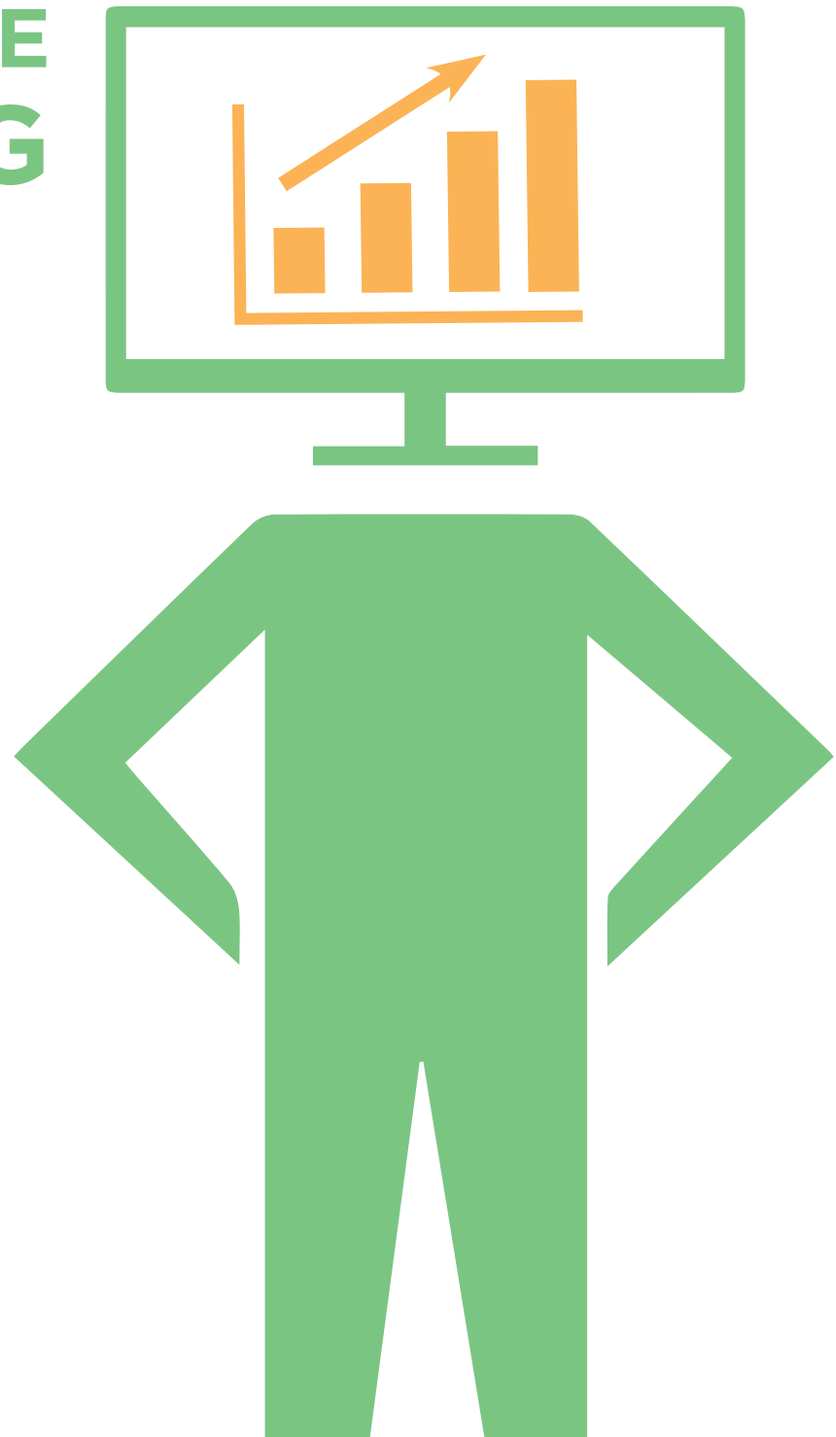
14 ibm.co/1HJ8tzE

"Cognitive systems are going to provide healthcare professionals with an expert selection of relevant information to support their decisions."

Larry Mickelberg, President, Havas Lynx US

COGNITIVE COMPUTING

IN HEALTHCARE MARKETING



For the reasons outlined above, plus the fact that the needs are so great and there's so much money involved, healthcare has been an obvious area to apply cognitive computing. But it's far from the only area that will benefit. We are quickly finding that marketing is another area ripe for cognitive computing. Our close-up experience of healthcare, and our Ecosystem partnership with Watson, are proving to be a great foundation for us to map out how we can harness it to develop our cognitive practice.

MEDIA MONITORING

In theory, it's now quick and easy to monitor the world's media 24/7 for mentions of our clients and their products. In practice, it's not so quick and easy. Internet search is a blunt tool that's okay for returning basic text items and other materials that have been tagged, but it takes a lot of additional brain work to make sense of what it finds; whether items are positive, negative or mixed, whether they are description or evaluation or prediction. Even more challenging is media coverage in foreign languages, which takes people with serious language skills to interpret. While services such as Google Translate have advanced, they are still apt to give translations that are hard to understand, misleading or just plain wrong. Cognitive computing will enable us to do media monitoring faster, more extensively and all-around better. Accessing unstructured data such as videos, providing increasingly accurate translation and analyzing it all for tone and meaning will make our media monitoring richer, more nuanced and more valuable for our clients.

MORE EFFECTIVE COMMUNICATION TO TRIGGER DESIRED BEHAVIORS

One of the most immediate applications is to create more effective communication for the diverse audiences we serve on behalf of our clients: healthcare professionals, healthcare budget holders and, of course, healthcare patients. In themselves these are very different audiences, but within each audience there's a lot of variety, too. By learning from interactions with members of each audience, cognitive computing can give us actionable personality insights. Where are they on the OCEAN Big Five traits (Openness, Conscientiousness, Extroversion, Agreeableness, Neuroticism)? What Needs do they seek to satisfy (eg, stability, structure, excitement) and what Values motivate them? Being able to identify the characteristics of recipients down to such a granular level is marketing communications gold, but mining it also creates difficulties that we can tackle with cognitive computing.

Knowing that an individual has a particular personality profile is just a start. It means that we have to tailor our communication accordingly; we have to personalize it. Cognitive computing can help here, too, with tone analysis of our proposed communication, enabling us to tweak it to optimize it for the personality profile of each target. Using the linguistic and visual analysis capabilities of cognitive computing, we can analyze the characteristics of marketing materials, then further down the line, sales data can show how the materials perform. The pattern recognition capabilities of cognitive computing will do the heavy lifting of integrating this complex mass of information, enabling us to see which communication elements have been most effective for which types of target.

This promises to be a continuous process of information-rich learning and fine-tuning. The more the system learns, the better we will be able to predict how effectively it will resonate with specific target audiences. The vast reach of cognitive systems will make it possible to identify and incorporate messaging elements that the target audience uses, enabling us to learn to "speak their language" more effectively over time.

BETTER CUSTOMER EXPERIENCE DESIGN

Cognitive computing also offers much-needed new tools for designing customer experiences. In healthcare marketing, with its regulatory constraints and ethical issues, designing customer experiences arguably takes more sensitivity than many other areas of marketing. By its very nature it can be complex, especially when the customer experience is in effect the patient journey. In a different way, communicating with busy healthcare professionals requires a judicious mix of art and science. Tapping the context personalization potential of cognitive computing promises to help fine-tune detailing to give individual HCPs the information they need in the form and sequence they need it.

INTEGRATING INFORMATION FROM WEARABLES

We've written a lot about the huge promise of wearables in healthcare and healthcare marketing. The elephant in the wearables room is the sheer volume of data that they generate. Cognitive computing is going to be an essential tool for integrating biometric data from wearables for effective messaging programs. Patient adherence is one area where smart use of real-time data can have a real impact on costs and outcomes. Non-adherence patterns and

causes vary from patient to patient, and potentially over time in the same patient. With cognitive computing we can use personality insight and tone guides to craft adherence messaging that's customized for each patient. With connected pill dispensers or digital pills we can not only track adherence in real time, but also predict changes in adherence and forestall them.

Without cognitive computing, parsing large volumes of dynamic data for patterns and predictions would be difficult, to say the least, and prohibitively expensive. With cognitive computing it will become a cost-effective standard element of healthcare marketing services.

COMPLEMENTARY COGNITION

From these examples, it might sound like healthcare marketing will be turned over to smart machines, but that's no more the case than for healthcare itself. For the foreseeable future, marketing still needs human expertise to frame problems, to generate creative strategies, to sell them to clients and to implement them. Cognitive computing will enable us to do what we already do better, and to create new service offerings that are just not possible yet.

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