

EMOTIONAL INTELLIGENCE

The possibilities and pitfalls of affective computing software

By Kris Helge

Affective Computing Software (ACS), a horizon technology still in the research and development phase, has the potential to significantly improve customer service in law libraries, enhance the marketing capabilities of law libraries, and augment law library employees' job satisfaction and work ethic. These benefits are attributable to this pioneering software's capacity to determine a person's affect while he or she is viewing or experiencing specific stimuli, such as websites or electronic databases. Gaining an awareness of an individual's current affect allows ACS to discover the person's preferences and dislikes. The Massachusetts Institute of Technology, Microsoft, and other American business entities such as Utopy and Mindfabric are currently experimenting with various forms of ACS. As this technology begins to filter into the marketplace, law libraries may also begin to use it.

This technology could become an important tool for law librarians, allowing them to use these discovered inclinations and aversions to supply patrons with materials that will increase the patrons' satisfaction and encourage their continued patronization. Utilizing ACS can also help library administrators provide library employees with enjoyable and challenging job tasks.

Along with these benefits, however, ACS engenders some perceived encroachment upon individuals' privacy and creates some potential legal and ethical pitfalls for law librarians. This article explains how ACS operates and how it can positively alter the way law libraries successfully achieve great patron service, effective marketing, and employee satisfaction; conversely it discusses how the software's use may result in possible ethical, privacy, and legal pitfalls, and it offers suggestions regarding how to deal with these pitfalls.

How ACS Operates

An article written by Bennett Daviss, and a separate article written by Marcee Steele and John Steele, describe how ACS

implements an augmented transition network (ATN) that senses an individual's physiological data via sensors or cameras. The ATN then analyzes this physiological information and determines the person's present affective state. If this individual is perceived as being distraught, sad, or frustrated, the ATN attempts to alleviate these negative feelings.

For example, consider a law library patron using an electronic library catalog or the Internet to locate materials about the probate process in New York on a computer equipped with ACS. This patron is unable to find the needed information and therefore experiences a rapid pulse, raised blood pressure, and an increase in galvanic skin response. ACS senses these physiological indicators via embedded sensors in a computer mouse or a keyboard and determines that the patron is flustered. ACS then independently accesses the electronic library catalog or the Internet and attempts to retrieve and recommend articles, websites, and electronic databases pertinent to the probate process in New York.

This potential of ACS to perceive the type of information sought by a patron, comprehend the patron's current affect, and quickly locate and suggest general, valid, and reliable sources can improve customer service.

Improving Customer Service Discovering Preferences

Presupposing that law library patrons log on with a unique username and password, another way ACS improves patron service is by rapidly learning a customer's preferred materials and then consistently providing them with access to those resources. The *Times Online* recently reported that Microsoft is currently developing a type of ACS called Microsoft Monitoring System 500 (MMS 500). This software is capable of recording and analyzing a computer user's search queries, websites

viewed, social networking tools visited, and the user's physiological responses to each stimulus. Such an analysis allows the software to learn which

websites, databases, and other sources a customer prefers. Therefore, as law libraries use software similar to MMS 500, each time patrons log on they are given a dynamic search tool that learns the patrons' preferences and then informs them of any newly published periodicals, case law, or other legal materials relevant to their currently known information inclinations. ACS' capacity to consistently provide desired resources to patrons could save them time and increase their satisfaction with library services.

Assisting with the Reference Interview

ACS also improves customer service by assisting with the reference interview even when law librarians are unaware a patron is experiencing difficulty locating desired items. For example, a patron searching on the Internet is unable to locate information about community property in Arizona and consequently displays negative physiological indicators. ACS senses the patron's aggravation and recommends more precise websites that convey general relevant information. Simultaneously, ACS delivers an electronic message to a reference librarian signifying the location of the distressed patron, the content of the patron's search query, and a summary of websites visited. The alerted reference librarian may then approach the discontented patron and offer informed assistance. The ability of ACS to serve as an information mediator and to notify the reference librarians of the precise needs of a customer enhances the reference interview, diminishes some degree of burden on the reference department, and improves customer satisfaction.

ACS as a Marketing Tool

ACS can enhance marketing of certain law library resources, which is likely to encourage continuous and increased patronization. Two articles recently published in *Training and Development* and *ILSole24ore.com* discuss different types of ACS, such as SpeechMiner and



the EREC Emotion Glove, each of which may be employed for advertising purposes. Similar to the other forms of ACS discussed above, these decipher one's affect by sensing, scrutinizing, and storing in a relational database individuals' physiological symptoms, such as heart rate, perspiration, galvanic skin response, pupil dilation, facial features, and voice patterns. These physiological records help develop a chronicle of patron penchants and repugnancies for websites, social networking sites, electronic databases, and other digital and print materials—even for café pastries.

Using this archive, law librarians could then discover that a specific patron enjoys drinking coffee at the cyber café and perusing information about the First Amendment. Then, by gathering e-mail addresses of patrons and using these preferences, law librarians could configure ACS to disseminate personalized messages to this patron while he or she is at home, work, or elsewhere. The e-mail could announce that the law library has recently obtained a monograph that discusses free speech, it has an author scheduled to speak on Tuesday evening about his blog regarding the establishment clause, and that the cyber café has a newly released blend of coffee he or she may desire. This type of marketing encourages individuals to visit the law library and engage with information—and even beverages—congruent with their interests and tastes.

Improving Employee Satisfaction and Work Ethic

Law library administration could also utilize ACS to improve the job satisfaction and work ethic of their employees. For example, numerous law library administrators are faced with employees who are discontented with their current job tasks and therefore emanate a lack of motivation and poor work performance. It is often difficult for library supervisors to ascertain the causes of such

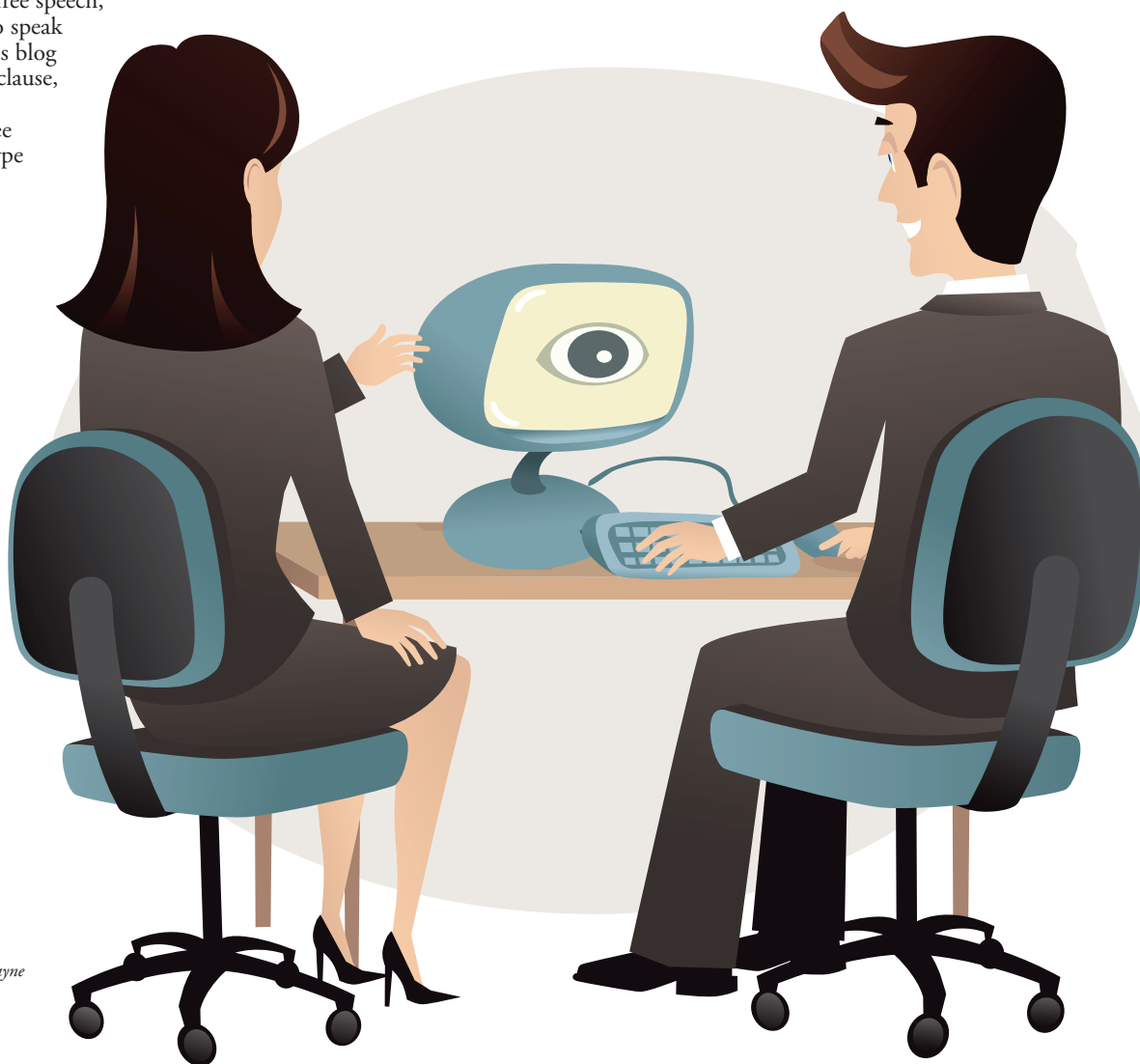
employee displeasure, but an implementation of ACS could pinpoint some of the sources of employee unhappiness.

One way to pinpoint possible reasons for employee dissatisfaction is by embedding ACS into the computer mouse, telephone, or chair of a library employee who has demonstrated indifference for his or her job. This software then perceives the employee developing cold sweaty hands, tight muscles, and an increased heart rate while dealing with public patrons. An article written by N. Sadat Shami, Christian Peter, and Regan Mandryk titled "Computers that Measure Our Emotions" notes these specific physiological symptoms indicate that an individual may be experiencing a fearful affect. Armed with this knowledge, library administration could then offer to relocate the employee to a different section of the library, offer more training, or permit another librarian to field queries from public patrons.

Concerns with Misinterpretation of Physiological Data

As the preceding example shows, in theory, having software that helps identify some possible origins of employee despondency could assist library supervisors in advancing worker happiness. However, astute critics will express concern about the potential of ACS to misinterpret physiological data and thus inaccurately conclude that a content employee is unhappy.

In the article "How Computer Spy in the Office Will Monitor Everything You Do" regarding MMS 500, David Brown and Elizabeth Judge mention that Microsoft plans to avoid such measurement error by obtaining an initial physiological baseline recording for each employee. Therefore, when given a baseline measurement, if an employee naturally manifests a more rapid heartbeat or has a highly varied pattern of neuropsychological activity, ACS does not initially interpret this as an



abnormality. Instead, ACS only perceives a possible problem if physiological symptoms recorded subsequent to the baseline measurement indicate an aberration.

Library employees are likely to display some hesitancy when asked to submit to baseline physiological measurements, and library customers are likely to refuse acquiescence altogether. Therefore, at least during its initial implementation, ACS is more likely to misinterpret what materials patrons are seeking, possibly leading to deleterious outcomes for these patrons.

For example, a pro se library customer is searching on an electronic catalog for a child custody form. During this research process, ACS misconstrues what the patron is seeking and proceeds to recommend a specific form that is irrelevant to his or her court proceeding. Using the erroneous form causes the customer to obtain a negative outcome in court. Subsequently, the patron may become frustrated and never return to the law library. The patron may also inform others of this software blunder, which would decrease patron confidence in the law library.

Such a result would be counter to the mission and goals of law libraries, which simultaneously aim to assist customers in locating relevant, valid, and reliable sources, augment customer satisfaction, and increase the number of patrons who visit the law library. With any new technology, some initial error is to be expected. However, to minimize patron aggravation, before implementing this new technology law librarians should carefully test its accuracy in recommending general sources.

Along with a decrease in patronization and customer dissatisfaction, software error could result in a lawsuit against the law library. Currently, no legal precedent exists holding a law librarian liable when he or she provides a patron with specific errant information. However, a disgruntled law library customer who obtains specific misinformation from a library computer equipped with ACS may argue that the law librarian who supervises the ACS caused the customer damages by providing him or her with specific invalid sources.

If the accused law librarian has earned a law degree, the patron may also advocate that the law librarian has established an attorney-client relationship with the patron and has failed to provide the patron with competent legal advice. If the accused law librarian does not possess a law degree, the patron may argue that the law librarian is practicing law without a license by offering specific sources to the patron. If the patron can convince a judge to be sympathetic to either of these allegations, the supervising law librarian

could suffer negative legal consequences.

Therefore, in today's litigious society, it behooves law librarians to remain cognizant of these possible legal pitfalls, to take all known precautions, and to recall that law librarians are trained to direct patrons to the general area of the library where the requested sources are located rather than make specific suggestions regarding which sources to use. With regard to implementing ACS, it follows that law librarians should ensure that the software is calibrated to make general recommendations to patrons rather than suggesting specific sources. Such general recommendations may consist of offering a few general and reliable websites rather than specific forms on the websites or proposing a general range in the law library instead of specific form books.

Informational Privacy

Along with the possibilities of misinterpreting which materials a patron is searching for, the implementation of ACS may also result in a patron perceiving an intrusion upon the patron's informational privacy. Jerry Kang describes informational privacy as encompassing a person's right to control the acquisition, processing, disclosure, and use of personal information. This personal information may consist of an individual's Social Security number, healthcare records, and financial records, and may also include internal processes that an individual desires to keep confidential, such as one's physiological symptoms and one's current affective state.

Some library users have been desensitized to exposing their private information by modern technology. For example, most library users are now mindful that as they surf the Internet, different websites disseminate cookies that monitor, record, and analyze their search behavior. However, ACS collects, stores, and examines information that is so inherently private and personal—such as one's neuropsychological processes, blood pressure, affect, and other physiological symptoms—that, if made known to the public, such information could cause great embarrassment or stress for the computer user. Therefore, numerous library patrons and library employees may object to the sensing, evaluation, and commercial use of these symptoms based on their reasonable expectation of privacy. While objecting to this perceived violation of privacy, they may seek help from the U.S. court system.

Current Law

To the chagrin of those seeking legal safeguard, there is no constitutional protection for individuals subjected to surveillance technologies implemented

in privately funded entities. Further, when observational technologies are applied in publicly financed entities, the courts have created more protection for the technologies than for the technology users.

For example, in *United States v. Forrester*, the Ninth Circuit Court of Appeals ruled that little Fourth Amendment protection is given to the "to/from" addresses of users' e-mail messages or the IP addresses of the websites they visit. Also, in *United States v. Miller* and in *Smith v. Maryland*, the U.S. Supreme Court held that there is no legitimate expectation of privacy for information revealed to third parties, even if it is revealed under the assumption that it will be used for a limited purpose. Other cases such as *United States v. Angevine* and *Biby v. Board of Regents* have upheld entities' written policies that give computer users clear notice that they have no reasonable expectation of privacy when operating one of the entities' computers.

Therefore, in a law library setting, whether it is state subsidized or privately funded, patrons and law library employees using computers equipped with ACS are given no legal privacy protection as to the e-mail addresses stored in their e-mail account or the websites they visit. Further, these law library patrons and employees are revealing their affects, personal interests, and search habits to third parties, namely members of the library staff. Couple this fact with a well-written, overt policy that clearly communicates that law library computer users and law library employees have no reasonable expectation of privacy when operating a library computer, and it appears law libraries may use ACS to compile complete dossiers of these patrons and employees' affects and preferences. It is further evident these dossiers may be used to assist patrons, market to patrons, and improve library employee work ethic without violating current privacy laws.

Informed Consent

However, because the information being collected by ACS is so personal to patrons, law librarians have an ethical duty to create a policy that gives customers and employees clear notice ACS is being used. One way law librarians can meet this ethical burden is by creating a policy that mandates all law library users and employees be given cogent, written informed consent. Giving a person valid informed consent means giving full disclosure that a technology is being used, communicating an explanation of how it operates, informing of any known risks and benefits, and conveying any alternatives available to the library users.

Also, according to an article written by Carson Reynolds and Rosalind Picard, informed consent implies that a person is voluntarily agreeing to subject oneself to a technology. Therefore, in a law library setting, patrons should be given express written notice that ACS is implemented on computers and on electronic catalogs. This disclosure should also briefly but clearly describe how ACS operates, indicating that one's physiological symptoms and research behavior will be analyzed and stored for library purposes. The notice should further inform customers that computers that are not equipped with ACS are also available for use. Therefore, patrons can make a fully informed and voluntary decision about whether they want to subject themselves to such technology. This disclosure can be provided by placing unconcealed pamphlets at the library entrance, in computer terminals, or near electronic catalogs.

Law libraries may also attempt to have patrons or employees sign a disclosure form regarding ACS when they initially obtain permission to use the library. Such informed consent should be provided to ethically protect the privacy of patrons and employees, to help them make an informed decision as to whether they want to use a computer terminal equipped with ACS, and to desensitize users to ACS.

Conclusion

ACS is currently in its research and development phase, but as entities such as Microsoft continue to refine and implement this software, many commercial and public enterprises including law libraries will soon follow. As law libraries begin to apply ACS to their electronic tools, the technology has the potential to transform the means of providing customer service, advertising a law library's resources, and advancing law library employee job productivity. Such transformations may allow librarians to more efficiently and precisely pinpoint their patrons' information needs, effectively motivate people to visit the library and engage with its resources, and create more content and self-motivated library employees.

Initially, ACS may also experience resistance from some customers and employees as they perceive infringement on their privacy rights. However, current legal precedent tends to grant more protection to innovative new technologies than to those that may be directly affected by such technology. Therefore, as time passes, most law library patrons may become desensitized to the implementation of ACS, just as people have accepted the use of surveillance cameras in private and public businesses and cookies on the Internet. However, law librarians do have an ethical duty to give full disclosure to patrons regarding ACS so that library patrons can then voluntarily decide whether they want to use this innovative, dynamic search tool. ■

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