

10-12-2021

## Monitoring Remote Employees at FinPro

Janice Sipior

*Villanova University*, [Janice.Sipior@villanova.edu](mailto:Janice.Sipior@villanova.edu)

Follow this and additional works at: <https://aisel.aisnet.org/cais>

---

### Recommended Citation

Sipior, J. (2021). Monitoring Remote Employees at FinPro. *Communications of the Association for Information Systems*, 49, pp-pp. <https://doi.org/10.17705/1CAIS.04912>

This material is brought to you by the AIS Journals at AIS Electronic Library (AISeL). It has been accepted for inclusion in *Communications of the Association for Information Systems* by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).



## Monitoring Remote Employees at FinPro

**Janice C. Sipior**

Department of Accountancy & Information Systems

Villanova University

*janice.sipior@villanova.edu*

### Abstract:

In response to the coronavirus disease of 2019 (COVID-19) pandemic, governments across the world have issued containment and mitigation restrictions to hinder the disease from spreading. To sustain operations and ensure continuity, businesses moved to remote working for their employees. To better hold work-from-home (WFH) employees accountable, employers have begun to use monitoring software, including emotion recognition software, to track employee productivity, their compliance with information security policy, and so on. This paper presents a teaching case based on a fictitious company inspired by the actual experiences of employees working at a global financial services provider. Educators worldwide in information systems or business courses can use the teaching case at the undergraduate or graduate level. The case introduces students to Financial Professional Services ("FinPro"), a fictitious American firm that makes the decision to monitor remote employees. It implements both software that records and controls end user activity and emotion recognition software. The teaching case overviews artificial intelligence and emotion recognition software and provides an opportunity for students to examine employers' and employees' different perspectives regarding monitoring.

**Keywords:** Work From Home, Employee Monitoring, Emotion Recognition Software, Artificial Intelligence, Employee Privacy, Employee Productivity, Cybersecurity, COVID-19.

This manuscript underwent peer review. It was received 11/19/2020 and was with the authors for 12 months for one revision. Mary Granger served as Associate Editor.

## 1 Introduction

The coronavirus disease of 2019 (COVID-19) has impacted virtually everyone across the world after it emerged in December, 2019. Financial Professional Services (“FinPro”<sup>1</sup>), whose logo Figure 1 presents, viewed protecting their employees’ wellbeing as paramount. Chief Executive Officer (CEO) Sophia Sturgeon commented: “We have updated new policies that relate to our organizations’ response to COVID-19 and how it affects employee health and safety as a primary focus”. Hence, FinPro requested employees to move to remote work as COVID-19 cases continued to spread around the world in March, 2020. Remote work refers to employees working outside the traditional organizational office environment with support from communication and collaboration technologies (Carroll & Conboy, 2020).



Figure 1. The Logo of FinPro

FinPro employees joined millions of workers forced to switch to home offices and kitchen tables due to widespread lockdowns. Planning, preparation, and leadership constitute key factors to manage any crisis. However, with little prior experience in remote work, CEO Sturgeon observed: “Some things get easier by the day, and others, well, we just go with the flow sometimes”.

## 2 Background on FinPro

FinPro, an American multinational investment bank and financial services firm with its headquarters in Charlotte, North Carolina, USA, specializes in meeting the domestic and international financial goals of high net worth individuals, families, businesses, institutions, and governments. FinPro has over 40 offices and more than 40,000 employees around the world. Founded in 1949, FinPro provides full-service financial planning—from wealth planning, investment management, retirement solutions, and estate planning to wealth transfer. FinPro offers the highest levels of experience, integrity, confidentiality, and personalized service to clients. As a result, FinPro ranks 127th in the 2020 Fortune 500 list of the largest U.S. corporations by total revenue (i.e., US\$24.088 billion).

Fortunately, FinPro had prepared pandemic plans during the H1N1 influenza virus pandemic in 2009. For the COVID-19 pandemic, the organization updated its previous plans and assembled a cross-functional team, including representatives from every functional area, to develop a coordinated and comprehensive response effort. It also identified work that required on-site attendance. For on-site employees, it put safeguards in place, such as revised cleaning protocols, personal protective equipment, and social distancing. It shifted all other employees to remote work to reduce the risk that COVID-19 would spread. To support the wide remote work deployment, the organization implemented various technologies, practices and policies, safeguards, and training.

<sup>1</sup> Financial Professional Services is a fictitious company. Data reported about this company is fictitious. Any resemblance to an actual company is purely coincidence. To my knowledge, this company name is not currently a registered business name according to the National Business Register at <https://www.start.biz/>.

### 3 Remote Work at FinPro

For FinPro and other financial service companies, flexible work (except for remote work for some financial institutions) did not represent the norm before the pandemic forced state governments to issue stay-at-home orders in March, 2020 (PwC, 2020). While advances in technologies, such as cloud computing and online collaboration tools, have enabled remote work in many jobs that once required in-person interactions, until the pandemic, few companies (mainly in the technology sector) had fully embraced remote work (Bick et al., 2020). Nonetheless, FinPro has committed to making remote work more manageable and productive for their employees. CEO Sturgeon emphasized: “We focus on ensuring the health and safety of our employees in performing their work”. Chief Human Resources Director (CHRO) Henry Halibut commented: “We need to empower staff to stay engaged and be productive”. Chief Information Officer (CIO) Sarah Sardine added: “It is imperative that tools, resources, and solutions are deployed to every employee to enable them to be as productive and secure as possible in performing their job responsibilities, while working from remote locations and on any device”.

While many companies host systems and applications inside their perimeter, the finance sector had accelerated cloud transformation programs (Sussex, & Jacob, 2020) as did FinPro. The move to full virtual working tested the scalability of FinPro’s information technology (IT) infrastructure and the load on critical business applications. CIO Sardine observed:

*The recent switch to Microsoft Office 365 products including Mail, Teams, and SharePoint significantly reduced the load on our remote access software because employees can do some of their work without being logged on to the virtual private network (VPN), while maintaining cybersecurity and privacy standards within the Microsoft system. For example, employees can get into their email without using remote connect software.*

CIO Sardine continued:

*Fortunately during the last few years, FinPro journeyed to the cloud. We implemented identity management and network access for all users, bolstered security on devices used to access the network, and provided productivity enabling apps users need.*

With little prior experience in remote work, FinPro made a cut-and-paste transition from office procedures to working online and adapted them along the way. The organization did not leave its efforts to establish the work-from-home (WFH)<sup>2</sup> program to chance. As such, it made remote access, videoconferencing, and online collaboration tools available to all remote employees. CIO Sardine implemented practical steps to reduce the burden on FinPro’s IT infrastructure of having so many employees remotely connected. For example, she changed the idle timeout period on the VPN from eight hours to two hours and increased the license for the remote connect software. Each user and device that connected to a remote desktop session host needed a client access license. CIO Sardine came to realize: “The biggest delay was not so much in getting the license, but in getting priority with the vendor to get the increase, because everyone around the world was asking for the same thing”.

### 4 Next Steps for Remote Work

FinPro got through the initial response to the pandemic and began to think about how to reset its strategy over the long term. Like most CEOs, CEO Sturgeon has begun to rethink her plans and to revamp their roadmaps as she works with her C-suite colleagues, such as corporate counsel, to analyze what happened in the past months, where they now stand, and what will happen next (Pratt, 2020). CEO Sturgeon admitted:

*We initially thought this “WFH thing” would last a few weeks. We were overly optimistic. In a lot of ways, our roadmap isn’t changing. But what is different for us is determining how we can better manage this WFH situation and ensure that our employees are as engaged as possible. Technology can enable us to be more productive. “What the pandemic has done is made business realize the importance of IT. The reason we’re working today is because of IT”<sup>3</sup>.*

<sup>2</sup> This paper uses the terms remote work and work from home (WFH) interchangeably consistent with Choudhury (2020) who discusses the inception of remote work as the adoption of WFH policies dating to the 1970s when high gasoline prices, which the 1973 OPEC oil embargo caused, made commuting more expensive.

<sup>3</sup> Information from Pratt (2020)

*“Digital transformation is the number one business imperative right now, and, as a result, the role of the CIO has never been more crucial”<sup>4</sup>.*

CEO Sturgeon met with the C-suite on Zoom<sup>5</sup> to discuss the future of remote work at FinPro. The discussion focused on how to operate in the near term as country leaders across the world and state governors in the US began slowly easing lockdown restrictions and moved towards a phased reopening. In particular, the discussion centered on need to tightly manage costs and the cost benefits of a remote workforce with HR Analyst Daria Dolphin presenting an estimate of the cost savings. CHRO Halibut noted: “Remote work is one example of creative cost savings that senior finance leaders are seeking in order to avoid more severe cuts and minimize the downside impact to operations” (Gartner, 2020).

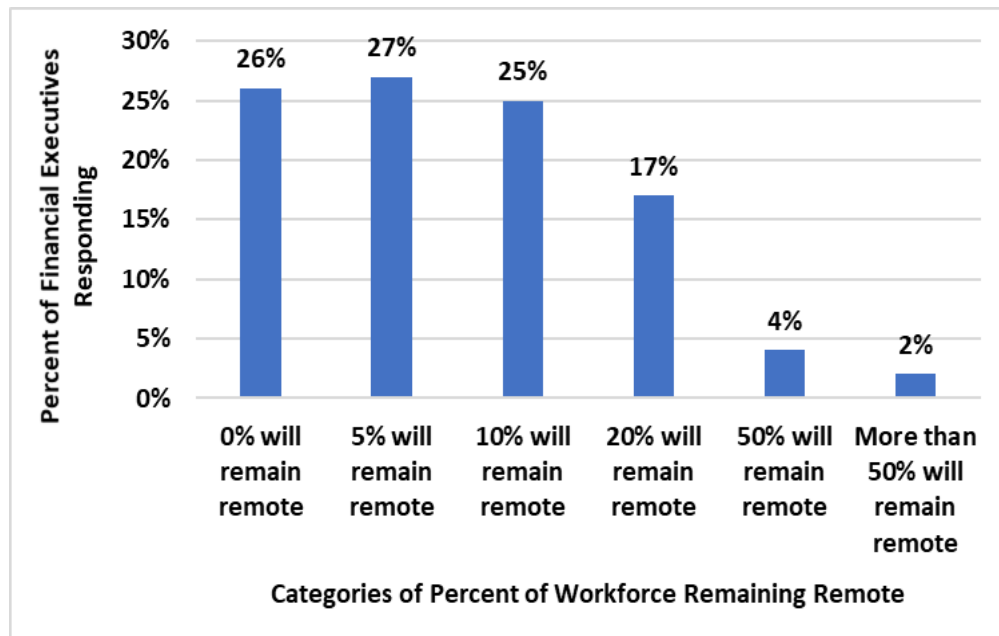
As the discussion proceeded, CHRO Halibut observed:

*We don’t have a full set of facts and we can’t wait for facts to emerge before determining what to do. As with any crisis, we are confronting many unknowns and surprises which contribute to uncertainty. We must decide whether to continue remote work, not only on the basis of intuition but by continually collecting information and observing how well our responses work.*

HR Manager Mike Mackerel noted:

*Facebook and Google announced that employees can WFH until at least summer 2021 and Facebook is even hiring a director of remote work to prepare for a shift over the next decade<sup>6</sup>. Twitter and Slack already announced that employees can WFH forever<sup>7</sup>.*

HR Analyst Dolphin added: “Results of a Gartner survey indicate that nearly three-quarters of financial executives plan to shift at least some of their workforces to full-time remote work after the pandemic subsides” as Figure 3 shows (Gartner, 2020).



**Figure 3. Percentage of Workforce that will Remain Permanently Remote Post-COVID who were not Remote before COVID (Gartner, 2020)**

CEO Sturgeon concluded:

*Remote work could complement our cost-cutting measures by deferring our on-premise technology spending and real estate expenses. So, it is decided that many employees will continue to WFH indefinitely, and some will move to permanent remote models, as appropriate.*

<sup>4</sup> Information from Loten (2021)

<sup>5</sup> Zoom is a “cloud platform for video, voice, content sharing, and chat [that] runs across mobile devices, desktops, telephones, and room systems” (Zoom, 2019).

<sup>6</sup> Information from Bindley (2020)

<sup>7</sup> Information from Bindley (2020)

## 5 IT to Monitor Remote Employees

With the move to WFH indefinitely, CIO Sardine recognized a need for the C-suite to become familiar with available IT to support and monitor employees and, therefore, called a meeting on Zoom for this purpose. She called Software Support Specialist (SSS) Sam Salmon into this meeting to explain:

*We could use IT to maintain some sense of security and control over employees to ensure productivity is monitored through, for example, tools such as Slack for workplace communication, Zoom for videoconferencing, and Trello for project management<sup>8</sup>. Platforms used for videoconferencing, for instance, can be used to analyze participants' attentiveness in real time, record participants' voice, chats, faces, and their home surroundings<sup>9</sup>. We could also use monitoring software. There are so many vendors, such as ActivTrak, Hubstaff, InterGuard, Time Doctor, and Teramind. For example, with InterGuard<sup>10</sup>—*

CHRO Halibut interrupted:

*In addition to mandating always-on webcams, we can schedule thrice-daily check-ins with not-so-optional company virtual happy hours, game nights using game apps, and breaktime/lunchtime chats in breakout rooms.*

SSS Salmon resumed, "Better yet, with InterGuard, which we can install on employees' computers using remote support software, we can create a minute-by-minute timeline of every app and website an employee views, categorizing each as 'productive' or 'unproductive' and ranking employees by their 'productivity score'"<sup>11</sup>.

CHRO Halibut interjected: "We don't want to measure productivity by generating a productivity score. We just want to know that employees are attending to activities associated with their job responsibilities."

SSS Salmon continued: "InterGuard can also alert managers if employees do or say something suspicious. For example, the words 'job', 'client', and 'file' could be flagged to indicate if an employee is looking elsewhere for a job"<sup>12</sup>.

CHRO Halibut responded:

*Oh you're right! Our employees could be doing something suspicious. Stress in these unsettling times can lead someone to unprofessional behavior. A trusted employee could develop malicious intent and seek to impose damages<sup>13</sup> on FinPro. We can't overlook the risk of insider threats as employees worry about layoffs, new remote working technology issues<sup>14</sup>, contracting the virus, social isolation, and more. According to the results of a recent survey of remote workers, 63 percent of respondents feel moderate to high levels of stress associated with "the current global situation and the financial uncertainty and health threats it brings"<sup>15</sup>. Further, research has shown that emotions such as anger can be associated with higher levels of incivility among colleagues and some negative emotions can be contagious<sup>16</sup>. We need to know if our employees are happy. Happy employees were found to be more productive according to the results of research studies<sup>17</sup>, the most recent of which was reported in *The Wall Street Journal*<sup>18</sup>. We could require that employees answer a daily or weekly online survey about their happiness, like Amazon.com Inc. and Workday Inc. are reportedly doing<sup>19</sup>. But, employees may*

<sup>8</sup> Information from Carroll and Conboy (2020)

<sup>9</sup> Information from Papadopoulos, Baltas, and Balta (2020)

<sup>10</sup> InterGuard develops monitoring software that records and controls all end user activity so organizations can measure and score employee productivity, conduct employee investigations, secure critical data, and maintain compliance. InterGuard began operations in 2002 and has its headquarters in Westport, Connecticut, USA (InterGuard, 2020).

<sup>11</sup> Information from Harwell (2020).

<sup>12</sup> Information from Harwell (2020).

<sup>13</sup> Information from Sadowski, Care, MacDonald, and Teixeira (2019)

<sup>14</sup> Information from Gelles (2020)

<sup>15</sup> Quote from Pymetrics (2020, p. 6)

<sup>16</sup> Information from Motro, Ye, Kugler, and Noussair (2019)

<sup>17</sup> Bellet, De Neve, and Ward (2019) and Oswald, Proto, and Sgroi (2015)

<sup>18</sup> Cutter and Feintzeig (2020)

<sup>19</sup> Information from Cutter and Feintzeig (2020)

*not accurately report their true feelings and completing the self-report on how they are feeling may adversely affect their own emotional state*<sup>20</sup>.

CIO Sardine replied:

*I agree, “we have to be better in tune with the mental health of our employees; otherwise, they won’t be as engaged with the company, which translates to lower productivity and a negative impact on business”<sup>21</sup>. We could monitor the happiness of our employees by using software like Receptiviti<sup>22</sup> to scan for words, in emails or messaging systems, associated with emotions<sup>23</sup>. Better than that, we could use emotion recognition software. SSS Salmon, could you explain artificial intelligence (AI) and emotion recognition software?*

## 5.1 What is AI?<sup>24</sup>

Scholars at The Dartmouth Conference, which mathematician John McCarthy organized in the US in 1956, first coined the term AI (McCarthy et al., 2006). No commonly accepted definition for AI exists because it has changed as technology has evolved. AI now constitutes a broad field that encompasses areas such as robotics, natural language processing (NLP), vision and sensory systems, and expert systems. Generally, AI refers to a machine’s ability to learn from experience, adjust to new inputs, and perform human-like tasks. FinPro executives generally agree with how Choudhury and Elliot (2021) define AI: a computer-based system that “applies advanced analysis and logic-based techniques, including machine learning, to interpret events, support and automate decisions, and take actions”.

Machine learning is at the forefront of the current expansion in AI applications (van Duin & Bakhshi, 2017). Gartner defines machine learning as a subfield of AI that “solves problems by using statistical models that can extract knowledge and patterns from data” (Alaybeyi, Linden, & den Hamer, 2020a). Machine learning algorithms rely on artificial neural networks, which loosely model the way that neurons interact in the human brain. Neural networks are structured in layers that comprise a network of interconnected neurons. The simplest structure has two layers: an input layer and an output layer. One may extend the structure to multiple layers: an input layer, one or more hidden layers, and an output layer. Each layer attempts to detect patterns from large data sets or big data.

Based on data input, neural networks essentially work on a probability system to make statements, decisions, or predictions with a degree of certainty (Marr, 2016). A weight value denotes a connection’s strength, either excitatory or inhibitory, with an input value. A neuron may receive input from many neurons, but it produces only a single output that it communicates to other neurons. While the path is usually uni-directional, it may be bi-directional with another path in the reverse direction. A feedback loop enables learning; that is, the process by which one adjusts connection weight values to strengthen or weaken a connection. When the system detects a pattern, it activates the next hidden layer, and so on, to learn to classify data in much the same way a human brain does. By sensing or being told, through data input, whether the decisions are right or wrong, the neural network modifies the approach that it will take in the future (Marr, 2016). The resulting model, a structured set of complex relationships, can perform actions under conditions it has never encountered before (Bleicher, 2017).

## 5.2 What is Emotion Recognition Software?

Emotion recognition (also known as affect recognition, emotion analysis, artificial emotional intelligence (AEI), and facial expression analysis) is a subfield of AI that analyzes facial expressions, facial movements, and body language to detect emotion and other traits (Chandrasekaran et al., 2019; Reibenspiess, Jaeger, & Eckhardt, 2018). It differs from facial recognition software, which focuses on identifying a person, not an emotion. The Facial Action Coding System (FACS), which Ekman and Friesen (1976) developed in 1976 and Ekman, Friesen, and Hager (2002) revised in 2002, represents the standard for measuring emotions in visibly different facial expressions. This categorization system comprises 46 observable action units (AUs) (i.e., facial movements that make up facial expressions), which, in turn, express emotions. Each AU corresponds to an individual face muscle or muscle group that

<sup>20</sup> Information from Motro et al. (2019)

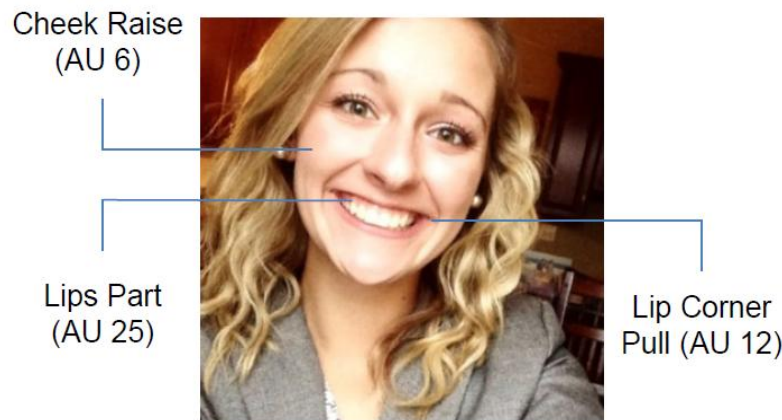
<sup>21</sup> Quote from Castellanos and Loftus (2020)

<sup>22</sup> Receptiviti, based in Toronto, Ontario, Canada, provides software that uncovers signals from everyday human language, in emails and messaging systems, to understand the emotions, drives, and traits that affect human behavior (see <https://www.receptiviti.com/>).

<sup>23</sup> Information from Cutter and Feintzeig (2020)

<sup>24</sup> Section 5.1 is based on Sipior, Lombardi, and Gabryelczyk (2021).

a number identifies (i.e., AU1 to AU46). Facial expressions comprise AUs. For example, Figure 4 presents the three observable AUs that make up the emotion “happy” (iMotions, 2016). The categorization system perceives emotional expressions categorically, not as an impression along a continuum (Etcoff & Magee, 1992). People seem to express the six basic emotions anger, disgust, fear, happiness, sadness, and surprise universally, and the system interprets them consistently despite gender, age, cultural background, and socialization history (iMotions, 2016). However, if individuals cannot move relevant facial muscles, the system cannot observe their AUs (Etcoff & Magee, 1992).



**Figure 4. Three AUs from FACS for the Physical Expression of the Emotion “Happy”**

Automated emotion recognition analysis relies on the assumption that facial expressions reflect underlying emotions (Stöckli, Schulte-Mecklenbeck, Borer, & Samson, 2018). In their study, Strack, Martin, and Stepper (1988) confirmed that facial expressions and emotions closely relate to one another. While a replication study that Wagenmakers, Beek, Dijkhoff, and Gronau (2016) performed did not achieve the results that Strack et al. (1988) did, Wagenmakers et al. stressed that the inconsistent results do not invalidate the so-called “facial feedback hypothesis” that facial expressions truly represent emotional reactions. Thus, emotion recognition attempts to interpret facial expressions in contrast to facial expression recognition, which only identifies facial expressions (Fasel & Luetttin, 2003).

## 6 Concerns about Remote Worker Productivity and Compliance with Information Security Policy

Following the informative meeting overviewing IT to support and monitor WFH employees, CHRO Halibut met with CIO Sardine to discuss making an effective and sustainable work-from-anywhere future.

CHRO Halibut, thinking aloud, said:

*We are no longer able to protect our interests through traditional measures of supervision. I wonder about the productivity of our “out-of-sight” employees. You might be concerned about them watching Netflix, gaming, surfing inappropriate websites, or trading stocks while they are on the clock. But think about what they might do from a tourist location. A colleague of mine is staying at the Four Seasons Resort in Mexico. He took the whole family to “Work from Paradise” and “Learn from Paradise”<sup>25</sup>. His kids are enrolled in their “Knowledge for All Seasons” program complete with after-school tennis, golf, and yoga. They log into class from pool- or beach-side cabanas, which are equipped with Wi-Fi, large TV monitors, headphones, snacks, and of course an ocean view. How much work do you think my colleague is getting done? According to a survey of how COVID-19 has affected employees’ work life, nearly half (45%) of employees across the US report they are less productive and just over one quarter (27%) feel more productive<sup>26</sup>!*

<sup>25</sup> Information from Fox (2020)

<sup>26</sup> Information from Eagle Hill Consulting (2020)



CIO Sardine added:

*And, more importantly, I wonder if our remote employees may place us at risk of cyber breaches by clicking on a link in a phishing email or spoof website. We need technology solutions for oversight and to ensure appropriate audit and forensics in the event of a breach or regulatory violation. A survey focusing on information security practices among U.S. businesses revealed 86 percent of C-suite executives agree that the risk of a data breach is higher when employees work off site than when they work at the office<sup>27</sup>. The survey also found that 47 percent of business leaders said human error by an employee had caused a data breach at their organization. Human behavior is often the weakest link in cybersecurity<sup>28</sup>, but one of the most important parts of the solution. We need to protect our customers' and employees' data.*

CHRO Halibut responded:

*As a financial sector company, we are already tracking staff communications to prevent insider trading, as legally required<sup>29</sup>. For that matter, some employees could even be selling trade secrets or engaging in corporate espionage! Is there more we could be doing to confirm employee productivity and compliance with our information security policy?*

## 7 Decision to Monitor Remote Employees

CIO Sardine noted:

*The abrupt shift to WFH has clearly made us nervous about reduced productivity and its potential impact on our business, just like other companies as evinced by a 55% increase in demand for monitoring software, compared to the pre-pandemic average<sup>30</sup>. Workplace monitoring had been increasing over the past years. According to a survey by the American Management Association in 2017, an estimated 78 percent of major companies monitor their employees' email, Internet, and phone usage in the workplace, up from 35 percent in 1997; while monitoring is significantly higher in the financial sector where 92.1 percent use communication-monitoring technologies<sup>31</sup>. This is not a surprising finding for financial services, an industry which is required to implement security measures to prevent employees from disclosing sensitive information<sup>32</sup>. For example, under the Graham-Leach-Bliley Act, a.k.a. the Financial Services Modernization Act of 1999, financial institutions are required to protect the personal information of customers<sup>33</sup>. Also, insider trading laws prohibit the communication of inside information to others so they may buy or sell stocks or securities<sup>34</sup>. The most damaging security threats are from trusted insiders, who are either malicious or simply negligent<sup>35</sup>. In addition to our concerns about employee productivity and more importantly, compliance with ISP while WFH, Teramind has reported there are many business reasons for workplace monitoring<sup>36</sup>. Given that employees are "out of site" during the pandemic, FinPro could take advantage of these additional benefits.*

Table 1 presents the reasons that Teramind (2019) has reported for why organizations monitor their employees.

<sup>27</sup> Information from Shred-it (2018)

<sup>28</sup> Information from Samuels (2017)

<sup>29</sup> Information from Solon (2017)

<sup>30</sup> Information from Brown (2020)

<sup>31</sup> Information from McParland and Connolly (2020)

<sup>32</sup> Information from Matwyshyn (2005)

<sup>33</sup> Information from Federal Trade Commission (n.d.)

<sup>34</sup> Information from Bondi and Lofchie (2011)

<sup>35</sup> Information from Cybersecurity Insiders (2017)

<sup>36</sup> Information from Teramind (2019)

**Table 1. Reasons Why Employers Monitor Employees (Teramind, 2019)**

Employer reason	Explanation
Employee productivity	Employers can track employee online activities, such as when and for how long applications or websites are accessed, for both activities related to work and not related to work responsibilities. Thereby, employers can identify productive and unproductive activities.
Security, Compliance, and Legal liability protection	Employers are responsible for their employees' activities. Companies risk legal liability or loss due to noncompliance with legal requirements, violations of company policies, or inappropriate employee activities. Examples include: <ul style="list-style-type: none"> <li>• Data breaches</li> <li>• Exceeding limitations on Internet access</li> <li>• Misconduct, such as harassment and discrimination complaints</li> <li>• Industrial espionage.</li> </ul>
Workforce management	Monitoring employees provides data to inform high-level business decisions.
Bandwidth management	Network monitoring software tracks bandwidth usage to protect networks from overloads due to large data transfers or denial of service (DoS) attacks.
Software asset management	Monitoring the applications that employees use allows organizations to identify over-licensed or under-licensed software and, thereby, avoid unnecessary licensing costs.

CIO Sardine continued:

*At FinPro, we could record an employee's virtual interaction with a colleague on Zoom and examine it with Noldus FaceReader<sup>37</sup> or a similar product such as Kairos<sup>38</sup>, iMotions in partnership with Affectiva<sup>39</sup>, nViso<sup>40</sup>, or Sightcorp<sup>41</sup>. With such emotion recognition software, facial expressions are assessed and quantified automatically to make a determination of the underlying emotion. FaceReader software, for example, can detect facial expressions from live, video, or still images using a series of algorithms to locate and analyze 500 key points on a face<sup>42</sup>. A multi-layered neural network recognizes patterns in image pixels of a face and classifies facial expressions. FaceReader measures the presence of the six basic emotions, recognizes a neutral state, and can analyze contempt and other expressions<sup>43</sup>. The results for each expression are presented on a scale ranging from zero, which means "not present at all" to one, "present at maximum intensity"<sup>44</sup> to reflect that facial expressions vary in intensity, are often a mixture of emotions, and have inter-personal variation<sup>45</sup>.*

At the conclusion of the discussion, CHRO Halibut and CIO Sardine recommended to CEO Sturgeon—who decided that FinPro will join the thousands of companies using monitoring software—should record employees' Internet access, Web browsing, and other activities (Harwell, 2020). Additionally, FinPro will record morning Zoom sessions and analyze the recordings for employees' emotions. CIO Sardine emphasized:

*Now more than ever, it's essential to foster an outcome-driven culture that empowers and holds employees accountable for productivity in getting things done. And, if we know employees are happy, they will be more productive. Also, we want to encourage compliance with our ISP. Flagging non-compliance will help us to detect risks to security and rapidly respond to cyber threats.*

<sup>37</sup> FaceReader is a facial expression recognition software product by Noldus Information Technology, headquartered in Wageningen, the Netherlands (Noldus, 2020).

<sup>38</sup> Kairos provides emotion detection and face recognition software (Kairos, 2020).

<sup>39</sup> iMotions partnered with Affectiva to provide emotion recognition software that integrates and synchronizes multiple biometric sensors. Founded in 2005, iMotions has its headquarters in Copenhagen, Denmark (iMotions, 2020). Affectiva is a venture-backed company that spun out of MIT Media Lab in 2009 and has its headquarters in Waltham, Massachusetts, USA (Affectiva, 2020).

<sup>40</sup> nViso provides award-winning emotion recognition technologies and has its headquarters in Lausanne, Switzerland (nViso, 2020).

<sup>41</sup> Sightcorp is an AI spin-off from the University of Amsterdam that provides software that analyzes faces in images, videos, and real-life environments. It has its headquarters in Amsterdam, The Netherlands (Sightcorp, 2020).

<sup>42</sup> Information from Motro et al. (2019)

<sup>43</sup> Information from Loijens and Krips (2019)

<sup>44</sup> Information from Motro et al. (2019)

<sup>45</sup> Information from Loijens and Krips (2019)

Together, CIO Sardine and CHRO Halibut evaluated employee monitoring software to identify the most appropriate enterprise-level tool to provide in-depth monitoring, automation, and comprehensive data collection. CIO Sardine observed:

*We need to minimize the burden on managers in tracking time and engagement, and in reviewing the multitude of screenshots and video recorded for each employee. I have evaluated various products and found that software from Teramind<sup>46</sup>, which monitors users' activity, can be configured to automatically raise an alert, block an action, or lock out a user in response to any observable behavior we want to flag. The software can also stop emails from being sent, block uploads to certain websites, send an alert when a user chats with a specific party, and more!*

The decision was made to license remote employee monitoring software from Teramind.

CIO Sardine commented:

*Teramind is an easy tool to install and use. We can configure the administrative dashboard to show the entire organization, a particular department, or an individual team to get at-a-glance reports and data visualizations on productivity or ISP metrics without much hassle. Then, managers can create reports and charts enabling us to identify suspicious activity, detect possible threats, optimize productivity, and continue to ensure regulatory compliance required of the financial services sector as we have been doing<sup>47</sup>.*

Additionally, CIO Sardine and CHRO Halibut evaluated FaceReader and iMotions. CIO Sardine related the results reported in a study:

*"FaceReader performs best for happiness" with a "classification accuracy of 96 percent"<sup>48</sup> [see Figure 5], while FaceReader reports its updated version 8 has a 100 percent accuracy<sup>49</sup>. Furthermore, the dashboard is flexible and can be configured to our needs. Let's go with FaceReader to determine if employees are happy because happy employees are more productive.*

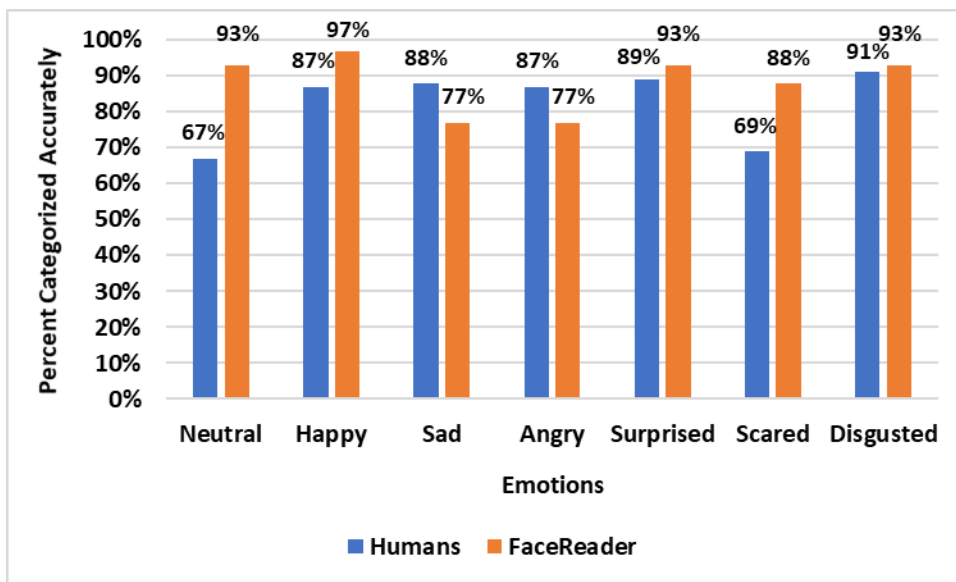


Figure 5. Emotion Recognition Accuracy for Humans versus FaceReader (FaceReader, 2020)

<sup>46</sup> Teramind provides "employee monitoring, user behavior analytics, insider threat detection, forensics and data loss prevention software solutions" (Teramind 2020). Founded in 2014, it has its headquarters in Miami, Florida, USA.

<sup>47</sup> Information from Sevilla (2020)

<sup>48</sup> Information from Stöckli et al. (2018)

<sup>49</sup> Information from Loijens and Krips (2019)

## 8 Preparing the Employee Consent Agreement for Monitoring

Chief Legal Officer (CLO) Sam Shark, relevant staff, and his counterparts in the more than 40 locations around the world in which FinPro operates prepared an informed consent agreement to provide notification that the company would implement the Teramind employee monitoring software and FaceReader emotion recognition software. The agreement explicitly described and comprehensively explained the details about the monitoring, such as the always-on webcams, the software's capability, how it would handle collected employee data, where it would store the data, how long it would store the data for, and who would have access to it. The company carefully and thoroughly reviewed the agreement for compliance with legal regulations on both national and international levels.

All FinPro employees had to electronically sign the agreement in order to stay employed with the company. Providing clear notice about monitoring activities and employee consent reduces employees' expectation for privacy, which forms the basis for privacy violation claims. Therefore, such notice provides the broadest protection for companies (Ford, Willey, White, & Domagalski, 2015). When employees acknowledge and agree to monitoring by signing a consent agreement, companies may be successful in defending against privacy-invasion lawsuits (Ford et al., 2015). For employees, the emphasis on the reasons for and the importance of monitoring as the consent agreement stipulates provides a foundation on which employees can base their workplace conduct (Ford et al., 2015). For employees who refuse to sign, employers have options including termination or documenting the employees' obligations to nonetheless comply. Employers should file and record employees' stated reasons for refusing to sign and what they explained to the employees (Holden, 2013).

## 9 Creating the Monitoring Software Settings

CHRO Halibut began working with Teramind monitoring software. The software includes capabilities such as allowing managers to monitor metrics such as webpages and applications visited; emails sent and received using Google's Gmail and Microsoft Outlook; instant messaging using Facebook Messenger, Google Hangouts, Skype, and WhatsApp; keystrokes; Web searches; screenshots; and video. Managers can set up behavior rules associated with these various uses for various employees to automatically enforce productivity and security rules (Sevilla, 2020).

CHRO Halibut reasoned that, given FinPro constitutes a financial services company, it makes sense to set options for and vary the extent to which it monitors employees according to their job responsibilities rather than another criterion such as salaried versus hourly employees. Financial planners, for example, look after clients' sensitive financial data. Referencing a Securities and Exchange Commission (SEC) Risk Alert, CHRO Halibut noted: using social media, especially third-party social media sites, may pose elevated risks" (Securities and Exchange Commission, 2012, p. 5). Thereby, CHRO Halibut set a daily time limit on social media for financial planners. These employees could not visit social media websites for more than 15 minutes per workday. Visits exceeding this duration would trigger the system to send an automatic instant message.

## 10 The Monitoring Software Implementation Go-live Date

Plan Design Specialist Holly Mackerel, staff support assistant to Financial Planners, booted up her laptop on Monday morning. After working for several hours on recommending adjustments to the asset allocation of a client's investment portfolio, she logged into Facebook to view a friend's timeline, read some posts, and look at some pictures. An instant message that Teramind automatically interrupted her: "You have exceeded social media usage for the day". Subsequently, it blocked her from visiting Facebook. Holly muttered to herself: "What the...? George Orwell's 1984 'revisit!'". Holly definitely was not happy. She had not yet given a thought to the stealthy emotion analysis of her recorded Zoom meeting from that morning.

## 11 Questions

Please develop detailed written responses to each question below. You will need to conduct additional research regarding remote work, employee productivity, cybersecurity, employee monitoring, AI and emotion recognition software, and employee privacy to adequately respond to each question. Please include references for your research in your responses and state any assumptions that you make.

- 1) How did the move to remote work occur as COVID-19 forced physical worksites to shut down?
- 2) Why should FinPro be concerned about the productivity of employees working from home?
- 3) In addition to monitoring employees, how can FinPro improve employee productivity for remote workers?
- 4) Why should FinPro be concerned about cybersecurity for employees working from home?
- 5) In addition to monitoring employees, how can FinPro protect itself against cybersecurity risks due to remote workers?
- 6) What capabilities does the employee monitoring software have?
- 7) Find and describe three example applications for how businesses use emotion recognition software.
- 8) If you worked at FinPro, would you be comfortable with the a) monitoring software and b) emotion recognition software it used? Why or why not?
- 9) Should FinPro monitor remote employees?
  - a) Provide your response from FinPro's perspective (i.e., the employers' perspective).
  - b) Provide your response from the employees' perspective.
- 10) Does employee monitoring violate employees' privacy?
  - a) Do employees have a right to privacy?
  - b) What legal privacy protection, if any, does an employee have concerning an organization monitoring their remote work?

## References

- Affectiva. (2020). *About us*. Retrieved from <https://www.affectiva.com/who/about-us/>
- Alaybeyi, S., Linden, A., & den Hamer, P. (2020). 3 types of machine learning for the enterprise. *Gartner*. Retrieved from <https://www.gartner.com/en/documents/3980239/3-types-of-machine-learning-for-the-enterprise>
- Bellet, C. S., De Neve, J.-E., & Ward, G. (2019). *Does employee happiness have an impact on productivity?* Retrieved from <http://dx.doi.org/10.2139/ssrn.3470734>
- Bick, R., Hazan, E., Khan, H., Lacroix, S., Sarrazin, H., & Welchman, T. (2020). The future of work: Reskilling and remote working to recover in the “next normal”. *McKinsey Digital*. Retrieved from <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-future-of-work-reskilling-and-remote-working-to-recover-in-the-next-normal>
- Bindley, K. (2020). Remote work is reshaping San Francisco, as tech workers flee and rents fall. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/remote-work-is-reshaping-san-francisco-as-tech-workers-flee-and-rents-fall-11597413602?mod=searchresults&page=1&pos=1>
- Bleicher, A. (2017). Demystifying the black box that is AI. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/demystifying-the-black-box-that-is-ai/>
- Bondi, B. J., & Lofchie, S. D. (2011). The law of insider trading: Legal theories, common defenses, and best practices for ensuring compliance. *New York University Journal of Law & Business*, 8(15), 151-201.
- Brown, E. (2020). Employee surveillance software demand increased as workers transitioned to home working. *ZDNet*. Retrieved from <https://www.zdnet.com/article/employee-surveillance-software-demand-increased-as-workers-transitioned-to-home-working/>
- Carroll, N., & Conboy, K. (2020). Normalising the “new normal”: Changing tech-driven work practices under pandemic time pressure. *International Journal of Information Management*, 55.
- Castellanos S., & Loftus, T. (2020). CIOs spearhead well-being initiatives to make remote work less remote. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/cios-spearhead-well-being-initiatives-to-make-remote-work-less-remote-11589398810>
- Chandrasekaran, A., Cearley, D., Smith, D., Jones, N., Burke, B., & Lu, C. K. (2019). Top 10 strategic technology trends for 2020. *Gartner*. Retrieved from <https://www.gartner.com/en/documents/3970506/top-10-strategic-technology-trends-for-2020>
- Choudhury, F., & Elliot, B. (2021). Applying AI—techniques and Infrastructure. *Gartner*. Retrieved from <https://www.gartner.com/document/4004027?ref=solrAll&refval=300781350>
- Choudhury, P. R. (2020). Our work-from-anywhere future. *Harvard Business Review*, 98(6), 58-67.
- Cutter, C., & Feintzeig, R. (2020). Smile! Your boss is tracking your happiness. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/smile-your-boss-is-tracking-your-happiness-11583255617?mod=searchresults&page=1&pos=4>
- Cybersecurity Insiders. (2017). *Insider threat 2018 report*. Retrieved from <https://crowdresearchpartners.com/wp-content/uploads/2017/07/Insider-Threat-Report-2018.pdf>
- Eagle Hill Consulting. (2020). *COVID-19 and employee burnout: Maintaining focus, productivity, and engagement*. Retrieved from <https://www.eaglehillconsulting.com/wp-content/uploads/2020/04/EHC-COVID-19-and-Employee-Burnout-Webinar.pdf>
- Ekman, P., & Friesen, W. V. (1976). Measuring facial movement. *Environmental Psychology and Nonverbal Behavior*, 1(1), 56-75.
- Ekman, P., Friesen, W. V., & Hager, J. C. (2002). *Facial action coding system: Manual and investigator’s guide*. Salt Lake City, UT: Research Nexus.
- Etcoff, N. L., & Magee, J. J. (1992). Categorical perception of facial expressions. *Cognition*, 44(3), 227-240.

- FaceReader. (2020). *FaceReader is as good at recognizing facial expressions as humans*. Retrieved from <https://www.facereader-online.com/cases/casefacereaderaccuracy>
- Fasel, B., & Luettin, J. (2003). Automatic facial expression analysis. *Pattern Recognition*, 36(1), 259-275.
- Ford, J., Willey, L., White, B. J., & Domagalski, T. (2015). New concerns in electronic employee monitoring: Have you checked your policies lately? *Journal of Legal, Ethical and Regulatory Issues*, 18(1), 51-70.
- Fox, A. (2020). A Four Seasons in Mexico is setting up “study cabanas” and hiring a poolside “screen doctor” in a bid to pull in families during the school year. *Business Insider*. Retrieved from <https://www.businessinsider.com/four-seasons-punta-mita-resort-remote-learning-program-students-2020-8>
- Gartner. (2020). *Gartner CFO survey reveals 74% intend to shift some employees to remote work permanently*. Retrieved from [https://www.gartner.com/en/newsroom/press-releases/2020-04-03-gartner-cfo-surey-reveals-74-percent-of-organizations-to-shift-some-employees-to-remote-work-permanently?source=BLD-200123&utm\\_medium=social&utm\\_source=bambu&utm\\_campaign=SM\\_GB\\_YOY\\_GTR\\_SOC\\_BU1\\_SM-BA-PR](https://www.gartner.com/en/newsroom/press-releases/2020-04-03-gartner-cfo-surey-reveals-74-percent-of-organizations-to-shift-some-employees-to-remote-work-permanently?source=BLD-200123&utm_medium=social&utm_source=bambu&utm_campaign=SM_GB_YOY_GTR_SOC_BU1_SM-BA-PR)
- Gelles, M. G. (2020). How to handle the risk of insider threats post-COVID-19. TechTarget. Retrieved from <https://searchcio.techtarget.com/feature/How-to-handle-the-risk-of-insider-threats-post-COVID-19>
- Federal Trade Commission. (n.d.). *Gramm-Leach-Bliley Act*. Retrieved from <https://www.govinfo.gov/content/pkg/PLAW-106publ102/pdf/PLAW-106publ102.pdf>
- Harwell, D. (2020). Managers turn to surveillance software, always-on webcams to ensure employees are (really) working from home. *The Washington Post*. Retrieved from <https://www.washingtonpost.com/technology/2020/04/30/work-from-home-surveillance/>
- Holden, S. R. (2013). What to do when an employee refuses to sign a document. *Avvo*. Retrieved from <https://www.avvo.com/legal-guides/ugc/what-to-do-when-an-employee-refuses-to-sign-a-document>
- iMotions (2016). *Facial expression analysis: The definitive guide*. Retrieved from <https://imotions.com/facialexpression-guide-ebook/>
- iMotions. (2020). *About us*. Retrieved from <https://imotions.com/about-us/>
- InterGuard. (2020). *About us*. Retrieved from <https://www.interguardsoftware.com/company/>
- Kairos. (2020). *Emotient to Kairos*. Retrieved from <https://www.kairos.com/emotient-to-kairos>
- Loijens, L., & Krips, O. (2019). FaceReader methodology. *Noldus Information Technology*. Retrieved from <https://www.noldus.com/resources/pdf/noldus-white-paper-facereader-methodology.pdf>
- Loten, A. (2021). CIOs enter 2021 with expanded role. *The Wall Street Journal*. Retrieved from <https://www.wsj.com/articles/cios-enter-2021-with-expanded-role-11609849800?mod=djemCIO>
- Marr, B. (2016). What is the difference between artificial intelligence and machine learning? *Forbes*. Retrieved from <https://www.forbes.com/sites/bernardmarr/2016/12/06/what-is-the-difference-between-artificial-intelligence-and-machine-learning/#396b4d252742>
- Matwyshyn, A. (2005). Material vulnerabilities: Data privacy, corporate information security, and securities regulation. *Berkeley Business Law Journal*, 3, 129-203.
- McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). A proposal for the Dartmouth summer research project on artificial intelligence, August 31, 1955. *The AI Magazine* 27(4), 12-14.
- McParland, C., & Connolly, R. (2020). Dataveillance in the workplace: Managing the impact of innovation. *Business Systems Research*, 11(1), 106-124.
- Motro, D., Ye, B., Kugler, T., & Noussair, C. N. (2019). Measuring emotions in the digital age. *MIT Sloan Management Review*. Retrieved from <https://sloanreview.mit.edu/article/measuring-emotions-in-the-digital-age/>
- Noldus. (2020). *Emotion analysis*. Retrieved from <https://www.noldus.com/applications/emotion-analysis>

- nViso. (2020). *The science of human emotion and human behavior* (white paper). Retrieved from <https://www.nviso.ai/en>
- Oswald, A. J., Proto, E. & Sgroi, D. (2015). Happiness and productivity. *Journal of Labor Economics*, 33(4), 789-822.
- Papadopoulos, T., Baltas, K. N., & Balta, M. E. (2020). The use of digital technologies by small and medium enterprises during COVID-19: Implications for theory and practice. *International Journal of Information Management*, 55, 1-4.
- Pratt, M. K. (2020). CIOs rethink the 18-month IT plan, post-COVID. *CIO*. Retrieved from <https://www.cio.com/article/3566694/cios-rethink-the-18-month-it-plan-post-covid.html>
- PwC. (2020). *Financial services firms look to a future that balances remote and in-office work*. Retrieved from <https://www.pwc.com/us/en/industries/financial-services/library/balancing-remote-and-in-office-work.html>
- Pymetrics. (2020). *Data-driven insights into attitudes about working from home*. Retrieved from [https://media.bitpipe.com/io\\_15x/io\\_150177/item\\_2078119/Data-driven%20insights%20into%20working%20from%20home%20White%20Paper.pdf](https://media.bitpipe.com/io_15x/io_150177/item_2078119/Data-driven%20insights%20into%20working%20from%20home%20White%20Paper.pdf)
- Reibenspiess, V. A., Jaeger, L., & Eckhardt, A. (2018). Unmasking emotions via facial expressions—first insights on the role of emotional valence for IS discontinuance. In *Proceedings of the European Conference on Information Systems*.
- Sadowski, G., Care, J., MacDonald, N., & Teixeira, H. (2019). Market guide for user and entity behavior analytics. *Gartner*. Retrieved from <https://www.gartner.com/en/documents/3917096/market-guide-for-user-and-entity-behavior-analytics>
- Samuels, M. (2017). Growing ransomware risk requires stronger security controls. *Security Intelligence*. Retrieved from <https://securityintelligence.com/news/growing-ransomware-risk-requires-stronger-security-controls/>
- Securities and Exchange Commission. (2012). *Investment adviser use of social media*. Retrieved from <https://www.sec.gov/about/offices/ocie/riskalert-socialmedia.pdf>
- Sevilla, G. (2020). Teramind review. *PC Magazine*. Retrieved from <https://www.pcmag.com/reviews/teramind>
- Shred-it. (2018). *Shred-it study exposes employee negligence as top information security risk to U.S. businesses*. Retrieved from <https://www.shredit.com/en-us/about/press-room/press-releases/sacking-employees-for-data-breach-negligence>
- Sightcorp. (2020). *Who are we?* Retrieved from <https://sightcorp.com/>
- Sipior, J. C., Lombardi, D. R., & Gabryelczyk, R. (2021). AI recruiting tools at Shiplt2Me.com. *Communications of the Association for Information Systems*, 48, 443-455.
- Solon, O. (2017). Big brother isn't just watching: Workplace surveillance can track your every move. *The Guardian*. Retrieved from <https://www.theguardian.com/world/2017/nov/06/workplace-surveillance-big-brother-technology>
- Stöckli, S., Schulte-Mecklenbeck, M., Borer, S., & Samson, A. C. (2018). Facial expression analysis with AFFDEX and FACET. *Behavior Research Methods*, 50(4), 1446-1460.
- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54(5), 768-777.
- Sussex, P., & Jacob, R. (2020). How to build crisis-ready remote access capabilities. *EY*. Retrieved from [https://www.ey.com/en\\_ch/innovation-financial-services/how-to-build-crisis-ready-remote-access-capabilities](https://www.ey.com/en_ch/innovation-financial-services/how-to-build-crisis-ready-remote-access-capabilities)
- Teramind. (2019). *Data privacy in 2020: Identifying, managing and preventing insider threats in a privacy-first world*. Retrieved from <https://www.teramind.co/images/cms/Teramind-Whitepaper---Privacy-2020-2019-07-03.pdf>
- Teramind. (2020). *About us*. Retrieved from <https://www.teramind.co/company/about-us>



- van Duin, S., & Bakhshi, N. (2017). Part 1: Artificial intelligence defined. *Deloitte*. Retrieved from <https://www2.deloitte.com/fi/fi/pages/technology/articles/part1-artificial-intelligence-defined.html>
- Wagenmakers, E. J., Beek, T., Dijkhoff, L., & Gronau, Q. F. (2016). Registered replication report: Strack, Martin, & Stepper 1988. *Perspectives on Psychological Science*, 11(6), 917-928.
- Zoom. (2019). *About Zoom*. Retrieved from <https://zoom.us/about>

## About the Author

**Janice C. Sipiør**, PhD, is Professor of MIS at Villanova University. Her academic experience includes faculty positions at University of Warsaw, Poland; Moscow State Linguistic University, Russia; University of North Carolina at Greensboro, USA; and Canisius College, USA. She serves as Editor-in-Chief of *Information Systems Management* and Associate Editor of *Information Resources Management Journal*, and is on the Editorial Advisory Board of *International Journal of Information Management* and *Journal of Business and Socio-economic Development*. She previously served as Chair of the Association for Computing Machinery's Special Interest Group on Management Information Systems (ACM SIGMIS). Her research interests include ethical and legal aspects of information technology, system development strategies, and knowledge management.

Copyright © 2021 by the Association for Information Systems. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and full citation on the first page. Copyright for components of this work owned by others than the Association for Information Systems must be honored. Abstracting with credit is permitted. To copy otherwise, to republish, to post on servers, or to redistribute to lists requires prior specific permission and/or fee. Request permission to publish from: AIS Administrative Office, P.O. Box 2712 Atlanta, GA, 30301-2712 Attn: Reprints are via e-mail from [publications@aisnet.org](mailto:publications@aisnet.org).